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1 <?xml version="1.0" encoding="UTF-8" ?>
2 <open-fides-notice open-fides-version="1.2">
3   <macro-family code="ec">
4     <family code="ec_ic" name="Integrated circuits">
5       <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
6         <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
7         <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
8         <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
9         <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
10        <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
11        <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
12        <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
13        <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
14        <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
15        <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
16        <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
17        <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
18        <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
19        <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
20        <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
21        <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
22        <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
23        <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
24        <list-param-item code="EC_IC_PKG_19" name="PBGA <0.5 mm [EC_IC]" value="19"/>
25        <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
26        <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
27        <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
28        <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
29        <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
30        <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
31        <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
32        <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
33        <list-param-item code="EC_IC_PKG_28" name="BGA WLP <0.5 mm [EC_IC]" value="28"/>
34        <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
35        <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
36        <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
37        <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
38        <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
39        <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
40        <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
41        <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
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42      <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
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44      <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
45      <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
46      <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
47      <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
48      <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
49      <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
50      <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
51      <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
52      <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
53      <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
54      <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
55      <list-param-item code="EC_DS_PKG_15" name="S0T23-5, SC74A, S0T25 [EC_DS]" value="115"/>
56      <list-param-item code="EC_DS_PKG_16" name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]" value="116"/>
57      <list-param-item code="EC_DS_PKG_17" name="S0T143, T0253AA, SC61B [EC_DS]" value="117"/>
58      <list-param-item code="EC_DS_PKG_18" name="S0T323, SC70 [EC_DS]" value="118"/>
59      <list-param-item code="EC_DS_PKG_19" name="S0T346, SC59, T0236AA [EC_DS]" value="119"/>
60      <list-param-item code="EC_DS_PKG_20" name="S0T353, SC70-5, SC88A [EC_DS]" value="120"/>
61      <list-param-item code="EC_DS_PKG_21" name="S0T363, SC70-6, SC88 [EC_DS]" value="121"/>
62      <list-param-item code="EC_DS_PKG_22" name="S0D123 [EC_DS]" value="122"/>
63      <list-param-item code="EC_DS_PKG_23" name="S0D323, SC76 [EC_DS]" value="123"/>
64      <list-param-item code="EC_DS_PKG_24" name="S0D523, SC79 [EC_DS]" value="124"/>
65      <list-param-item code="EC_DS_PKG_25" name="S0T223, SC73, T0261AA [EC_DS]" value="125"/>
66      <list-param-item code="EC_DS_PKG_26" name="S0T243 [EC_DS]" value="126"/>
67      <list-param-item code="EC_DS_PKG_27" name="S0T343, SC82 [EC_DS]" value="127"/>
68      <list-param-item code="EC_DS_PKG_28" name="S0T89, SC62, T0243AA [EC_DS]" value="128"/>
69      <list-param-item code="EC_DS_PKG_29" name="S0T194 [EC_DS]" value="129"/>
70      <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
71      <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
72      <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, S0T429 [EC_DS]" value="132"/>
73      <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
74      <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
75      <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
76      <list-param-item code="EC_DS_PKG_36" name="S0T82, T0225 [EC_DS]" value="136"/>
77      <list-param-item code="EC_DS_PKG_37" name="S0D6, D0214AA, SMB-J [EC_DS]" value="137"/>
78      <list-param-item code="EC_DS_PKG_38" name="S0D15, D0214AB, SMC-J [EC_DS]" value="138"/>
79      <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, S0T428 [EC_DS]" value="139"/>
80      <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
81      <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
82      <list-param-item code="EC_DS_PKG_42" name="IS0TOP, S0T227, T0244, Half-Pak [EC_DS]" value="142"/>
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83      <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
84      <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
85      <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
86      <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
87      <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
88      <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
89      <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
90      <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
91      <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
92      <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
93      <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
94      <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
95      <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
96    </family-param>
97    <family-param code="ec_ic_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
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99      <list-param-item code="EC_IC_CHIP_02" name="Analog and mixed circuit (MOS, Bipolar, BiCMOS)" value="2"/>
100     <list-param-item code="EC_IC_CHIP_03" name="Microprocessor, Microcontroller, DSP" value="3"/>
101     <list-param-item code="EC_IC_CHIP_04" name="Flash, EEPROM, EPROM" value="4"/>
102     <list-param-item code="EC_IC_CHIP_05" name="SRAM" value="5"/>
103     <list-param-item code="EC_IC_CHIP_06" name="DRAM" value="6"/>
104     <list-param-item code="EC_IC_CHIP_07" name="Digital circuit (MOS, Bipolar, BiCMOS)" value="7"/>
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106   <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="true" in-hmc="false"/>
107   <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="true" in-hmc="false"/>
108   <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
109   <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
110     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
111     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
112     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
113     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
114   </family-param>
115 </family>
116 <family code="ec_asic" name="Application Specific Integrated Circuit">
117   <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
118     <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
119     <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
120     <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
121     <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
122     <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
123     <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>

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126 <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
127 <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
128 <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
129 <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
130 <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
131 <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
132 <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
133 <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
134 <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
135 <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
136 <list-param-item code="EC_IC_PKG_19" name="PBGA &lt;0.5 mm [EC_IC]" value="19"/>
137 <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
138 <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
139 <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
140 <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
141 <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
142 <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
143 <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
144 <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
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146 <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
147 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
148 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
149 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
150 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
151 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
152 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
153 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
154 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
155 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
156 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
157 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
158 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
159 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
160 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
161 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
162 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
163 <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
164 <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
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165 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
166 <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
167 <list-param-item code="EC_DS_PKG_15" name="S0T23-5, SC74A, S0T25 [EC_DS]" value="115"/>
168 <list-param-item code="EC_DS_PKG_16" name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]" value="116"/>
169 <list-param-item code="EC_DS_PKG_17" name="S0T143, T0253AA, SC61B [EC_DS]" value="117"/>
170 <list-param-item code="EC_DS_PKG_18" name="S0T323, SC70 [EC_DS]" value="118"/>
171 <list-param-item code="EC_DS_PKG_19" name="S0T346, SC59, T0236AA [EC_DS]" value="119"/>
172 <list-param-item code="EC_DS_PKG_20" name="S0T353, SC70-5, SC88A [EC_DS]" value="120"/>
173 <list-param-item code="EC_DS_PKG_21" name="S0T363, SC70-6, SC88 [EC_DS]" value="121"/>
174 <list-param-item code="EC_DS_PKG_22" name="S0D123 [EC_DS]" value="122"/>
175 <list-param-item code="EC_DS_PKG_23" name="S0D323, SC76 [EC_DS]" value="123"/>
176 <list-param-item code="EC_DS_PKG_24" name="S0D523, SC79 [EC_DS]" value="124"/>
177 <list-param-item code="EC_DS_PKG_25" name="S0T223, SC73, T0261AA [EC_DS]" value="125"/>
178 <list-param-item code="EC_DS_PKG_26" name="S0T243 [EC_DS]" value="126"/>
179 <list-param-item code="EC_DS_PKG_27" name="S0T343, SC82 [EC_DS]" value="127"/>
180 <list-param-item code="EC_DS_PKG_28" name="S0T89, SC62, T0243AA [EC_DS]" value="128"/>
181 <list-param-item code="EC_DS_PKG_29" name="S0T194 [EC_DS]" value="129"/>
182 <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
183 <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
184 <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, S0T429 [EC_DS]" value="132"/>
185 <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
186 <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
187 <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
188 <list-param-item code="EC_DS_PKG_36" name="S0T82, T0225 [EC_DS]" value="136"/>
189 <list-param-item code="EC_DS_PKG_37" name="S0D6, D0214AA, SMB-J [EC_DS]" value="137"/>
190 <list-param-item code="EC_DS_PKG_38" name="S0D15, D0214AB, SMC-J [EC_DS]" value="138"/>
191 <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, S0T428 [EC_DS]" value="139"/>
192 <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
193 <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
194 <list-param-item code="EC_DS_PKG_42" name="IS0TOP, S0T227, T0244, Half-Pak [EC_DS]" value="142"/>
195 <list-param-item code="EC_DS_PKG_43" name="S0D80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
196 <list-param-item code="EC_DS_PKG_44" name="S0D87, MELF, D0213AB [EC_DS]" value="144"/>
197 <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, S0T31, S0T18 [EC_DS]" value="145"/>
198 <list-param-item code="EC_DS_PKG_46" name="T039, S0T5 [EC_DS]" value="146"/>
199 <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
200 <list-param-item code="EC_DS_PKG_48" name="S0T553 [EC_DS]" value="148"/>
201 <list-param-item code="EC_DS_PKG_49" name="S0T563 [EC_DS]" value="149"/>
202 <list-param-item code="EC_DS_PKG_50" name="S0T563F [EC_DS]" value="150"/>
203 <list-param-item code="EC_DS_PKG_51" name="S0T663 [EC_DS]" value="151"/>
204 <list-param-item code="EC_DS_PKG_52" name="S0T666 [EC_DS]" value="152"/>
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206         <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
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209     <family-param code="ec_asic_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
210         <list-param-item code="EC_ASIC_CHIP_01" name="Silicon MOS - Digital ASIC, simple function" value="1"/>
211         <list-param-item code="EC_ASIC_CHIP_02"
212             name="Silicon MOS - Digital ASIC, complex function (with IP and/or µP core, memory blocks)"
213             value="2"/>
214         <list-param-item code="EC_ASIC_CHIP_03" name="Silicon MOS - Analog, mixed ASIC" value="3"/>
215         <list-param-item code="EC_ASIC_CHIP_04" name="Silicon bipolar, BICMOS - Digital ASIC" value="4"/>
216         <list-param-item code="EC_ASIC_CHIP_05" name="Silicon bipolar, BICMOS - Mixed, analog ASIC" value="5"/>
217     </family-param>
218     <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="true" in-hmc="false"/>
219     <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="true" in-hmc="false"/>
220     <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
221     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
222         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
223         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
224         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
225         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
226     </family-param>
227 </family>
228 <family code="ec_ds" name="Discrete semiconductors">
229     <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
230         <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
231         <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
232         <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
233         <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
234         <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
235         <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
236         <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
237         <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
238         <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
239         <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
240         <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
241         <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
242         <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
243         <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
244         <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
245         <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
246         <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
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247 <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
248 <list-param-item code="EC_IC_PKG_19" name="PBGA &lt;0.5 mm [EC_IC]" value="19"/>
249 <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
250 <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
251 <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
252 <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
253 <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
254 <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
255 <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
256 <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
257 <list-param-item code="EC_IC_PKG_28" name="BGA WLP &lt;0.5 mm [EC_IC]" value="28"/>
258 <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
259 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
260 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
261 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
262 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
263 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
264 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
265 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
266 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
267 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
268 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
269 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
270 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
271 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
272 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
273 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
274 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
275 <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
276 <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
277 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
278 <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
279 <list-param-item code="EC_DS_PKG_15" name="S0T23-5, SC74A, S0T25 [EC_DS]" value="115"/>
280 <list-param-item code="EC_DS_PKG_16" name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]" value="116"/>
281 <list-param-item code="EC_DS_PKG_17" name="S0T143, T0253AA, SC61B [EC_DS]" value="117"/>
282 <list-param-item code="EC_DS_PKG_18" name="S0T323, SC70 [EC_DS]" value="118"/>
283 <list-param-item code="EC_DS_PKG_19" name="S0T346, SC59, T0236AA [EC_DS]" value="119"/>
284 <list-param-item code="EC_DS_PKG_20" name="S0T353, SC70-5, SC88A [EC_DS]" value="120"/>
285 <list-param-item code="EC_DS_PKG_21" name="S0T363, SC70-6, SC88 [EC_DS]" value="121"/>
286 <list-param-item code="EC_DS_PKG_22" name="S0D123 [EC_DS]" value="122"/>
287 <list-param-item code="EC_DS_PKG_23" name="S0D323, SC76 [EC_DS]" value="123"/>
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288     <list-param-item code="EC_DS_PKG_24" name="SOD523, SC79 [EC_DS]" value="124"/>
289     <list-param-item code="EC_DS_PKG_25" name="SOT223, SC73, T0261AA [EC_DS]" value="125"/>
290     <list-param-item code="EC_DS_PKG_26" name="SOT243 [EC_DS]" value="126"/>
291     <list-param-item code="EC_DS_PKG_27" name="SOT343, SC82 [EC_DS]" value="127"/>
292     <list-param-item code="EC_DS_PKG_28" name="SOT89, SC62, T0243AA [EC_DS]" value="128"/>
293     <list-param-item code="EC_DS_PKG_29" name="SOT194 [EC_DS]" value="129"/>
294     <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
295     <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
296     <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, SOT429 [EC_DS]" value="132"/>
297     <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
298     <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
299     <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
300     <list-param-item code="EC_DS_PKG_36" name="SOT82, T0225 [EC_DS]" value="136"/>
301     <list-param-item code="EC_DS_PKG_37" name="SOD6, D0214AA, SMB-J [EC_DS]" value="137"/>
302     <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
303     <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
304     <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
305     <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
306     <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
307     <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
308     <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
309     <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
310     <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
311     <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
312     <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
313     <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
314     <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
315     <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
316     <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
317     <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
318     <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
319     <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
320 </family-param>
321 <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="true" in-hmc="false"/>
322 <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="true" in-hmc="false"/>
323 <family-param code="ec_ds_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
324     <list-param-item code="EC_DS_CHIP_01" name="Signal diodes up to 1A (PIN, Schottky, signal, varactor)"
325         value="1"/>
326     <list-param-item code="EC_DS_CHIP_02" name="Rectifier diodes 1A to 3A" value="2"/>
327     <list-param-item code="EC_DS_CHIP_03" name="Zener regulation diodes up to 1.5W" value="3"/>
328     <list-param-item code="EC_DS_CHIP_04" name="Protection diodes up to 3kW (peak 10ms/ 100ms) (TVS)"

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329         value="4"/>
330     <list-param-item code="EC_DS_CHIP_05" name="Silicon, bipolar &lt; 5W" value="5"/>
331     <list-param-item code="EC_DS_CHIP_06" name="Silicon, MOS &lt; 5W" value="6"/>
332     <list-param-item code="EC_DS_CHIP_07" name="Silicon, JFET &lt; 5W" value="7"/>
333     <list-param-item code="EC_DS_CHIP_08" name="Thyristors, triacs over 3A" value="8"/>
334     <list-param-item code="EC_DS_CHIP_09" name="Rectifier diodes &gt; 3A" value="9"/>
335     <list-param-item code="EC_DS_CHIP_10" name="Zener regulation diodes over 1.5W" value="10"/>
336     <list-param-item code="EC_DS_CHIP_11" name="Protection diodes over 3kW (peak 10ms / 100ms) (TVS)"
337         value="11"/>
338     <list-param-item code="EC_DS_CHIP_12" name="Silicon, bipolar &gt; 5W" value="12"/>
339 </family-param>
340 <family-param code="ec_elmt_nb" name="Nb elements" value-type="NUMERIC" optional="false" in-hmc="false"/>
341 <family-param code="ec_v_rated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
342     in-hmc="false"/>
343 <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
344     in-hmc="false"/>
345 <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
346 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
347     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
348     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
349     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
350     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
351 </family-param>
352 </family>
353 <family code="ec_dps" name="Discrete power semiconductors">
354     <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
355         <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
356         <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
357         <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
358         <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
359         <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
360         <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
361         <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
362         <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
363         <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
364         <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
365         <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
366         <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
367         <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
368         <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
369         <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>

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370 <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
371 <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
372 <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
373 <list-param-item code="EC_IC_PKG_19" name="PBGA &lt;0.5 mm [EC_IC]" value="19"/>
374 <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
375 <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
376 <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
377 <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
378 <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
379 <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
380 <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
381 <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
382 <list-param-item code="EC_IC_PKG_28" name="BGA WLP &lt;0.5 mm [EC_IC]" value="28"/>
383 <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
384 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
385 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
386 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
387 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
388 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
389 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
390 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
391 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
392 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
393 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
394 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
395 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
396 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
397 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
398 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
399 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
400 <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
401 <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
402 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
403 <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
404 <list-param-item code="EC_DS_PKG_15" name="S0T23-5, SC74A, S0T25 [EC_DS]" value="115"/>
405 <list-param-item code="EC_DS_PKG_16" name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]" value="116"/>
406 <list-param-item code="EC_DS_PKG_17" name="S0T143, T0253AA, SC61B [EC_DS]" value="117"/>
407 <list-param-item code="EC_DS_PKG_18" name="S0T323, SC70 [EC_DS]" value="118"/>
408 <list-param-item code="EC_DS_PKG_19" name="S0T346, SC59, T0236AA [EC_DS]" value="119"/>
409 <list-param-item code="EC_DS_PKG_20" name="S0T353, SC70-5, SC88A [EC_DS]" value="120"/>
410 <list-param-item code="EC_DS_PKG_21" name="S0T363, SC70-6, SC88 [EC_DS]" value="121"/>
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411     <list-param-item code="EC_DS_PKG_22" name="SOD123 [EC_DS]" value="122"/>
412     <list-param-item code="EC_DS_PKG_23" name="SOD323, SC76 [EC_DS]" value="123"/>
413     <list-param-item code="EC_DS_PKG_24" name="SOD523, SC79 [EC_DS]" value="124"/>
414     <list-param-item code="EC_DS_PKG_25" name="SOT223, SC73, T0261AA [EC_DS]" value="125"/>
415     <list-param-item code="EC_DS_PKG_26" name="SOT243 [EC_DS]" value="126"/>
416     <list-param-item code="EC_DS_PKG_27" name="SOT343, SC82 [EC_DS]" value="127"/>
417     <list-param-item code="EC_DS_PKG_28" name="SOT89, SC62, T0243AA [EC_DS]" value="128"/>
418     <list-param-item code="EC_DS_PKG_29" name="SOT194 [EC_DS]" value="129"/>
419     <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
420     <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
421     <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, SOT429 [EC_DS]" value="132"/>
422     <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
423     <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
424     <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
425     <list-param-item code="EC_DS_PKG_36" name="SOT82, T0225 [EC_DS]" value="136"/>
426     <list-param-item code="EC_DS_PKG_37" name="SOD6, D0214AA, SMB-J [EC_DS]" value="137"/>
427     <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
428     <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
429     <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
430     <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
431     <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
432     <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
433     <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
434     <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
435     <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
436     <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
437     <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
438     <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
439     <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
440     <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
441     <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
442     <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
443     <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
444     <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
445   </family-param>
446   <family-param code="ec_dps_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
447     <list-param-item code="EC_DPS_CHIP_01" name="Silicon, MOS &gt; 5W" value="1"/>
448     <list-param-item code="EC_DPS_CHIP_02" name="IGBT" value="2"/>
449   </family-param>
450   <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="true" in-hmc="false"/>
451   <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="true" in-hmc="false"/>
```

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452     <family-param code="ec_elmt_nb" name="Nb elements" value-type="NUMERIC" optional="false" in-hmc="false"/>
453     <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
454     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
455         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
456         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
457         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
458         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
459     </family-param>
460 </family>
461 <family code="ec_led" name="Light-emitting diodes">
462     <family-param code="ec_led_pkg" name="Type" value-type="LIST" optional="false" in-hmc="false">
463         <list-param-item code="EC_LED_PKG_TYPE_01"
464             name="If_max < 150mA / Through-hole / T1-x / Plastic / 2 to 4 pins" value="1"/>
465         <list-param-item code="EC_LED_PKG_TYPE_02"
466             name="If_max < 150mA / Through-hole / High flux / Plastic / 4 pins" value="2"/>
467         <list-param-item code="EC_LED_PKG_TYPE_03" name="If_max < 150mA / SMD / Chip / Plastic / 2 pins"
468             value="3"/>
469         <list-param-item code="EC_LED_PKG_TYPE_04" name="If_max < 150mA / SMD / PLCC / Plastic / Mini 2 pins"
470             value="4"/>
471         <list-param-item code="EC_LED_PKG_TYPE_05" name="If_max < 150mA / SMD / PLCC / Plastic / 2 pins"
472             value="5"/>
473         <list-param-item code="EC_LED_PKG_TYPE_06" name="If_max < 150mA / SMD / PLCC / Plastic / 3 pins"
474             value="6"/>
475         <list-param-item code="EC_LED_PKG_TYPE_07" name="If_max < 150mA / SMD / PLCC / Plastic / 4 pins"
476             value="7"/>
477         <list-param-item code="EC_LED_PKG_TYPE_08" name="If_max < 150mA / SMD / PLCC / Plastic / 6 pins"
478             value="8"/>
479         <list-param-item code="EC_LED_PKG_TYPE_09" name="If_max < 150mA / SMD / Round / Plastic / 2 pins"
480             value="9"/>
481         <list-param-item code="EC_LED_PKG_TYPE_10" name="If_max < 150mA / SMD / LGA / Plastic / 2 pins"
482             value="10"/>
483         <list-param-item code="EC_LED_PKG_TYPE_11" name="If_max < 150mA / SMD / LGA / Ceramic / 2 pins"
484             value="11"/>
485         <list-param-item code="EC_LED_PKG_TYPE_12" name="If_max < 150mA / SMD / Plastic" value="12"/>
486         <list-param-item code="EC_LED_PKG_TYPE_13" name="If_max < 150mA / SMD / Ceramic" value="13"/>
487         <list-param-item code="EC_LED_PKG_TYPE_14" name="If_max ≥ 150mA / SMD / Plastic" value="14"/>
488         <list-param-item code="EC_LED_PKG_TYPE_15" name="If_max ≥ 150mA / SMD / Ceramic" value="15"/>
489     </family-param>
490     <family-param code="ec_color" name="Color" value-type="LIST" optional="false" in-hmc="false">
491         <list-param-item code="EC_LED_COLOR_01" name="COLOUR" value="1"/>
492         <list-param-item code="EC_LED_COLOR_02" name="WHITE" value="2"/>
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493     </family-param>
494     <family-param code="ec_elmt_nb" name="Nb elements" value-type="NUMERIC" optional="false" in-hmc="false"/>
495     <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
496     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
497         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
498         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
499         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
500         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
501     </family-param>
502 </family>
503 <family code="ec_op" name="Optocouplers">
504     <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
505         <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
506         <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
507         <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
508         <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
509         <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
510         <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
511         <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
512         <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
513         <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
514         <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
515         <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
516         <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
517         <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
518         <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
519         <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
520         <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
521         <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
522         <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
523         <list-param-item code="EC_IC_PKG_19" name="PBGA <0.5 mm [EC_IC]" value="19"/>
524         <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
525         <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
526         <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
527         <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
528         <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
529         <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
530         <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
531         <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
532         <list-param-item code="EC_IC_PKG_28" name="BGA WLP <0.5 mm [EC_IC]" value="28"/>
533         <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
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534 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
535 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
536 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
537 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
538 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
539 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
540 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
541 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
542 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
543 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
544 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
545 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
546 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
547 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
548 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
549 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
550 <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
551 <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
552 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
553 <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
554 <list-param-item code="EC_DS_PKG_15" name="S0T23-5, SC74A, S0T25 [EC_DS]" value="115"/>
555 <list-param-item code="EC_DS_PKG_16" name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]" value="116"/>
556 <list-param-item code="EC_DS_PKG_17" name="S0T143, T0253AA, SC61B [EC_DS]" value="117"/>
557 <list-param-item code="EC_DS_PKG_18" name="S0T323, SC70 [EC_DS]" value="118"/>
558 <list-param-item code="EC_DS_PKG_19" name="S0T346, SC59, T0236AA [EC_DS]" value="119"/>
559 <list-param-item code="EC_DS_PKG_20" name="S0T353, SC70-5, SC88A [EC_DS]" value="120"/>
560 <list-param-item code="EC_DS_PKG_21" name="S0T363, SC70-6, SC88 [EC_DS]" value="121"/>
561 <list-param-item code="EC_DS_PKG_22" name="S0D123 [EC_DS]" value="122"/>
562 <list-param-item code="EC_DS_PKG_23" name="S0D323, SC76 [EC_DS]" value="123"/>
563 <list-param-item code="EC_DS_PKG_24" name="S0D523, SC79 [EC_DS]" value="124"/>
564 <list-param-item code="EC_DS_PKG_25" name="S0T223, SC73, T0261AA [EC_DS]" value="125"/>
565 <list-param-item code="EC_DS_PKG_26" name="S0T243 [EC_DS]" value="126"/>
566 <list-param-item code="EC_DS_PKG_27" name="S0T343, SC82 [EC_DS]" value="127"/>
567 <list-param-item code="EC_DS_PKG_28" name="S0T89, SC62, T0243AA [EC_DS]" value="128"/>
568 <list-param-item code="EC_DS_PKG_29" name="S0T194 [EC_DS]" value="129"/>
569 <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
570 <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
571 <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, S0T429 [EC_DS]" value="132"/>
572 <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
573 <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
574 <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
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575     <list-param-item code="EC_DS_PKG_36" name="SOT82, T0225 [EC_DS]" value="136"/>
576     <list-param-item code="EC_DS_PKG_37" name="SOD6, D0214AA, SMB-J [EC_DS]" value="137"/>
577     <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
578     <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
579     <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
580     <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
581     <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
582     <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
583     <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
584     <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
585     <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
586     <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
587     <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
588     <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
589     <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
590     <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
591     <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
592     <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
593     <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
594     <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
595   </family-param>
596   <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="true" in-hmc="false"/>
597   <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="true" in-hmc="false"/>
598   <family-param code="ec_op_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
599     <list-param-item code="EC_OP_TYPE_01" name="Photodiode optocoupler" value="1"/>
600     <list-param-item code="EC_OP_TYPE_02" name="Phototransistor optocoupler" value="2"/>
601   </family-param>
602   <family-param code="ec_elmt_nb" name="Nb elements" value-type="NUMERIC" optional="false" in-hmc="false"/>
603   <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
604   <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
605     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
606     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
607     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
608     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
609   </family-param>
610 </family>
611 <family code="ec_re" name="Resistors">
612   <family-param code="ec_re_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
613     <list-param-item code="EC_RE_TYPE_01"
614       name="&quot;MiniMELF&quot;; fixed resistor, low-power, thin film, current use (RC), high-
stability (RS)"

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615         value="1"/>
616     <list-param-item code="EC_RE_TYPE_02" name="Fixed resistor, high-power (≥1W), thick film" value="2"/>
617     <list-param-item code="EC_RE_TYPE_03" name="Fixed resistor, low-power, wirewound, precision" value="3"/>
618     <list-param-item code="EC_RE_TYPE_04" name="Fixed resistor, high-power (≥1W), wirewound" value="4"/>
619     <list-param-item code="EC_RE_TYPE_05" name="Potentiometer, non-wirewound" value="5"/>
620     <list-param-item code="EC_RE_TYPE_06" name="Fixed resistor, SMD, thick film" value="6"/>
621     <list-param-item code="EC_RE_TYPE_07" name="Resistor network, SMD" value="7"/>
622     <list-param-item code="EC_RE_TYPE_08" name="Fixed resistor, thin film, precision, high-stability (SMD)"
623         value="8"/>
624 </family-param>
625 <family-param code="ec_smd_thl" name="SMD/Through hole" value-type="LIST" optional="true" in-hmc="false">
626     <list-param-item code="EC_SMD_THL_01" name="SMD" value="1"/>
627     <list-param-item code="EC_SMD_THL_02" name="Through-hole" value="2"/>
628 </family-param>
629 <family-param code="ec_ohm" name="Ohm" value-type="NUMERIC" unit="kΩ" optional="true" in-hmc="false"/>
630 <family-param code="ec_elmt_nb" name="Nb elements" value-type="NUMERIC" optional="true" in-hmc="false"/>
631 <family-param code="ec_pRated" name="Prated" value-type="NUMERIC" unit="W" optional="false"
632     in-hmc="false"/>
633 <app-stress code="ec_p_appl" name="Papplied" value-type="NUMERIC" unit="W" optional="false"
634     in-hmc="false"/>
635 <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
636     in-hmc="true">
637     <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
638     <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
639 </family-param>
640 <family-param code="hmc_c_mould" name="Cmoulding" value-type="LIST" optional="false" in-hmc="true">
641     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
642     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
643     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
644     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
645 </family-param>
646 </family>
647 <family code="ec_fu" name="Fuses">
648     <family-param code="ec_iRated" name="Irated" value-type="NUMERIC" unit="A" optional="false"
649         in-hmc="false"/>
650     <app-stress code="ec_i_appl" name="Iapplied" value-type="NUMERIC" unit="A" optional="false"
651         in-hmc="false"/>
652     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
653         in-hmc="true">
654         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
655         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>

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656         </family-param>
657         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
658             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
659             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
660             <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
661             <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
662         </family-param>
663     </family>
664     <family code="ec_cc" name="Ceramic capacitors">
665         <family-param code="ec_cc_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
666             <list-param-item code="EC_CC_TYPE_01"
667                 name="Ceramic capacitor with defined temperature coefficient (Type I)" value="1"/>
668             <list-param-item code="EC_CC_TYPE_02"
669                 name="Ceramic capacitor with non-defined temperature coefficient (Type II X5R)"
670                 value="2"/>
671             <list-param-item code="EC_CC_TYPE_03"
672                 name="Ceramic capacitor with non-defined temperature coefficient (Type II X7R)"
673                 value="3"/>
674             <list-param-item code="EC_CC_TYPE_04"
675                 name="Ceramic capacitor with polymer terminations and a non-defined temperature coefficient
676                 (Type II X5R)"
677                 value="4"/>
678             <list-param-item code="EC_CC_TYPE_05"
679                 name="Ceramic capacitor with polymer terminations and a non-defined temperature coefficient
680                 (Type II X7R)"
681                 value="5"/>
682         </family-param>
683         <family-param code="ec_top_end" name="Top end" value-type="BOOL" optional="false" in-hmc="false"/>
684         <family-param code="ec_cRated" name="C" value-type="NUMERIC" unit="F" optional="false" in-hmc="false"/>
685         <family-param code="ec_vRated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
686             in-hmc="false"/>
687         <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
688             in-hmc="false"/>
689         <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
690             in-hmc="true">
691             <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
692             <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
693         </family-param>
694         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
695             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
696             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>

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695         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
696         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
697     </family-param>
698 </family>
699 <family code="ec_ac" name="Aluminium capacitors">
700     <family-param code="ec_ac_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
701         <list-param-item code="EC_AC_TYPE_01" name="Wet aluminium electrolytic capacitor" value="1"/>
702         <list-param-item code="EC_AC_TYPE_02" name="Solid aluminium electrolytic capacitor" value="2"/>
703     </family-param>
704     <family-param code="ec_vRated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
705         in-hmc="false"/>
706     <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
707         in-hmc="false"/>
708     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
709         in-hmc="true">
710         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
711         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
712     </family-param>
713     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
714         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
715         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
716         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
717         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
718     </family-param>
719 </family>
720 <family code="ec_tc" name="Tantalum capacitors">
721     <family-param code="ec_tc_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
722         <list-param-item code="EC_TC_TECH_01" name="Wet tantalum capacitor, silver case, elastomer-sealed"
723             value="1"/>
724         <list-param-item code="EC_TC_TECH_02" name="Wet tantalum capacitor, silver case, glass-sealed"
725             value="2"/>
726         <list-param-item code="EC_TC_TECH_03" name="Wet tantalum capacitor, tantalum case, glass-sealed"
727             value="3"/>
728         <list-param-item code="EC_TC_TECH_04" name="Solid tantalum capacitor, bead packaging" value="4"/>
729         <list-param-item code="EC_TC_TECH_05" name="Solid tantalum capacitor, SMD packaging" value="5"/>
730         <list-param-item code="EC_TC_TECH_06" name="Solid tantalum capacitor, axial metal packaging" value="6"/>
731     </family-param>
732     <family-param code="ec_vRated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
733         in-hmc="false"/>
734     <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
735         in-hmc="false"/>
```

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736     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
737         in-hmc="true">
738         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
739         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
740     </family-param>
741     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
742         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
743         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
744         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
745         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
746     </family-param>
747 </family>
748 <family code="ec_pfc" name="Plastic film capacitors">
749     <family-param code="ec_pfc_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
750         <list-param-item code="EC_PFC_TYPE_01" name="Polypropylene (PP) film capacitor" value="1"/>
751         <list-param-item code="EC_PFC_TYPE_02" name="Polyethylene terephthalate (PET) film capacitor" value="2"/>
752         <list-param-item code="EC_PFC_TYPE_03" name="Polyethylene naphthalate (PEN) film capacitor" value="3"/>
753         <list-param-item code="EC_PFC_TYPE_04" name="Polyphenylene sulfide (PPS) film capacitor" value="4"/>
754         <list-param-item code="EC_PFC_TYPE_05" name="Teflon (PTFE) film capacitor" value="5"/>
755     </family-param>
756     <family-param code="ec_vRated" name="V_Rated" value-type="NUMERIC" unit="V" optional="false"
757         in-hmc="false"/>
758     <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
759         in-hmc="false"/>
760     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
761         in-hmc="true">
762         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
763         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
764     </family-param>
765     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
766         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
767         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
768         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
769         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
770     </family-param>
771 </family>
772 <family code="ec_mc" name="Magnetic components">
773     <family-param code="ec_mc_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
774         <list-param-item code="EC_MC_TYPE_01" name="Low-current (or low-level) wirewound inductor" value="1"/>
775         <list-param-item code="EC_MC_TYPE_02" name="High-current (or power) wirewound inductor" value="2"/>
776         <list-param-item code="EC_MC_TYPE_03" name="Multilayer inductor" value="3"/>
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777         <list-param-item code="EC_MC_TYPE_04" name="Low-power (or low-level) transformer" value="4"/>
778         <list-param-item code="EC_MC_TYPE_05" name="High-power transformer" value="5"/>
779     </family-param>
780     <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
781     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
782         in-hmc="true">
783         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
784         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
785     </family-param>
786     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
787         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
788         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
789         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
790         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
791     </family-param>
792 </family>
793 <family code="ec_pec" name="Piezoelectric components">
794     <family-param code="ec_pec_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
795         <list-param-item code="EC_PEC_TYPE_01" name="Quartz crystal resonator (HCxx package, through-hole)"
796             value="1"/>
797         <list-param-item code="EC_PEC_TYPE_02" name="Quartz crystal resonator (surface-mounted)" value="2"/>
798         <list-param-item code="EC_PEC_TYPE_03" name="Quartz crystal oscillator (X0 package through-hole)"
799             value="3"/>
800         <list-param-item code="EC_PEC_TYPE_04"
801             name="Quartz crystal oscillator (X0, MCS0 package, surface-mounted)" value="4"/>
802     </family-param>
803     <family-param code="ec_i_out_max" name="I_output_max" value-type="NUMERIC" unit="A" optional="false"
804         in-hmc="false"/>
805     <app-stress code="ec_i_out" name="I_output" value-type="NUMERIC" unit="A" optional="false" in-hmc="false"/>
806     <family-param code="ec_t_max_manuf" name="T_max_manufacturer" value-type="NUMERIC" unit="°C"
807         optional="false" in-hmc="false"/>
808     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
809         in-hmc="true">
810         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
811         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
812     </family-param>
813     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
814         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
815         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
816         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
817         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
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818     </family-param>
819 </family>
820 <family code="ec_memr" name="Monostable electromechanical relays">
821   <family-param code="ec_n_dt" name="N_DT" value-type="NUMERIC" optional="false" in-hmc="false"/>
822   <family-param code="ec_n_st" name="N_ST" value-type="NUMERIC" optional="false" in-hmc="false"/>
823   <family-param code="ec_contact_type" name="Contact type" value-type="LIST" optional="false" in-hmc="false">
824     <list-param-item code="EC_CONTACT_01" name="Gold-plated" value="1"/>
825     <list-param-item code="EC_CONTACT_02" name="Silver" value="2"/>
826   </family-param>
827   <family-param code="ec_break_cpty" name="Breaking capacity" value-type="NUMERIC" unit="A" optional="false"
828     in-hmc="false"/>
829   <family-param code="ec_herme_type" name="Hermeticity type" value-type="LIST" optional="false"
830     in-hmc="false">
831     <list-param-item code="EC_HERMETICITY_01" name="Hermetic" value="1"/>
832     <list-param-item code="EC_HERMETICITY_02" name="Sealed" value="2"/>
833     <list-param-item code="EC_HERMETICITY_03" name="Not sealed" value="3"/>
834   </family-param>
835   <family-param code="ec_vRated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
836     in-hmc="false"/>
837   <family-param code="ec_iRated" name="I_rated" value-type="NUMERIC" unit="A" optional="false"
838     in-hmc="false"/>
839   <family-param code="ec_u_appl" name="U_applied" value-type="NUMERIC" unit="V" optional="false"
840     in-hmc="false"/>
841   <app-stress code="ec_op_nb" name="Nb op/h" value-type="NUMERIC" unit="Op/H" optional="false"
842     in-hmc="false"/>
843   <app-stress code="ec_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
844     <list-param-item code="EC_LOAD_01" name="Resistive" value="1"/>
845     <list-param-item code="EC_LOAD_02" name="Inductive" value="2"/>
846     <list-param-item code="EC_LOAD_03" name="Incandescent lamp" value="3"/>
847     <list-param-item code="EC_LOAD_04" name="Capacitive" value="4"/>
848   </app-stress>
849   <app-stress code="ec_v_contact" name="V_contact" value-type="NUMERIC" unit="V" optional="false"
850     in-hmc="false"/>
851   <app-stress code="ec_i_contact" name="I_contact" value-type="NUMERIC" unit="A" optional="false"
852     in-hmc="false"/>
853   <app-stress code="ec_u_coil" name="U_coil" value-type="NUMERIC" unit="V" optional="false" in-hmc="false"/>
854   <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
855   <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
856     in-hmc="true">
857     <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
858     <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
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859     </family-param>
860     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
861         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
862         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
863         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
864         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
865     </family-param>
866 </family>
867 <family code="ec_sw" name="Switches">
868     <family-param code="ec_sw_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
869         <list-param-item code="EC_SW_TYPE_01" name="Limit switch, microcontacts" value="1"/>
870         <list-param-item code="EC_SW_TYPE_02" name="Toggle" value="2"/>
871         <list-param-item code="EC_SW_TYPE_03" name="Slide" value="3"/>
872         <list-param-item code="EC_SW_TYPE_04" name="Lever" value="4"/>
873         <list-param-item code="EC_SW_TYPE_05" name="DIP" value="5"/>
874         <list-param-item code="EC_SW_TYPE_06" name="Rotary" value="6"/>
875         <list-param-item code="EC_SW_TYPE_07" name="Encoder" value="7"/>
876         <list-param-item code="EC_SW_TYPE_08" name="Momentary push button (monostable)" value="8"/>
877         <list-param-item code="EC_SW_TYPE_09" name="Permanent push button (bistable)" value="9"/>
878     </family-param>
879     <family-param code="ec_contact_type" name="Contact type" value-type="LIST" optional="false" in-hmc="false">
880         <list-param-item code="EC_CONTACT_01" name="Gold-plated" value="1"/>
881         <list-param-item code="EC_CONTACT_02" name="Silver" value="2"/>
882     </family-param>
883     <family-param code="ec_break_cpty" name="Breaking capacity" value-type="NUMERIC" unit="A" optional="false"
884         in-hmc="false"/>
885     <family-param code="ec_herme_type" name="Hermeticity type" value-type="LIST" optional="false"
886         in-hmc="false">
887         <list-param-item code="EC_HERMETICITY_01" name="Hermetic" value="1"/>
888         <list-param-item code="EC_HERMETICITY_02" name="Sealed" value="2"/>
889         <list-param-item code="EC_HERMETICITY_03" name="Not sealed" value="3"/>
890     </family-param>
891     <family-param code="ec_n_dt" name="N_DT" value-type="NUMERIC" optional="false" in-hmc="false"/>
892     <family-param code="ec_n_st" name="N_ST" value-type="NUMERIC" optional="false" in-hmc="false"/>
893     <family-param code="ec_v_rated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
894         in-hmc="false"/>
895     <family-param code="ec_i_rated" name="I_rated" value-type="NUMERIC" unit="A" optional="false"
896         in-hmc="false"/>
897     <app-stress code="ec_op_nb" name="Nb op/h" value-type="NUMERIC" unit="Op/H" optional="false"
898         in-hmc="false"/>
899     <app-stress code="ec_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
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900      <list-param-item code="EC_LOAD_01" name="Resistive" value="1"/>
901      <list-param-item code="EC_LOAD_02" name="Inductive" value="2"/>
902      <list-param-item code="EC_LOAD_03" name="Incandescent lamp" value="3"/>
903      <list-param-item code="EC_LOAD_04" name="Capacitive" value="4"/>
904    </app-stress>
905    <app-stress code="ec_v_contact" name="V_contact" value-type="NUMERIC" unit="V" optional="false"
906      in-hmc="false"/>
907    <app-stress code="ec_i_contact" name="I_contact" value-type="NUMERIC" unit="A" optional="false"
908      in-hmc="false"/>
909    <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
910      in-hmc="true">
911      <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
912      <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
913    </family-param>
914    <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
915      <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
916      <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
917      <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
918      <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
919    </family-param>
920  </family>
921  <family code="ec_pcb" name="Printed circuit boards">
922    <family-param code="ec_pcb_class" name="Class" value-type="LIST" optional="false" in-hmc="false">
923      <list-param-item code="EC_PCB_CLASS_01" name="800 / 800" value="1"/>
924      <list-param-item code="EC_PCB_CLASS_02" name="500 / 500" value="2"/>
925      <list-param-item code="EC_PCB_CLASS_03" name="310 / 310" value="3"/>
926      <list-param-item code="EC_PCB_CLASS_04" name="210 / 210" value="4"/>
927      <list-param-item code="EC_PCB_CLASS_05" name="150 / 150" value="5"/>
928      <list-param-item code="EC_PCB_CLASS_06" name="125 / 125" value="6"/>
929      <list-param-item code="EC_PCB_CLASS_07" name="100 / 100" value="7"/>
930    </family-param>
931    <family-param code="ec_pcb_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
932      <list-param-item code="EC_PCB_TECH_01" name="Through-holes" value="1"/>
933      <list-param-item code="EC_PCB_TECH_02" name="Blind holes" value="2"/>
934      <list-param-item code="EC_PCB_TECH_03" name="Micro-via technology" value="3"/>
935      <list-param-item code="EC_PCB_TECH_04" name="Pad on via technology" value="4"/>
936    </family-param>
937    <family-param code="ec_n_layer" name="N_layers" value-type="NUMERIC" optional="false" in-hmc="false"/>
938    <family-param code="ec_n_mount" name="N_mount" value-type="NUMERIC" optional="false" in-hmc="false"/>
939    <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
940      in-hmc="true">

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941         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
942         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
943     </family-param>
944     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
945         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
946         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
947         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
948         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
949     </family-param>
950 </family>
951 <family code="ec_co" name="Connectors">
952     <family-param code="ec_co_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
953         <list-param-item code="EC_CO_TYPE_01" name="Round and rectangular connectors" value="1"/>
954         <list-param-item code="EC_CO_TYPE_02" name="Coaxial connectors" value="2"/>
955         <list-param-item code="EC_CO_TYPE_03" name="Connectors for printed (and assimilated) circuits"
956             value="3"/>
957         <list-param-item code="EC_CO_TYPE_04" name="Component supports" value="4"/>
958     </family-param>
959     <family-param code="ec_mount_type" name="Mount Type" value-type="LIST" optional="false" in-hmc="false">
960         <list-param-item code="EC_CO_MOUNT_01" name="Insertion (press fit)" value="1"/>
961         <list-param-item code="EC_CO_MOUNT_02" name="Soldered (through-hole)" value="2"/>
962         <list-param-item code="EC_CO_MOUNT_03" name="Soldered (SMD)" value="3"/>
963         <list-param-item code="EC_CO_MOUNT_04" name="Wrapping (braid)" value="4"/>
964         <list-param-item code="EC_CO_MOUNT_05" name="Wrapping (wire)" value="5"/>
965     </family-param>
966     <family-param code="ec_n_contact" name="Contact Number" value-type="NUMERIC" optional="false"
967         in-hmc="false"/>
968     <family-param code="ec_co_n_cycle" name="Nb mated/unmated Cycles" value-type="NUMERIC" optional="false"
969         in-hmc="false"/>
970     <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
971     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
972         in-hmc="true">
973         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
974         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
975     </family-param>
976     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
977         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
978         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
979         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
980         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
981 </family-param>
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982     </family>
983 </macro-family>
984 <macro-family code="hmc">
985     <family code="hmc_hmc" name="Hybrid and multi-chip module">
986         <family-param code="hmc_csens_cs" name="Case & substrate C_sensitivity" value-type="LIST"
987             optional="false" in-hmc="false">
988             <list-param-item code="HMC_CSSENS_CS_01" name="Metal case, ceramic case, ceramic substrate" value="1"/>
989             <list-param-item code="HMC_CSSENS_CS_02" name="Glass/epoxy substrate with moulding" value="2"/>
990             <list-param-item code="HMC_CSSENS_CS_03" name="Glass/epoxy substrate without moulding" value="3"/>
991         </family-param>
992         <family-param code="hmc_mounting_type" name="Mounting type" value-type="LIST" optional="false"
993             in-hmc="false">
994             <list-param-item code="HMC_MOUNTING_TYPE_01"
995                 name="Soldered surface-mount component with flat pins - With copper or copper alloy pins"
996                 value="1"/>
997             <list-param-item code="HMC_MOUNTING_TYPE_02"
998                 name="Soldered surface-mount component with flat pins - With iron-nickel alloy pins (alloy 42,
999                 Kovar, etc.)"
1000                 value="2"/>
1001             <list-param-item code="HMC_MOUNTING_TYPE_03"
1002                 name="Soldered through-hole component with pins - With copper or copper alloy pins"
1003                 value="3"/>
1004             <list-param-item code="HMC_MOUNTING_TYPE_04"
1005                 name="Soldered through-hole component with pins - With iron-nickel alloy pins (alloy 42,
1006                 Kovar, etc.)"
1007                 value="4"/>
1008             <list-param-item code="HMC_MOUNTING_TYPE_05" name="Surface-mount soldered component without pins"
1009                 value="5"/>
1010             <list-param-item code="HMC_MOUNTING_TYPE_06" name="Component without pins, assembled by contact"
1011                 value="6"/>
1012         </family-param>
1013         <family-param code="hmc_attach_mode" name="Attachment mode" value-type="LIST" optional="false"
1014             in-hmc="false">
1015             <list-param-item code="HMC_ATTACH_MODE_01"
1016                 name="None (Allows for a degree of movement between the component and the printed circuit)"
1017                 value="1"/>
1018             <list-param-item code="HMC_ATTACH_MODE_02"
1019                 name="Flexible (Allows for limited movement of the component on its support)"
1020                 value="2"/>
1021             <list-param-item code="HMC_ATTACH_MODE_03"
1022                 name="Rigid (Allows for little or no movement between the component and the printed circuit)"

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1021         value="3"/>
1022     </family-param>
1023     <family-param code="hmc_np" name="N_pin" value-type="NUMERIC" optional="false" in-hmc="false"/>
1024     <family-param code="hmc_l_pin" name="L_pin" value-type="NUMERIC" unit="mm" optional="false" in-hmc="false"/>
1025     <family-param code="hmc_s_pin" name="S_pin" value-type="NUMERIC" unit="mm2" optional="false"
1026         in-hmc="false"/>
1027     <family-param code="hmc_d" name="D" value-type="NUMERIC" unit="mm" optional="false" in-hmc="false"/>
1028     <family-param code="hmc_m" name="M" value-type="NUMERIC" unit="g" optional="false" in-hmc="false"/>
1029     <family-param code="hmc_delta_cte" name="ΔCTE" value-type="LIST" optional="false" in-hmc="false">
1030         <list-param-item code="HMC_DELTA_CTE_01" name="Metal (Kovar) without Cu/In/Cu" value="1"/>
1031         <list-param-item code="HMC_DELTA_CTE_02" name="Metal (Kovar) with Cu/In/Cu" value="2"/>
1032         <list-param-item code="HMC_DELTA_CTE_03" name="Ceramic (alumina or cofired) without Cu/In/Cu"
1033             value="3"/>
1034         <list-param-item code="HMC_DELTA_CTE_04" name="Ceramic (alumina or cofired) with Cu/In/Cu" value="4"/>
1035         <list-param-item code="HMC_DELTA_CTE_05" name="Moulded (organic substrate or ceramic) without Cu/In/Cu"
1036             value="5"/>
1037         <list-param-item code="HMC_DELTA_CTE_06" name="Moulded (organic substrate or ceramic) with Cu/In/Cu"
1038             value="6"/>
1039     </family-param>
1040     <app-stress code="hmc_delta_thm" name="ΔT_H&M" value-type="NUMERIC" unit="°C" optional="false"
1041         in-hmc="false"/>
1042 </family>
1043 <family code="hmc_ca" name="Cavity">
1044     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1045         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1046         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1047         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1048         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1049     </family-param>
1050     <family-param code="hmc_c_herme" name="C_hermeticity" value-type="LIST" optional="false" in-hmc="false">
1051         <list-param-item code="HMC_C_HERMETICITY_01" name="Hermetic circuit (with or without internal coating)"
1052             value="1"/>
1053         <list-param-item code="HMC_C_HERMETICITY_02" name="Sealed cavity circuit (non-hermetic)" value="2"/>
1054         <list-param-item code="HMC_C_HERMETICITY_03" name="Moulded circuit" value="3"/>
1055     </family-param>
1056     <family-param code="hmc_c_particle" name="C_particle" value-type="LIST" optional="false" in-hmc="false">
1057         <list-param-item code="HMC_C_PARTICLE_01"
1058             name="Moulded circuit or chip interconnection by flip-chip, with underfill" value="1"/>
1059         <list-param-item code="HMC_C_PARTICLE_02"
1060             name="Non-moulded hermetic circuit with particle trap and gold wire*" value="2"/>
1061         <list-param-item code="HMC_C_PARTICLE_03"

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1062         name="Non-moulded hermetic circuit with particle trap and aluminium wire* or chip
interconnection by flip-chip without underfill"
1063         value="3"/>
1064     <list-param-item code="HMC_C_PARTICLE_04"
1065         name="Non-moulded hermetic circuit without particle trap and gold wire*" value="4"/>
1066     <list-param-item code="HMC_C_PARTICLE_05"
1067         name="Non-moulded hermetic circuit without particle trap and aluminium wire*"
1068         value="5"/>
1069 </family-param>
1070 <family-param code="hmc_nb_wire" name="N_wires" value-type="NUMERIC" optional="false" in-hmc="false"/>
1071 <family-param code="hmc_n_track" name="N_tracks" value-type="NUMERIC" optional="false" in-hmc="false"/>
1072 <family-param code="hmc_n_layer" name="N_layers" value-type="NUMERIC" optional="false" in-hmc="false"/>
1073 <family-param code="hmc_pi_class" name="&Pi;_Class" value-type="LIST" optional="false" in-hmc="false">
1074     <list-param-item code="HMC_PI_CLASS_01" name="800 / 800" value="1"/>
1075     <list-param-item code="HMC_PI_CLASS_02" name="500 / 500" value="2"/>
1076     <list-param-item code="HMC_PI_CLASS_03" name="310 / 310" value="3"/>
1077     <list-param-item code="HMC_PI_CLASS_04" name="210 / 210" value="4"/>
1078     <list-param-item code="HMC_PI_CLASS_05" name="150 / 150" value="5"/>
1079     <list-param-item code="HMC_PI_CLASS_06" name="125 / 125" value="6"/>
1080     <list-param-item code="HMC_PI_CLASS_07" name="100 / 100" value="7"/>
1081 </family-param>
1082 <family-param code="hmc_cs_tech" name="Case & substrate technology" value-type="LIST" optional="false"
1083     in-hmc="false">
1084     <list-param-item code="HMC_CS_TECH_01" name="Hermetic ceramic case (cofired MCM package, etc.)"
1085         value="1"/>
1086     <list-param-item code="HMC_CS_TECH_02" name="Alumina substrate with hermetic metal case" value="2"/>
1087     <list-param-item code="HMC_CS_TECH_03" name="Alumina substrate with moulding" value="3"/>
1088     <list-param-item code="HMC_CS_TECH_04" name="Alumina substrate without case or moulding" value="4"/>
1089     <list-param-item code="HMC_CS_TECH_05" name="Organic substrate (glass/epoxy) with hermetic metal case"
1090         value="5"/>
1091     <list-param-item code="HMC_CS_TECH_06" name="Organic substrate (glass/epoxy) with moulding" value="6"/>
1092     <list-param-item code="HMC_CS_TECH_07" name="Glass/epoxy substrate without case or moulding" value="7"/>
1093 </family-param>
1094 <family-param code="hmc_cs_type" name="Substrate type" value-type="LIST" optional="false" in-hmc="false">
1095     <list-param-item code="HMC_CS_TYPE_01" name="Ceramic" value="1"/>
1096     <list-param-item code="HMC_CS_TYPE_02" name="Glass/epoxy - Through-holes" value="2"/>
1097     <list-param-item code="HMC_CS_TYPE_03" name="Glass/epoxy - Blind holes" value="3"/>
1098     <list-param-item code="HMC_CS_TYPE_04" name="Glass/epoxy - Micro-via technology" value="4"/>
1099     <list-param-item code="HMC_CS_TYPE_05" name="Glass/epoxy - Pad on via technology" value="5"/>
1100 </family-param>
1101 <family-param code="hmc_w_type" name="Wiring type" value-type="LIST" optional="false" in-hmc="false">

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1102         <list-param-item code="HMC_WIRING_TYPE_01" name="Wires and strips (aluminium and gold)" value="1"/>
1103         <list-param-item code="HMC_WIRING_TYPE_02" name="Bumps" value="2"/>
1104     </family-param>
1105 </family>
1106 <family code="hmc_bc_ic" name="Micro-components - Bare chips (Integrated circuit)">
1107     <family-param code="hmc_icds_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
1108         <list-param-item code="HMC_ICDS_CHIP_01" name="FPGA, CPLD, FPGA Antifuse, PAL" value="1"/>
1109         <list-param-item code="HMC_ICDS_CHIP_02" name="Analog and mixed circuit (MOS, Bipolar, BiCMOS)"
1110             value="2"/>
1111         <list-param-item code="HMC_ICDS_CHIP_03" name="Microprocessor, Microcontroller, DSP" value="3"/>
1112         <list-param-item code="HMC_ICDS_CHIP_04" name="Flash, EEPROM, EPROM" value="4"/>
1113         <list-param-item code="HMC_ICDS_CHIP_05" name="SRAM" value="5"/>
1114         <list-param-item code="HMC_ICDS_CHIP_06" name="DRAM" value="6"/>
1115         <list-param-item code="HMC_ICDS_CHIP_07" name="Digital circuit (MOS, Bipolar, BiCMOS)" value="7"/>
1116         <list-param-item code="HMC_ICDS_CHIP_08" name="Silicon MOS - Digital ASIC, simple function" value="8"/>
1117         <list-param-item code="HMC_ICDS_CHIP_09"
1118             name="Silicon MOS - Digital ASIC, complex function (with IP and/or ?P core, memory blocks)"
1119             value="9"/>
1120         <list-param-item code="HMC_ICDS_CHIP_10" name="Silicon MOS - Analog, mixed ASIC" value="10"/>
1121         <list-param-item code="HMC_ICDS_CHIP_11" name="Silicon bipolar, BICMOS - Digital ASIC" value="11"/>
1122         <list-param-item code="HMC_ICDS_CHIP_12" name="Silicon bipolar, BICMOS - Mixed, analog ASIC"
1123             value="12"/>
1124         <list-param-item code="HMC_ICDS_CHIP_13"
1125             name="Low-power diodes - Signal diodes up to 1A (PIN, Schottky, signal, varactor)"
1126             value="13"/>
1127         <list-param-item code="HMC_ICDS_CHIP_14" name="Low-power diodes - Rectifier diodes 1A to 3A"
1128             value="14"/>
1129         <list-param-item code="HMC_ICDS_CHIP_15" name="Low-power diodes - Zener regulation diodes up to 1.5W"
1130             value="15"/>
1131         <list-param-item code="HMC_ICDS_CHIP_16"
1132             name="Low-power diodes - Protection diodes up to 3kW (peak 10ms / 100ms) (TVS)"
1133             value="16"/>
1134         <list-param-item code="HMC_ICDS_CHIP_17" name="Power diodes - Thyristors, triacs over 3A" value="17"/>
1135         <list-param-item code="HMC_ICDS_CHIP_18" name="Power diodes - Rectifier diodes > 3A" value="18"/>
1136         <list-param-item code="HMC_ICDS_CHIP_19" name="Power diodes - Zener regulation diodes over 1.5W"
1137             value="19"/>
1138         <list-param-item code="HMC_ICDS_CHIP_20"
1139             name="Power diodes - Protection diodes over 3kW (peak 10ms / 100ms) (TVS)" value="20"/>
1140         <list-param-item code="HMC_ICDS_CHIP_21" name="Low-power transistors - Silicon, bipolar < 5W"
1141             value="21"/>
1142         <list-param-item code="HMC_ICDS_CHIP_22" name="Low-power transistors - Silicon, MOS < 5W"

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1143         value="22"/>
1144     <list-param-item code="HMC_ICDS_CHIP_23" name="Low-power transistors - Silicon, JFET &lt; 5W"
1145         value="23"/>
1146     <list-param-item code="HMC_ICDS_CHIP_24" name="Power transistors - Silicon, bipolar &gt; 5W"
1147         value="24"/>
1148     <list-param-item code="HMC_ICDS_CHIP_25" name="Power transistors - Silicon, MOS &gt; 5W" value="25"/>
1149     <list-param-item code="HMC_ICDS_CHIP_26" name="Power transistors - IGBT" value="26"/>
1150 </family-param>
1151 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1152     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1153     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1154     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1155     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1156 </family-param>
1157 <family-param code="hmc_bc_s" name="S" value-type="NUMERIC" unit="mm2" optional="false" in-hmc="false"/>
1158 <family-param code="hmc_bc_d" name="d" value-type="LIST" optional="false" in-hmc="false">
1159     <list-param-item code="HMC_BC_D_01" name="Silicon digital integrated circuits (MOS, Bipolar and BiCMOS)"
1160         value="1"/>
1161     <list-param-item code="HMC_BC_D_02" name="Silicon analog integrated circuits (MOS, Bipolar and BiCMOS)"
1162         value="2"/>
1163     <list-param-item code="HMC_BC_D_03" name="Discrete circuits" value="3"/>
1164 </family-param>
1165 <family-param code="hmc_vRated" name="V_rated" value-type="NUMERIC" optional="false" in-hmc="false"/>
1166 <app-stress code="hmc_v_appl" name="V_applied" value-type="NUMERIC" optional="false" in-hmc="false"/>
1167 <app-stress code="hmc_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
1168 </family>
1169 <family code="hmc_bc_ds" name="Micro-components - Bare chips (Discrete semiconductor)">
1170     <family-param code="hmc_icds_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
1171         <list-param-item code="HMC_ICDS_CHIP_01" name="FPGA, CPLD, FPGA Antifuse, PAL" value="1"/>
1172         <list-param-item code="HMC_ICDS_CHIP_02" name="Analog and mixed circuit (MOS, Bipolar, BiCMOS)"
1173             value="2"/>
1174         <list-param-item code="HMC_ICDS_CHIP_03" name="Microprocessor, Microcontroller, DSP" value="3"/>
1175         <list-param-item code="HMC_ICDS_CHIP_04" name="Flash, EEPROM, EPROM" value="4"/>
1176         <list-param-item code="HMC_ICDS_CHIP_05" name="SRAM" value="5"/>
1177         <list-param-item code="HMC_ICDS_CHIP_06" name="DRAM" value="6"/>
1178         <list-param-item code="HMC_ICDS_CHIP_07" name="Digital circuit (MOS, Bipolar, BiCMOS)" value="7"/>
1179         <list-param-item code="HMC_ICDS_CHIP_08" name="Silicon MOS - Digital ASIC, simple function" value="8"/>
1180         <list-param-item code="HMC_ICDS_CHIP_09"
1181             name="Silicon MOS - Digital ASIC, complex function (with IP and/or ?P core, memory blocks)"
1182             value="9"/>
1183         <list-param-item code="HMC_ICDS_CHIP_10" name="Silicon MOS - Analog, mixed ASIC" value="10"/>

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1184     <list-param-item code="HMC_ICDS_CHIP_11" name="Silicon bipolar, BICMOS - Digital ASIC" value="11"/>
1185     <list-param-item code="HMC_ICDS_CHIP_12" name="Silicon bipolar, BICMOS - Mixed, analog ASIC"
1186         value="12"/>
1187     <list-param-item code="HMC_ICDS_CHIP_13"
1188         name="Low-power diodes - Signal diodes up to 1A (PIN, Schottky, signal, varactor)"
1189         value="13"/>
1190     <list-param-item code="HMC_ICDS_CHIP_14" name="Low-power diodes - Rectifier diodes 1A to 3A"
1191         value="14"/>
1192     <list-param-item code="HMC_ICDS_CHIP_15" name="Low-power diodes - Zener regulation diodes up to 1.5W"
1193         value="15"/>
1194     <list-param-item code="HMC_ICDS_CHIP_16"
1195         name="Low-power diodes - Protection diodes up to 3kW (peak 10ms / 100ms) (TVS)"
1196         value="16"/>
1197     <list-param-item code="HMC_ICDS_CHIP_17" name="Power diodes - Thyristors, triacs over 3A" value="17"/>
1198     <list-param-item code="HMC_ICDS_CHIP_18" name="Power diodes - Rectifier diodes > 3A" value="18"/>
1199     <list-param-item code="HMC_ICDS_CHIP_19" name="Power diodes - Zener regulation diodes over 1.5W"
1200         value="19"/>
1201     <list-param-item code="HMC_ICDS_CHIP_20"
1202         name="Power diodes - Protection diodes over 3kW (peak 10ms / 100ms) (TVS)" value="20"/>
1203     <list-param-item code="HMC_ICDS_CHIP_21" name="Low-power transistors - Silicon, bipolar < 5W"
1204         value="21"/>
1205     <list-param-item code="HMC_ICDS_CHIP_22" name="Low-power transistors - Silicon, MOS < 5W"
1206         value="22"/>
1207     <list-param-item code="HMC_ICDS_CHIP_23" name="Low-power transistors - Silicon, JFET < 5W"
1208         value="23"/>
1209     <list-param-item code="HMC_ICDS_CHIP_24" name="Power transistors - Silicon, bipolar > 5W"
1210         value="24"/>
1211     <list-param-item code="HMC_ICDS_CHIP_25" name="Power transistors - Silicon, MOS > 5W" value="25"/>
1212     <list-param-item code="HMC_ICDS_CHIP_26" name="Power transistors - IGBT" value="26"/>
1213 </family-param>
1214 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1215     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1216     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1217     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1218     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1219 </family-param>
1220 <family-param code="hmc_bc_s" name="S" value-type="NUMERIC" unit="mm2" optional="false" in-hmc="false"/>
1221 <family-param code="hmc_bc_d" name="d" value-type="LIST" optional="false" in-hmc="false">
1222     <list-param-item code="HMC_BC_D_01" name="Silicon digital integrated circuits (MOS, Bipolar and BiCMOS)"
1223         value="1"/>
1224     <list-param-item code="HMC_BC_D_02" name="Silicon analog integrated circuits (MOS, Bipolar and BiCMOS)"

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1225         value="2"/>
1226     <list-param-item code="HMC_BC_D_03" name="Discrete circuits" value="3"/>
1227 </family-param>
1228 <family-param code="hmc_vRated" name="V_rated" value-type="NUMERIC" optional="false" in-hmc="false"/>
1229 <app-stress code="hmc_v_appl" name="V_applied" value-type="NUMERIC" optional="false" in-hmc="false"/>
1230 <app-stress code="hmc_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
1231 </family>
1232 <family code="hmc_mpc_ic" name="Micro-components - Micro-packaged components (Integrated circuit)">
1233     <family-param code="hmc_icds_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
1234         <list-param-item code="HMC_ICDS_CHIP_01" name="FPGA, CPLD, FPGA Antifuse, PAL" value="1"/>
1235         <list-param-item code="HMC_ICDS_CHIP_02" name="Analog and mixed circuit (MOS, Bipolar, BiCMOS)"
1236             value="2"/>
1237         <list-param-item code="HMC_ICDS_CHIP_03" name="Microprocessor, Microcontroller, DSP" value="3"/>
1238         <list-param-item code="HMC_ICDS_CHIP_04" name="Flash, EEPROM, EPROM" value="4"/>
1239         <list-param-item code="HMC_ICDS_CHIP_05" name="SRAM" value="5"/>
1240         <list-param-item code="HMC_ICDS_CHIP_06" name="DRAM" value="6"/>
1241         <list-param-item code="HMC_ICDS_CHIP_07" name="Digital circuit (MOS, Bipolar, BiCMOS)" value="7"/>
1242         <list-param-item code="HMC_ICDS_CHIP_08" name="Silicon MOS - Digital ASIC, simple function" value="8"/>
1243         <list-param-item code="HMC_ICDS_CHIP_09"
1244             name="Silicon MOS - Digital ASIC, complex function (with IP and/or ?P core, memory blocks)"
1245             value="9"/>
1246         <list-param-item code="HMC_ICDS_CHIP_10" name="Silicon MOS - Analog, mixed ASIC" value="10"/>
1247         <list-param-item code="HMC_ICDS_CHIP_11" name="Silicon bipolar, BiCMOS - Digital ASIC" value="11"/>
1248         <list-param-item code="HMC_ICDS_CHIP_12" name="Silicon bipolar, BiCMOS - Mixed, analog ASIC"
1249             value="12"/>
1250         <list-param-item code="HMC_ICDS_CHIP_13"
1251             name="Low-power diodes - Signal diodes up to 1A (PIN, Schottky, signal, varactor)"
1252             value="13"/>
1253         <list-param-item code="HMC_ICDS_CHIP_14" name="Low-power diodes - Rectifier diodes 1A to 3A"
1254             value="14"/>
1255         <list-param-item code="HMC_ICDS_CHIP_15" name="Low-power diodes - Zener regulation diodes up to 1.5W"
1256             value="15"/>
1257         <list-param-item code="HMC_ICDS_CHIP_16"
1258             name="Low-power diodes - Protection diodes up to 3kW (peak 10ms / 100ms) (TVS)"
1259             value="16"/>
1260         <list-param-item code="HMC_ICDS_CHIP_17" name="Power diodes - Thyristors, triacs over 3A" value="17"/>
1261         <list-param-item code="HMC_ICDS_CHIP_18" name="Power diodes - Rectifier diodes > 3A" value="18"/>
1262         <list-param-item code="HMC_ICDS_CHIP_19" name="Power diodes - Zener regulation diodes over 1.5W"
1263             value="19"/>
1264         <list-param-item code="HMC_ICDS_CHIP_20"
1265             name="Power diodes - Protection diodes over 3kW (peak 10ms / 100ms) (TVS)" value="20"/>

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1266      <list-param-item code="HMC_ICDS_CHIP_21" name="Low-power transistors - Silicon, bipolar &lt; 5W"
1267      value="21"/>
1268      <list-param-item code="HMC_ICDS_CHIP_22" name="Low-power transistors - Silicon, MOS &lt; 5W"
1269      value="22"/>
1270      <list-param-item code="HMC_ICDS_CHIP_23" name="Low-power transistors - Silicon, JFET &lt; 5W"
1271      value="23"/>
1272      <list-param-item code="HMC_ICDS_CHIP_24" name="Power transistors - Silicon, bipolar &gt; 5W"
1273      value="24"/>
1274      <list-param-item code="HMC_ICDS_CHIP_25" name="Power transistors - Silicon, MOS &gt; 5W" value="25"/>
1275      <list-param-item code="HMC_ICDS_CHIP_26" name="Power transistors - IGBT" value="26"/>
1276    </family-param>
1277    <family-param code="hmc_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1278      <list-param-item code="HMC_ICDS_PACKAGE_01" name="PQFP [IC]" value="1"/>
1279      <list-param-item code="HMC_ICDS_PACKAGE_02" name="SQFP, TQFP, VQFP, LQFP [IC]" value="2"/>
1280      <list-param-item code="HMC_ICDS_PACKAGE_03" name="Power QFP (RQFP, HQFP, PowerQuad, EdQuad, etc.) [IC]"
1281      value="3"/>
1282      <list-param-item code="HMC_ICDS_PACKAGE_04" name="CERPACK [IC]" value="4"/>
1283      <list-param-item code="HMC_ICDS_PACKAGE_05" name="CQFP, Cerquad [IC]" value="5"/>
1284      <list-param-item code="HMC_ICDS_PACKAGE_06" name="PLCC [IC]" value="6"/>
1285      <list-param-item code="HMC_ICDS_PACKAGE_07" name="J-CLCC [IC]" value="7"/>
1286      <list-param-item code="HMC_ICDS_PACKAGE_08" name="CLCC [IC]" value="8"/>
1287      <list-param-item code="HMC_ICDS_PACKAGE_09" name="SOJ [IC]" value="9"/>
1288      <list-param-item code="HMC_ICDS_PACKAGE_10" name="SO, SOP, GROUND, SOIC, SOW [IC]" value="10"/>
1289      <list-param-item code="HMC_ICDS_PACKAGE_11" name="TSOP I, TSOP II [IC]" value="11"/>
1290      <list-param-item code="HMC_ICDS_PACKAGE_12" name="SSOP, VSOP, QSOP [IC]" value="12"/>
1291      <list-param-item code="HMC_ICDS_PACKAGE_13" name="TSSOP, MSOP, ?SO, ?MAX, TVSOP [IC]" value="13"/>
1292      <list-param-item code="HMC_ICDS_PACKAGE_14" name="PBGA CSP BT 0.8 and 0.75 mm [IC]" value="14"/>
1293      <list-param-item code="HMC_ICDS_PACKAGE_15" name="PBGA flex 0.8 mm [IC]" value="15"/>
1294      <list-param-item code="HMC_ICDS_PACKAGE_16" name="PBGA BT 1.00 mm [IC]" value="16"/>
1295      <list-param-item code="HMC_ICDS_PACKAGE_17" name="PBGA 1.27mm [IC]" value="17"/>
1296      <list-param-item code="HMC_ICDS_PACKAGE_18" name="Power BGA (TBGA, SBGA, etc.) [IC]" value="18"/>
1297      <list-param-item code="HMC_ICDS_PACKAGE_19" name="CBGA [IC]" value="19"/>
1298      <list-param-item code="HMC_ICDS_PACKAGE_20" name="DBGA [IC]" value="20"/>
1299      <list-param-item code="HMC_ICDS_PACKAGE_21" name="CGA IC [IC]" value="21"/>
1300      <list-param-item code="HMC_ICDS_PACKAGE_22" name="SOT23-3 [DS]" value="22"/>
1301      <list-param-item code="HMC_ICDS_PACKAGE_23" name="SOT23-5 [DS]" value="23"/>
1302      <list-param-item code="HMC_ICDS_PACKAGE_24" name="SOT23-6 [DS]" value="24"/>
1303      <list-param-item code="HMC_ICDS_PACKAGE_25" name="SOT143 [DS]" value="25"/>
1304      <list-param-item code="HMC_ICDS_PACKAGE_26" name="SOT323 [DS]" value="26"/>
1305      <list-param-item code="HMC_ICDS_PACKAGE_27" name="SOT346 [DS]" value="27"/>
1306      <list-param-item code="HMC_ICDS_PACKAGE_28" name="SOT353 [DS]" value="28"/>

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1307      <list-param-item code="HMC_ICDS_PACKAGE_29" name="SOT363 [DS]" value="29"/>
1308      <list-param-item code="HMC_ICDS_PACKAGE_30" name="SOD123 [DS]" value="30"/>
1309      <list-param-item code="HMC_ICDS_PACKAGE_31" name="SOD323 [DS]" value="31"/>
1310      <list-param-item code="HMC_ICDS_PACKAGE_32" name="SOD523 [DS]" value="32"/>
1311      <list-param-item code="HMC_ICDS_PACKAGE_33" name="SOT223 [DS]" value="33"/>
1312      <list-param-item code="HMC_ICDS_PACKAGE_34" name="SOT243 [DS]" value="34"/>
1313      <list-param-item code="HMC_ICDS_PACKAGE_35" name="SOT343 [DS]" value="35"/>
1314      <list-param-item code="HMC_ICDS_PACKAGE_36" name="SOT89 [DS]" value="36"/>
1315      <list-param-item code="HMC_ICDS_PACKAGE_37" name="SOT194 [DS]" value="37"/>
1316      <list-param-item code="HMC_ICDS_PACKAGE_38" name="SOD6 [DS]" value="38"/>
1317      <list-param-item code="HMC_ICDS_PACKAGE_39" name="SOD15 [DS]" value="39"/>
1318      <list-param-item code="HMC_ICDS_PACKAGE_40" name="DPAK [DS]" value="40"/>
1319      <list-param-item code="HMC_ICDS_PACKAGE_41" name="D2PAK [DS]" value="41"/>
1320      <list-param-item code="HMC_ICDS_PACKAGE_42" name="D3PAK [DS]" value="42"/>
1321      <list-param-item code="HMC_ICDS_PACKAGE_43" name="ISOTOP [DS]" value="43"/>
1322      <list-param-item code="HMC_ICDS_PACKAGE_44" name="SOD80 [DS]" value="44"/>
1323      <list-param-item code="HMC_ICDS_PACKAGE_45" name="SOD87 [DS]" value="45"/>
1324    </family-param>
1325    <family-param code="hmc_np" name="N_pin" value-type="NUMERIC" optional="false" in-hmc="false"/>
1326    <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1327      <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1328      <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1329      <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1330      <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1331    </family-param>
1332    <family-param code="hmc_vRated" name="V_Rated" value-type="NUMERIC" optional="false" in-hmc="false"/>
1333    <app-stress code="hmc_v_appl" name="V_applied" value-type="NUMERIC" optional="false" in-hmc="false"/>
1334    <app-stress code="hmc_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
1335  </family>
1336  <family code="hmc_mpc_ds" name="Micro-components - Micro-packaged components (Discrete semiconductor)">
1337    <family-param code="hmc_icds_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
1338      <list-param-item code="HMC_ICDS_CHIP_01" name="FPGA, CPLD, FPGA Antifuse, PAL" value="1"/>
1339      <list-param-item code="HMC_ICDS_CHIP_02" name="Analog and mixed circuit (MOS, Bipolar, BiCMOS)"
1340        value="2"/>
1341      <list-param-item code="HMC_ICDS_CHIP_03" name="Microprocessor, Microcontroller, DSP" value="3"/>
1342      <list-param-item code="HMC_ICDS_CHIP_04" name="Flash, EEPROM, EPROM" value="4"/>
1343      <list-param-item code="HMC_ICDS_CHIP_05" name="SRAM" value="5"/>
1344      <list-param-item code="HMC_ICDS_CHIP_06" name="DRAM" value="6"/>
1345      <list-param-item code="HMC_ICDS_CHIP_07" name="Digital circuit (MOS, Bipolar, BiCMOS)" value="7"/>
1346      <list-param-item code="HMC_ICDS_CHIP_08" name="Silicon MOS - Digital ASIC, simple function" value="8"/>
1347      <list-param-item code="HMC_ICDS_CHIP_09"

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1348         name="Silicon MOS - Digital ASIC, complex function (with IP and/or ?P core, memory blocks)"
1349         value="9"/>
1350     <list-param-item code="HMC_ICDS_CHIP_10" name="Silicon MOS - Analog, mixed ASIC" value="10"/>
1351     <list-param-item code="HMC_ICDS_CHIP_11" name="Silicon bipolar, BICMOS - Digital ASIC" value="11"/>
1352     <list-param-item code="HMC_ICDS_CHIP_12" name="Silicon bipolar, BICMOS - Mixed, analog ASIC"
1353         value="12"/>
1354     <list-param-item code="HMC_ICDS_CHIP_13"
1355         name="Low-power diodes - Signal diodes up to 1A (PIN, Schottky, signal, varactor)"
1356         value="13"/>
1357     <list-param-item code="HMC_ICDS_CHIP_14" name="Low-power diodes - Rectifier diodes 1A to 3A"
1358         value="14"/>
1359     <list-param-item code="HMC_ICDS_CHIP_15" name="Low-power diodes - Zener regulation diodes up to 1.5W"
1360         value="15"/>
1361     <list-param-item code="HMC_ICDS_CHIP_16"
1362         name="Low-power diodes - Protection diodes up to 3kW (peak 10ms / 100ms) (TVS)"
1363         value="16"/>
1364     <list-param-item code="HMC_ICDS_CHIP_17" name="Power diodes - Thyristors, triacs over 3A" value="17"/>
1365     <list-param-item code="HMC_ICDS_CHIP_18" name="Power diodes - Rectifier diodes > 3A" value="18"/>
1366     <list-param-item code="HMC_ICDS_CHIP_19" name="Power diodes - Zener regulation diodes over 1.5W"
1367         value="19"/>
1368     <list-param-item code="HMC_ICDS_CHIP_20"
1369         name="Power diodes - Protection diodes over 3kW (peak 10ms / 100ms) (TVS)" value="20"/>
1370     <list-param-item code="HMC_ICDS_CHIP_21" name="Low-power transistors - Silicon, bipolar < 5W"
1371         value="21"/>
1372     <list-param-item code="HMC_ICDS_CHIP_22" name="Low-power transistors - Silicon, MOS < 5W"
1373         value="22"/>
1374     <list-param-item code="HMC_ICDS_CHIP_23" name="Low-power transistors - Silicon, JFET < 5W"
1375         value="23"/>
1376     <list-param-item code="HMC_ICDS_CHIP_24" name="Power transistors - Silicon, bipolar > 5W"
1377         value="24"/>
1378     <list-param-item code="HMC_ICDS_CHIP_25" name="Power transistors - Silicon, MOS > 5W" value="25"/>
1379     <list-param-item code="HMC_ICDS_CHIP_26" name="Power transistors - IGBT" value="26"/>
1380 </family-param>
1381 <family-param code="hmc_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1382     <list-param-item code="HMC_ICDS_PACKAGE_01" name="PQFP [IC]" value="1"/>
1383     <list-param-item code="HMC_ICDS_PACKAGE_02" name="SQFP, TQFP, VQFP, LQFP [IC]" value="2"/>
1384     <list-param-item code="HMC_ICDS_PACKAGE_03" name="Power QFP (RQFP, HQFP, PowerQuad, EdQuad, etc.) [IC]"
1385         value="3"/>
1386     <list-param-item code="HMC_ICDS_PACKAGE_04" name="CERPACK [IC]" value="4"/>
1387     <list-param-item code="HMC_ICDS_PACKAGE_05" name="CQFP, Cerquad [IC]" value="5"/>
1388     <list-param-item code="HMC_ICDS_PACKAGE_06" name="PLCC [IC]" value="6"/>

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1389     <list-param-item code="HMC_ICDS_PACKAGE_07" name="J-CLCC [IC]" value="7"/>
1390     <list-param-item code="HMC_ICDS_PACKAGE_08" name="CLCC [IC]" value="8"/>
1391     <list-param-item code="HMC_ICDS_PACKAGE_09" name="SOJ [IC]" value="9"/>
1392     <list-param-item code="HMC_ICDS_PACKAGE_10" name="SO, SOP, GROUND, SOIC, SOW [IC]" value="10"/>
1393     <list-param-item code="HMC_ICDS_PACKAGE_11" name="TSOP I, TSOP II [IC]" value="11"/>
1394     <list-param-item code="HMC_ICDS_PACKAGE_12" name="SSOP, VSOP, QSOP [IC]" value="12"/>
1395     <list-param-item code="HMC_ICDS_PACKAGE_13" name="TSSOP, MSOP, ?SO, ?MAX, TVSOP [IC]" value="13"/>
1396     <list-param-item code="HMC_ICDS_PACKAGE_14" name="PBGA CSP BT 0.8 and 0.75 mm [IC]" value="14"/>
1397     <list-param-item code="HMC_ICDS_PACKAGE_15" name="PBGA flex 0.8 mm [IC]" value="15"/>
1398     <list-param-item code="HMC_ICDS_PACKAGE_16" name="PBGA BT 1.00 mm [IC]" value="16"/>
1399     <list-param-item code="HMC_ICDS_PACKAGE_17" name="PBGA 1.27mm [IC]" value="17"/>
1400     <list-param-item code="HMC_ICDS_PACKAGE_18" name="Power BGA (TBGA, SBGA, etc.) [IC]" value="18"/>
1401     <list-param-item code="HMC_ICDS_PACKAGE_19" name="CBGA [IC]" value="19"/>
1402     <list-param-item code="HMC_ICDS_PACKAGE_20" name="DBGA [IC]" value="20"/>
1403     <list-param-item code="HMC_ICDS_PACKAGE_21" name="CGA IC [IC]" value="21"/>
1404     <list-param-item code="HMC_ICDS_PACKAGE_22" name="SOT23-3 [DS]" value="22"/>
1405     <list-param-item code="HMC_ICDS_PACKAGE_23" name="SOT23-5 [DS]" value="23"/>
1406     <list-param-item code="HMC_ICDS_PACKAGE_24" name="SOT23-6 [DS]" value="24"/>
1407     <list-param-item code="HMC_ICDS_PACKAGE_25" name="SOT143 [DS]" value="25"/>
1408     <list-param-item code="HMC_ICDS_PACKAGE_26" name="SOT323 [DS]" value="26"/>
1409     <list-param-item code="HMC_ICDS_PACKAGE_27" name="SOT346 [DS]" value="27"/>
1410     <list-param-item code="HMC_ICDS_PACKAGE_28" name="SOT353 [DS]" value="28"/>
1411     <list-param-item code="HMC_ICDS_PACKAGE_29" name="SOT363 [DS]" value="29"/>
1412     <list-param-item code="HMC_ICDS_PACKAGE_30" name="SOD123 [DS]" value="30"/>
1413     <list-param-item code="HMC_ICDS_PACKAGE_31" name="SOD323 [DS]" value="31"/>
1414     <list-param-item code="HMC_ICDS_PACKAGE_32" name="SOD523 [DS]" value="32"/>
1415     <list-param-item code="HMC_ICDS_PACKAGE_33" name="SOT223 [DS]" value="33"/>
1416     <list-param-item code="HMC_ICDS_PACKAGE_34" name="SOT243 [DS]" value="34"/>
1417     <list-param-item code="HMC_ICDS_PACKAGE_35" name="SOT343 [DS]" value="35"/>
1418     <list-param-item code="HMC_ICDS_PACKAGE_36" name="SOT89 [DS]" value="36"/>
1419     <list-param-item code="HMC_ICDS_PACKAGE_37" name="SOT194 [DS]" value="37"/>
1420     <list-param-item code="HMC_ICDS_PACKAGE_38" name="SOD6 [DS]" value="38"/>
1421     <list-param-item code="HMC_ICDS_PACKAGE_39" name="SOD15 [DS]" value="39"/>
1422     <list-param-item code="HMC_ICDS_PACKAGE_40" name="DPAK [DS]" value="40"/>
1423     <list-param-item code="HMC_ICDS_PACKAGE_41" name="D2PAK [DS]" value="41"/>
1424     <list-param-item code="HMC_ICDS_PACKAGE_42" name="D3PAK [DS]" value="42"/>
1425     <list-param-item code="HMC_ICDS_PACKAGE_43" name="ISOTOP [DS]" value="43"/>
1426     <list-param-item code="HMC_ICDS_PACKAGE_44" name="SOD80 [DS]" value="44"/>
1427     <list-param-item code="HMC_ICDS_PACKAGE_45" name="SOD87 [DS]" value="45"/>
1428   </family-param>
1429   <family-param code="hmc_np" name="N_pin" value-type="NUMERIC" optional="false" in-hmc="false"/>
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1430     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1431         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1432         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1433         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1434         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1435     </family-param>
1436     <family-param code="hmc_vRated" name="V_rated" value-type="NUMERIC" optional="false" in-hmc="false"/>
1437     <app-stress code="hmc_v_appl" name="V_applied" value-type="NUMERIC" optional="false" in-hmc="false"/>
1438     <app-stress code="hmc_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
1439 </family>
1440 <family code="hmc_dr" name="Micro-components - Deposited resistors">
1441     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
1442         in-hmc="false">
1443         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
1444         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
1445     </family-param>
1446     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1447         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1448         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1449         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1450         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1451     </family-param>
1452     <family-param code="hmc_dr_tole" name="Tolerance" value-type="LIST" optional="false" in-hmc="false">
1453         <list-param-item code="HMC_DR_TOLERANCE_01" name="Tolerance above 5%" value="1"/>
1454         <list-param-item code="HMC_DR_TOLERANCE_02" name="Tolerance from 1 to 5%" value="2"/>
1455         <list-param-item code="HMC_DR_TOLERANCE_03" name="Tolerance less than 1%" value="3"/>
1456     </family-param>
1457     <family-param code="hmc_dr_re" name="R_e" value-type="NUMERIC" optional="false" in-hmc="false"/>
1458     <family-param code="hmc_dr_rm" name="R_m" value-type="NUMERIC" optional="false" in-hmc="false"/>
1459 </family>
1460 <family code="hmc_dc" name="Micro-components - Deposited capacitor">
1461     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
1462         in-hmc="false">
1463         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
1464         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
1465     </family-param>
1466     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="false">
1467         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1468         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1469         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1470         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>

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1471         </family-param>
1472         <family-param code="ec_vRated" name="V_Rated" value-type="NUMERIC" unit="V" optional="false"
1473             in-hmc="false"/>
1474         <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
1475             in-hmc="false"/>
1476     </family>
1477 </macro-family>
1478 <macro-family code="mwrf">
1479     <family code="mwrf_ganic" name="GaN MMIC RF/MW components">
1480         <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1481             <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
1482             <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
1483             <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
1484             <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
1485             <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
1486             <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
1487             <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
1488             <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
1489             <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
1490             <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
1491             <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
1492             <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
1493             <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
1494             <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
1495             <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
1496             <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
1497             <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
1498             <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
1499             <list-param-item code="EC_IC_PKG_19" name="PBGA <0.5 mm [EC_IC]" value="19"/>
1500             <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
1501             <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
1502             <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
1503             <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
1504             <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
1505             <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
1506             <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
1507             <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
1508             <list-param-item code="EC_IC_PKG_28" name="BGA WLP <0.5 mm [EC_IC]" value="28"/>
1509             <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
1510             <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
1511             <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
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1512 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
1513 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
1514 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
1515 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
1516 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
1517 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
1518 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
1519 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
1520 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
1521 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
1522 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
1523 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
1524 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
1525 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
1526 <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
1527 <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
1528 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
1529 <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
1530 <list-param-item code="EC_DS_PKG_15" name="S0T23-5, SC74A, S0T25 [EC_DS]" value="115"/>
1531 <list-param-item code="EC_DS_PKG_16" name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]" value="116"/>
1532 <list-param-item code="EC_DS_PKG_17" name="S0T143, T0253AA, SC61B [EC_DS]" value="117"/>
1533 <list-param-item code="EC_DS_PKG_18" name="S0T323, SC70 [EC_DS]" value="118"/>
1534 <list-param-item code="EC_DS_PKG_19" name="S0T346, SC59, T0236AA [EC_DS]" value="119"/>
1535 <list-param-item code="EC_DS_PKG_20" name="S0T353, SC70-5, SC88A [EC_DS]" value="120"/>
1536 <list-param-item code="EC_DS_PKG_21" name="S0T363, SC70-6, SC88 [EC_DS]" value="121"/>
1537 <list-param-item code="EC_DS_PKG_22" name="S0D123 [EC_DS]" value="122"/>
1538 <list-param-item code="EC_DS_PKG_23" name="S0D323, SC76 [EC_DS]" value="123"/>
1539 <list-param-item code="EC_DS_PKG_24" name="S0D523, SC79 [EC_DS]" value="124"/>
1540 <list-param-item code="EC_DS_PKG_25" name="S0T223, SC73, T0261AA [EC_DS]" value="125"/>
1541 <list-param-item code="EC_DS_PKG_26" name="S0T243 [EC_DS]" value="126"/>
1542 <list-param-item code="EC_DS_PKG_27" name="S0T343, SC82 [EC_DS]" value="127"/>
1543 <list-param-item code="EC_DS_PKG_28" name="S0T89, SC62, T0243AA [EC_DS]" value="128"/>
1544 <list-param-item code="EC_DS_PKG_29" name="S0T194 [EC_DS]" value="129"/>
1545 <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
1546 <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
1547 <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, S0T429 [EC_DS]" value="132"/>
1548 <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
1549 <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
1550 <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
1551 <list-param-item code="EC_DS_PKG_36" name="S0T82, T0225 [EC_DS]" value="136"/>
1552 <list-param-item code="EC_DS_PKG_37" name="S0D6, D0214AA, SMB-J [EC_DS]" value="137"/>
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1553     <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
1554     <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
1555     <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
1556     <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
1557     <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
1558     <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
1559     <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
1560     <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
1561     <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
1562     <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
1563     <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
1564     <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
1565     <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
1566     <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
1567     <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
1568     <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
1569     <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
1570     <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
1571   </family-param>
1572   <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="false" in-hmc="false"/>
1573   <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="false" in-hmc="false"/>
1574   <app-stress code="mwrf_delta_t" name="Rise of temperature" value-type="NUMERIC" unit="°C" optional="false"
1575     in-hmc="false"/>
1576   <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
1577   <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
1578     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1579     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1580     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1581     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1582   </family-param>
1583 </family>
1584 <family code="mwrf_gands" name="GaN discrete semiconductors RF/MW components">
1585   <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1586     <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
1587     <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
1588     <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
1589     <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
1590     <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
1591     <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
1592     <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
1593     <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>

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1594 <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
1595 <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
1596 <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
1597 <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
1598 <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
1599 <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
1600 <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
1601 <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
1602 <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
1603 <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
1604 <list-param-item code="EC_IC_PKG_19" name="PBGA &lt;0.5 mm [EC_IC]" value="19"/>
1605 <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
1606 <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
1607 <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
1608 <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
1609 <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
1610 <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
1611 <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
1612 <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
1613 <list-param-item code="EC_IC_PKG_28" name="BGA WLP &lt;0.5 mm [EC_IC]" value="28"/>
1614 <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
1615 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
1616 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
1617 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
1618 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
1619 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
1620 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
1621 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
1622 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
1623 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
1624 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
1625 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
1626 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
1627 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
1628 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
1629 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
1630 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
1631 <list-param-item code="EC_DS_PKG_11" name="T092, S0T54, SC43, T0226AA [EC_DS]" value="111"/>
1632 <list-param-item code="EC_DS_PKG_12" name="T0126, S0T32, T0225AA [EC_DS]" value="112"/>
1633 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
1634 <list-param-item code="EC_DS_PKG_14" name="S0T23-3, T0236AB [EC_DS]" value="114"/>
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1635 <list-param-item code="EC_DS_PKG_15" name="SOT23-5, SC74A, SOT25 [EC_DS]" value="115"/>
1636 <list-param-item code="EC_DS_PKG_16" name="SOT23-6, SC74, SOT26, SOT457 [EC_DS]" value="116"/>
1637 <list-param-item code="EC_DS_PKG_17" name="SOT143, T0253AA, SC61B [EC_DS]" value="117"/>
1638 <list-param-item code="EC_DS_PKG_18" name="SOT323, SC70 [EC_DS]" value="118"/>
1639 <list-param-item code="EC_DS_PKG_19" name="SOT346, SC59, T0236AA [EC_DS]" value="119"/>
1640 <list-param-item code="EC_DS_PKG_20" name="SOT353, SC70-5, SC88A [EC_DS]" value="120"/>
1641 <list-param-item code="EC_DS_PKG_21" name="SOT363, SC70-6, SC88 [EC_DS]" value="121"/>
1642 <list-param-item code="EC_DS_PKG_22" name="SOD123 [EC_DS]" value="122"/>
1643 <list-param-item code="EC_DS_PKG_23" name="SOD323, SC76 [EC_DS]" value="123"/>
1644 <list-param-item code="EC_DS_PKG_24" name="SOD523, SC79 [EC_DS]" value="124"/>
1645 <list-param-item code="EC_DS_PKG_25" name="SOT223, SC73, T0261AA [EC_DS]" value="125"/>
1646 <list-param-item code="EC_DS_PKG_26" name="SOT243 [EC_DS]" value="126"/>
1647 <list-param-item code="EC_DS_PKG_27" name="SOT343, SC82 [EC_DS]" value="127"/>
1648 <list-param-item code="EC_DS_PKG_28" name="SOT89, SC62, T0243AA [EC_DS]" value="128"/>
1649 <list-param-item code="EC_DS_PKG_29" name="SOT194 [EC_DS]" value="129"/>
1650 <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
1651 <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
1652 <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, SOT429 [EC_DS]" value="132"/>
1653 <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
1654 <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
1655 <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
1656 <list-param-item code="EC_DS_PKG_36" name="SOT82, T0225 [EC_DS]" value="136"/>
1657 <list-param-item code="EC_DS_PKG_37" name="SOD6, D0214AA, SMB-J [EC_DS]" value="137"/>
1658 <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
1659 <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
1660 <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
1661 <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
1662 <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
1663 <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
1664 <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
1665 <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
1666 <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
1667 <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
1668 <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
1669 <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
1670 <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
1671 <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
1672 <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
1673 <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
1674 <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
1675 <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
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1676     </family-param>
1677     <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="false" in-hmc="false"/>
1678     <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="false" in-hmc="false"/>
1679     <app-stress code="mwrf_delta_t" name="Rise of temperature" value-type="NUMERIC" unit="°C" optional="false"
1680         in-hmc="false"/>
1681     <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
1682     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
1683         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1684         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1685         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1686         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1687     </family-param>
1688 </family>
1689 <family code="mwrf_gaas" name="GaAs RF/MW components">
1690     <family-param code="mwrf_gaas_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
1691         <list-param-item code="MWRF_GAAS_TYPE_01" name="GaAs components, MMICs (incl. LNAs)" value="1"/>
1692         <list-param-item code="MWRF_GAAS_TYPE_02"
1693             name="GaAs components, discrete semiconductors (incl. transistors)" value="2"/>
1694     </family-param>
1695     <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1696         <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
1697         <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
1698         <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
1699         <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
1700         <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
1701         <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
1702         <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
1703         <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
1704         <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
1705         <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
1706         <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
1707         <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
1708         <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
1709         <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
1710         <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
1711         <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
1712         <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
1713         <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
1714         <list-param-item code="EC_IC_PKG_19" name="PBGA <0.5 mm [EC_IC]" value="19"/>
1715         <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
1716         <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
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1717 <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
1718 <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
1719 <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
1720 <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
1721 <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
1722 <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
1723 <list-param-item code="EC_IC_PKG_28" name="BGA WLP &lt;0.5 mm [EC_IC]" value="28"/>
1724 <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
1725 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
1726 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
1727 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
1728 <list-param-item code="EC_IC_PKG_33" name="DBGa [EC_IC]" value="33"/>
1729 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
1730 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
1731 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
1732 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
1733 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
1734 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
1735 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
1736 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
1737 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
1738 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
1739 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
1740 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
1741 <list-param-item code="EC_DS_PKG_11" name="T092, SOT54, SC43, T0226AA [EC_DS]" value="111"/>
1742 <list-param-item code="EC_DS_PKG_12" name="T0126, SOT32, T0225AA [EC_DS]" value="112"/>
1743 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
1744 <list-param-item code="EC_DS_PKG_14" name="SOT23-3, T0236AB [EC_DS]" value="114"/>
1745 <list-param-item code="EC_DS_PKG_15" name="SOT23-5, SC74A, SOT25 [EC_DS]" value="115"/>
1746 <list-param-item code="EC_DS_PKG_16" name="SOT23-6, SC74, SOT26, SOT457 [EC_DS]" value="116"/>
1747 <list-param-item code="EC_DS_PKG_17" name="SOT143, T0253AA, SC61B [EC_DS]" value="117"/>
1748 <list-param-item code="EC_DS_PKG_18" name="SOT323, SC70 [EC_DS]" value="118"/>
1749 <list-param-item code="EC_DS_PKG_19" name="SOT346, SC59, T0236AA [EC_DS]" value="119"/>
1750 <list-param-item code="EC_DS_PKG_20" name="SOT353, SC70-5, SC88A [EC_DS]" value="120"/>
1751 <list-param-item code="EC_DS_PKG_21" name="SOT363, SC70-6, SC88 [EC_DS]" value="121"/>
1752 <list-param-item code="EC_DS_PKG_22" name="SOD123 [EC_DS]" value="122"/>
1753 <list-param-item code="EC_DS_PKG_23" name="SOD323, SC76 [EC_DS]" value="123"/>
1754 <list-param-item code="EC_DS_PKG_24" name="SOD523, SC79 [EC_DS]" value="124"/>
1755 <list-param-item code="EC_DS_PKG_25" name="SOT223, SC73, T0261AA [EC_DS]" value="125"/>
1756 <list-param-item code="EC_DS_PKG_26" name="SOT243 [EC_DS]" value="126"/>
1757 <list-param-item code="EC_DS_PKG_27" name="SOT343, SC82 [EC_DS]" value="127"/>
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1758     <list-param-item code="EC_DS_PKG_28" name="SOT89, SC62, T0243AA [EC_DS]" value="128"/>
1759     <list-param-item code="EC_DS_PKG_29" name="SOT194 [EC_DS]" value="129"/>
1760     <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
1761     <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
1762     <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, SOT429 [EC_DS]" value="132"/>
1763     <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
1764     <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
1765     <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
1766     <list-param-item code="EC_DS_PKG_36" name="SOT82, T0225 [EC_DS]" value="136"/>
1767     <list-param-item code="EC_DS_PKG_37" name="SOD6, D0214AA, SMB-J [EC_DS]" value="137"/>
1768     <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
1769     <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
1770     <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
1771     <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
1772     <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
1773     <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
1774     <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
1775     <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
1776     <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
1777     <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
1778     <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
1779     <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
1780     <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
1781     <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
1782     <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
1783     <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
1784     <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
1785     <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
1786   </family-param>
1787   <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="false" in-hmc="false"/>
1788   <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="false" in-hmc="false"/>
1789   <app-stress code="mwrf_delta_t" name="Rise of temperature" value-type="NUMERIC" unit="°C" optional="false"
1790     in-hmc="false"/>
1791   <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
1792   <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
1793     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1794     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1795     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1796     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1797   </family-param>
1798 </family>

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1799 <family code="mwrp_siic" name="Si and SiGe RF/MW integrated circuits">
1800 <family-param code="mwrp_siic_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
1801 <list-param-item code="MWRP_SIIC_CHIP_01" name="Analog circuit (power amplifier) RF and MW (MOS)"
1802 value="1"/>
1803 <list-param-item code="MWRP_SIIC_CHIP_02"
1804 name="Analog and mixed circuit (MOS, Bipolar, BiCMOS, MESFET, PHEMT), RF and MW"
1805 value="2"/>
1806 <list-param-item code="MWRP_SIIC_CHIP_03" name="Digital circuit (MOS, Bipolar, BiCMOS), RF and MW"
1807 value="3"/>
1808 </family-param>
1809 <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1810 <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
1811 <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
1812 <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
1813 <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
1814 <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
1815 <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
1816 <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
1817 <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
1818 <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
1819 <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
1820 <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
1821 <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
1822 <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
1823 <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
1824 <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
1825 <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
1826 <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
1827 <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
1828 <list-param-item code="EC_IC_PKG_19" name="PBGA <0.5 mm [EC_IC]" value="19"/>
1829 <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
1830 <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
1831 <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
1832 <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
1833 <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
1834 <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
1835 <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
1836 <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
1837 <list-param-item code="EC_IC_PKG_28" name="BGA WLP <0.5 mm [EC_IC]" value="28"/>
1838 <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
1839 <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
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1840 <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
1841 <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
1842 <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
1843 <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>
1844 <list-param-item code="EC_IC_PKG_35" name="CPGA [EC_IC]" value="35"/>
1845 <list-param-item code="EC_DS_PKG_01" name="CB417 [EC_DS]" value="101"/>
1846 <list-param-item code="EC_DS_PKG_02" name="CB429 [EC_DS]" value="102"/>
1847 <list-param-item code="EC_DS_PKG_03" name="D013, D0202AA [EC_DS]" value="103"/>
1848 <list-param-item code="EC_DS_PKG_04" name="D015, D0204AC [EC_DS]" value="104"/>
1849 <list-param-item code="EC_DS_PKG_05" name="D027, D0201AA [EC_DS]" value="105"/>
1850 <list-param-item code="EC_DS_PKG_06" name="D035, D0204AH [EC_DS]" value="106"/>
1851 <list-param-item code="EC_DS_PKG_07" name="D041, D0204AL [EC_DS]" value="107"/>
1852 <list-param-item code="EC_DS_PKG_08" name="D092 [EC_DS]" value="108"/>
1853 <list-param-item code="EC_DS_PKG_09" name="F126 [EC_DS]" value="109"/>
1854 <list-param-item code="EC_DS_PKG_10" name="SIL, SIP, ZIP [EC_DS]" value="110"/>
1855 <list-param-item code="EC_DS_PKG_11" name="T092, SOT54, SC43, T0226AA [EC_DS]" value="111"/>
1856 <list-param-item code="EC_DS_PKG_12" name="T0126, SOT32, T0225AA [EC_DS]" value="112"/>
1857 <list-param-item code="EC_DS_PKG_13" name="T0202 [EC_DS]" value="113"/>
1858 <list-param-item code="EC_DS_PKG_14" name="SOT23-3, T0236AB [EC_DS]" value="114"/>
1859 <list-param-item code="EC_DS_PKG_15" name="SOT23-5, SC74A, SOT25 [EC_DS]" value="115"/>
1860 <list-param-item code="EC_DS_PKG_16" name="SOT23-6, SC74, SOT26, SOT457 [EC_DS]" value="116"/>
1861 <list-param-item code="EC_DS_PKG_17" name="SOT143, T0253AA, SC61B [EC_DS]" value="117"/>
1862 <list-param-item code="EC_DS_PKG_18" name="SOT323, SC70 [EC_DS]" value="118"/>
1863 <list-param-item code="EC_DS_PKG_19" name="SOT346, SC59, T0236AA [EC_DS]" value="119"/>
1864 <list-param-item code="EC_DS_PKG_20" name="SOT353, SC70-5, SC88A [EC_DS]" value="120"/>
1865 <list-param-item code="EC_DS_PKG_21" name="SOT363, SC70-6, SC88 [EC_DS]" value="121"/>
1866 <list-param-item code="EC_DS_PKG_22" name="SOD123 [EC_DS]" value="122"/>
1867 <list-param-item code="EC_DS_PKG_23" name="SOD323, SC76 [EC_DS]" value="123"/>
1868 <list-param-item code="EC_DS_PKG_24" name="SOD523, SC79 [EC_DS]" value="124"/>
1869 <list-param-item code="EC_DS_PKG_25" name="SOT223, SC73, T0261AA [EC_DS]" value="125"/>
1870 <list-param-item code="EC_DS_PKG_26" name="SOT243 [EC_DS]" value="126"/>
1871 <list-param-item code="EC_DS_PKG_27" name="SOT343, SC82 [EC_DS]" value="127"/>
1872 <list-param-item code="EC_DS_PKG_28" name="SOT89, SC62, T0243AA [EC_DS]" value="128"/>
1873 <list-param-item code="EC_DS_PKG_29" name="SOT194 [EC_DS]" value="129"/>
1874 <list-param-item code="EC_DS_PKG_30" name="T0218, ISOWATT218 [EC_DS]" value="130"/>
1875 <list-param-item code="EC_DS_PKG_31" name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]" value="131"/>
1876 <list-param-item code="EC_DS_PKG_32" name="T0247, Max247, Super247, SOT429 [EC_DS]" value="132"/>
1877 <list-param-item code="EC_DS_PKG_33" name="ISOWATT [EC_DS]" value="133"/>
1878 <list-param-item code="EC_DS_PKG_34" name="D0220 [EC_DS]" value="134"/>
1879 <list-param-item code="EC_DS_PKG_35" name="IPACK, T0251AA [EC_DS]" value="135"/>
1880 <list-param-item code="EC_DS_PKG_36" name="SOT82, T0225 [EC_DS]" value="136"/>
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1881     <list-param-item code="EC_DS_PKG_37" name="SOD6, D0214AA, SMB-J [EC_DS]" value="137"/>
1882     <list-param-item code="EC_DS_PKG_38" name="SOD15, D0214AB, SMC-J [EC_DS]" value="138"/>
1883     <list-param-item code="EC_DS_PKG_39" name="DPAK, T0252AA, SC63, SOT428 [EC_DS]" value="139"/>
1884     <list-param-item code="EC_DS_PKG_40" name="D2PAK, T0263, SC83A, SMD220 [EC_DS]" value="140"/>
1885     <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
1886     <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
1887     <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
1888     <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
1889     <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
1890     <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
1891     <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
1892     <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
1893     <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
1894     <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
1895     <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
1896     <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
1897     <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
1898     <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
1899     <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
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1901   <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="false" in-hmc="false"/>
1902   <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="false" in-hmc="false"/>
1903   <app-stress code="mwrf_delta_t" name="Rise of temperature" value-type="NUMERIC" unit="°C" optional="false"
1904     in-hmc="false"/>
1905   <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
1906   <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
1907     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
1908     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
1909     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
1910     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
1911   </family-param>
1912 </family>
1913 <family code="mwrf_sids" name="Si and SiGe RF/MW discrete semiconductors">
1914   <family-param code="mwrf_sids_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
1915     <list-param-item code="MWRF_SIDS_TYPE_01" name="Discrete semiconductor circuit, Si and SiGe, RF and MW"
1916       value="1"/>
1917     <list-param-item code="MWRF_SIDS_TYPE_02" name="Discrete semiconductor circuit, GaAs, RF and MW"
1918       value="2"/>
1919   </family-param>
1920   <family-param code="mwrf_sids_chip" name="Chip" value-type="LIST" optional="false" in-hmc="false">
1921     <list-param-item code="MWRF_SIDS_CHIP_01" name="PIN, Schottky, Tunnel, varactor diodes (RF/MW)"

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1922         value="1"/>
1923     <list-param-item code="MWRF_SIDS_CHIP_02" name="Silicon, bipolar &lt; 5W, SiGe, bipolar &lt;1W"
1924         value="2"/>
1925     <list-param-item code="MWRF_SIDS_CHIP_03" name="Silicon, bipolar &gt; 5W" value="3"/>
1926     <list-param-item code="MWRF_SIDS_CHIP_04" name="Silicon, MOS &gt; 5W" value="4"/>
1927 </family-param>
1928 <family-param code="ec_icds_pkg" name="Package" value-type="LIST" optional="false" in-hmc="false">
1929     <list-param-item code="EC_IC_PKG_01" name="PDIP [EC_IC]" value="1"/>
1930     <list-param-item code="EC_IC_PKG_02" name="CERDIP, CDIP [EC_IC]" value="2"/>
1931     <list-param-item code="EC_IC_PKG_03" name="PQFP [EC_IC]" value="3"/>
1932     <list-param-item code="EC_IC_PKG_04" name="TQFP, LQFP [EC_IC]" value="4"/>
1933     <list-param-item code="EC_IC_PKG_05" name="Power QFP [EC_IC]" value="5"/>
1934     <list-param-item code="EC_IC_PKG_06" name="CERPACK [EC_IC]" value="6"/>
1935     <list-param-item code="EC_IC_PKG_07" name="CQFP [EC_IC]" value="7"/>
1936     <list-param-item code="EC_IC_PKG_08" name="PLCC [EC_IC]" value="8"/>
1937     <list-param-item code="EC_IC_PKG_09" name="J-LCC [EC_IC]" value="9"/>
1938     <list-param-item code="EC_IC_PKG_10" name="CLCC [EC_IC]" value="10"/>
1939     <list-param-item code="EC_IC_PKG_11" name="SOJ [EC_IC]" value="11"/>
1940     <list-param-item code="EC_IC_PKG_12" name="SO [EC_IC]" value="12"/>
1941     <list-param-item code="EC_IC_PKG_13" name="TSOP [EC_IC]" value="13"/>
1942     <list-param-item code="EC_IC_PKG_14" name="SSOP, QSOP [EC_IC]" value="14"/>
1943     <list-param-item code="EC_IC_PKG_15" name="TSSOP, MSOP [EC_IC]" value="15"/>
1944     <list-param-item code="EC_IC_PKG_16" name="QFN, DFN ≥0.5 mm [EC_IC]" value="16"/>
1945     <list-param-item code="EC_IC_PKG_17" name="QFN 0.4 mm [EC_IC]" value="17"/>
1946     <list-param-item code="EC_IC_PKG_18" name="LGA Plastic [EC_IC]" value="18"/>
1947     <list-param-item code="EC_IC_PKG_19" name="PBGA &lt;0.5 mm [EC_IC]" value="19"/>
1948     <list-param-item code="EC_IC_PKG_20" name="PBGA 0.5 mm [EC_IC]" value="20"/>
1949     <list-param-item code="EC_IC_PKG_21" name="PBGA 0.65 mm [EC_IC]" value="21"/>
1950     <list-param-item code="EC_IC_PKG_22" name="PBGA BT 0.8 mm [EC_IC]" value="22"/>
1951     <list-param-item code="EC_IC_PKG_23" name="PBGA flex 0.8 mm [EC_IC]" value="23"/>
1952     <list-param-item code="EC_IC_PKG_24" name="PBGA BOC 0.8 mm (memories) [EC_IC]" value="24"/>
1953     <list-param-item code="EC_IC_PKG_25" name="PBGA BT 1.00 mm [EC_IC]" value="25"/>
1954     <list-param-item code="EC_IC_PKG_26" name="PBGA 1.27 mm [EC_IC]" value="26"/>
1955     <list-param-item code="EC_IC_PKG_27" name="Power BGA [EC_IC]" value="27"/>
1956     <list-param-item code="EC_IC_PKG_28" name="BGA WLP &lt;0.5 mm [EC_IC]" value="28"/>
1957     <list-param-item code="EC_IC_PKG_29" name="BGA WLP 0.5 mm [EC_IC]" value="29"/>
1958     <list-param-item code="EC_IC_PKG_30" name="FC-PBGA 0.8 mm [EC_IC]" value="30"/>
1959     <list-param-item code="EC_IC_PKG_31" name="FC-PBGA 1 mm [EC_IC]" value="31"/>
1960     <list-param-item code="EC_IC_PKG_32" name="CBGA [EC_IC]" value="32"/>
1961     <list-param-item code="EC_IC_PKG_33" name="DBGA [EC_IC]" value="33"/>
1962     <list-param-item code="EC_IC_PKG_34" name="CI CGA [EC_IC]" value="34"/>

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1963	<list-param-item	code="EC_IC_PKG_35"	name="CPGA [EC_IC]"	value="35"/>
1964	<list-param-item	code="EC_DS_PKG_01"	name="CB417 [EC_DS]"	value="101"/>
1965	<list-param-item	code="EC_DS_PKG_02"	name="CB429 [EC_DS]"	value="102"/>
1966	<list-param-item	code="EC_DS_PKG_03"	name="D013, D0202AA [EC_DS]"	value="103"/>
1967	<list-param-item	code="EC_DS_PKG_04"	name="D015, D0204AC [EC_DS]"	value="104"/>
1968	<list-param-item	code="EC_DS_PKG_05"	name="D027, D0201AA [EC_DS]"	value="105"/>
1969	<list-param-item	code="EC_DS_PKG_06"	name="D035, D0204AH [EC_DS]"	value="106"/>
1970	<list-param-item	code="EC_DS_PKG_07"	name="D041, D0204AL [EC_DS]"	value="107"/>
1971	<list-param-item	code="EC_DS_PKG_08"	name="D092 [EC_DS]"	value="108"/>
1972	<list-param-item	code="EC_DS_PKG_09"	name="F126 [EC_DS]"	value="109"/>
1973	<list-param-item	code="EC_DS_PKG_10"	name="SIL, SIP, ZIP [EC_DS]"	value="110"/>
1974	<list-param-item	code="EC_DS_PKG_11"	name="T092, S0T54, SC43, T0226AA [EC_DS]"	value="111"/>
1975	<list-param-item	code="EC_DS_PKG_12"	name="T0126, S0T32, T0225AA [EC_DS]"	value="112"/>
1976	<list-param-item	code="EC_DS_PKG_13"	name="T0202 [EC_DS]"	value="113"/>
1977	<list-param-item	code="EC_DS_PKG_14"	name="S0T23-3, T0236AB [EC_DS]"	value="114"/>
1978	<list-param-item	code="EC_DS_PKG_15"	name="S0T23-5, SC74A, S0T25 [EC_DS]"	value="115"/>
1979	<list-param-item	code="EC_DS_PKG_16"	name="S0T23-6, SC74, S0T26, S0T457 [EC_DS]"	value="116"/>
1980	<list-param-item	code="EC_DS_PKG_17"	name="S0T143, T0253AA, SC61B [EC_DS]"	value="117"/>
1981	<list-param-item	code="EC_DS_PKG_18"	name="S0T323, SC70 [EC_DS]"	value="118"/>
1982	<list-param-item	code="EC_DS_PKG_19"	name="S0T346, SC59, T0236AA [EC_DS]"	value="119"/>
1983	<list-param-item	code="EC_DS_PKG_20"	name="S0T353, SC70-5, SC88A [EC_DS]"	value="120"/>
1984	<list-param-item	code="EC_DS_PKG_21"	name="S0T363, SC70-6, SC88 [EC_DS]"	value="121"/>
1985	<list-param-item	code="EC_DS_PKG_22"	name="S0D123 [EC_DS]"	value="122"/>
1986	<list-param-item	code="EC_DS_PKG_23"	name="S0D323, SC76 [EC_DS]"	value="123"/>
1987	<list-param-item	code="EC_DS_PKG_24"	name="S0D523, SC79 [EC_DS]"	value="124"/>
1988	<list-param-item	code="EC_DS_PKG_25"	name="S0T223, SC73, T0261AA [EC_DS]"	value="125"/>
1989	<list-param-item	code="EC_DS_PKG_26"	name="S0T243 [EC_DS]"	value="126"/>
1990	<list-param-item	code="EC_DS_PKG_27"	name="S0T343, SC82 [EC_DS]"	value="127"/>
1991	<list-param-item	code="EC_DS_PKG_28"	name="S0T89, SC62, T0243AA [EC_DS]"	value="128"/>
1992	<list-param-item	code="EC_DS_PKG_29"	name="S0T194 [EC_DS]"	value="129"/>
1993	<list-param-item	code="EC_DS_PKG_30"	name="T0218, ISOWATT218 [EC_DS]"	value="130"/>
1994	<list-param-item	code="EC_DS_PKG_31"	name="T0220, T0220-5, ISOWATT220, T0220XX [EC_DS]"	value="131"/>
1995	<list-param-item	code="EC_DS_PKG_32"	name="T0247, Max247, Super247, S0T429 [EC_DS]"	value="132"/>
1996	<list-param-item	code="EC_DS_PKG_33"	name="ISOWATT [EC_DS]"	value="133"/>
1997	<list-param-item	code="EC_DS_PKG_34"	name="D0220 [EC_DS]"	value="134"/>
1998	<list-param-item	code="EC_DS_PKG_35"	name="IPACK, T0251AA [EC_DS]"	value="135"/>
1999	<list-param-item	code="EC_DS_PKG_36"	name="S0T82, T0225 [EC_DS]"	value="136"/>
2000	<list-param-item	code="EC_DS_PKG_37"	name="S0D6, D0214AA, SMB-J [EC_DS]"	value="137"/>
2001	<list-param-item	code="EC_DS_PKG_38"	name="S0D15, D0214AB, SMC-J [EC_DS]"	value="138"/>
2002	<list-param-item	code="EC_DS_PKG_39"	name="DPAK, T0252AA, SC63, S0T428 [EC_DS]"	value="139"/>
2003	<list-param-item	code="EC_DS_PKG_40"	name="D2PAK, T0263, SC83A, SMD220 [EC_DS]"	value="140"/>

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2004      <list-param-item code="EC_DS_PKG_41" name="D3PAK, T0268 [EC_DS]" value="141"/>
2005      <list-param-item code="EC_DS_PKG_42" name="ISOTOP, SOT227, T0244, Half-Pak [EC_DS]" value="142"/>
2006      <list-param-item code="EC_DS_PKG_43" name="SOD80, Mini-MELF, D0213AA [EC_DS]" value="143"/>
2007      <list-param-item code="EC_DS_PKG_44" name="SOD87, MELF, D0213AB [EC_DS]" value="144"/>
2008      <list-param-item code="EC_DS_PKG_45" name="T018, T071, T072, SOT31, SOT18 [EC_DS]" value="145"/>
2009      <list-param-item code="EC_DS_PKG_46" name="T039, SOT5 [EC_DS]" value="146"/>
2010      <list-param-item code="EC_DS_PKG_47" name="T052 [EC_DS]" value="147"/>
2011      <list-param-item code="EC_DS_PKG_48" name="SOT553 [EC_DS]" value="148"/>
2012      <list-param-item code="EC_DS_PKG_49" name="SOT563 [EC_DS]" value="149"/>
2013      <list-param-item code="EC_DS_PKG_50" name="SOT563F [EC_DS]" value="150"/>
2014      <list-param-item code="EC_DS_PKG_51" name="SOT663 [EC_DS]" value="151"/>
2015      <list-param-item code="EC_DS_PKG_52" name="SOT666 [EC_DS]" value="152"/>
2016      <list-param-item code="EC_DS_PKG_53" name="SOT66 [EC_DS]" value="153"/>
2017      <list-param-item code="EC_DS_PKG_54" name="SOT665 [EC_DS]" value="154"/>
2018      <list-param-item code="EC_DS_PKG_55" name="SOT490 [EC_DS]" value="155"/>
2019    </family-param>
2020    <family-param code="ec_np" name="Np" value-type="NUMERIC" optional="false" in-hmc="false"/>
2021    <family-param code="ec_underfill" name="Underfill" value-type="BOOL" optional="false" in-hmc="false"/>
2022    <family-param code="mwrf_vRated" name="V-rated" value-type="NUMERIC" unit="V" optional="false"
2023      in-hmc="false"/>
2024    <app-stress code="mwrf_delta_t" name="Rise of temperature" value-type="NUMERIC" unit="°C" optional="false"
2025      in-hmc="false"/>
2026    <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2027    <app-stress code="mwrf_v_appl" name="V-applied" value-type="NUMERIC" unit="V" optional="false"
2028      in-hmc="false"/>
2029    <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2030      <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2031      <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2032      <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2033      <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2034    </family-param>
2035  </family>
2036  <family code="mwrf_re" name="Surface-mounted RF/MW resistors">
2037    <family-param code="ec_re_type" name="Type" value-type="LIST" optional="false" in-hmc="false"
2038      default-val="6">
2039      <list-param-item code="EC_RE_TYPE_01"
2040        name=""MiniMELF" fixed resistor, low-power, thin film, current use (RC), high-
stability (RS)"
2041        value="1"/>
2042      <list-param-item code="EC_RE_TYPE_02" name="Fixed resistor, high-power (≥1W), thick film" value="2"/>
2043      <list-param-item code="EC_RE_TYPE_03" name="Fixed resistor, low-power, wirewound, precision" value="3"/>

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2044         <list-param-item code="EC_RE_TYPE_04" name="Fixed resistor, high-power (≥1W), wirewound" value="4"/>
2045         <list-param-item code="EC_RE_TYPE_05" name="Potentiometer, non-wirewound" value="5"/>
2046         <list-param-item code="EC_RE_TYPE_06" name="Fixed resistor, SMD, thick film" value="6"/>
2047         <list-param-item code="EC_RE_TYPE_07" name="Resistor network, SMD" value="7"/>
2048         <list-param-item code="EC_RE_TYPE_08" name="Fixed resistor, thin film, precision, high-stability (SMD)"
2049         value="8"/>
2050     </family-param>
2051     <family-param code="ec_smd_thl" name="SMD/Through hole" value-type="LIST" optional="true" in-hmc="false">
2052         <list-param-item code="EC_SMD_THL_01" name="SMD" value="1"/>
2053         <list-param-item code="EC_SMD_THL_02" name="Through-hole" value="2"/>
2054     </family-param>
2055     <family-param code="ec_ohm" name="Ohm" value-type="NUMERIC" unit="kΩ" optional="true" in-hmc="false"/>
2056     <family-param code="ec_elmt_nb" name="Nb elements" value-type="NUMERIC" optional="false" in-hmc="false"/>
2057     <family-param code="ec_pRated" name="P_rated" value-type="NUMERIC" unit="W" optional="false"
2058     in-hmc="false"/>
2059     <app-stress code="ec_p_appl" name="P_applied" value-type="NUMERIC" unit="W" optional="false"
2060     in-hmc="false"/>
2061     <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2062     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2063     in-hmc="true">
2064         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2065         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2066     </family-param>
2067     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2068         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2069         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2070         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2071         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2072     </family-param>
2073 </family>
2074 <family code="mwrf_cc" name="Surface-mounted RF/MW ceramic capacitors">
2075     <family-param code="ec_cc_type" name="Type" value-type="LIST" optional="false" in-hmc="false"
2076     default-val="1">
2077         <list-param-item code="EC_CC_TYPE_01"
2078         name="Ceramic capacitor with defined temperature coefficient (Type I)" value="1"/>
2079         <list-param-item code="EC_CC_TYPE_02"
2080         name="Ceramic capacitor with non-defined temperature coefficient (Type II X5R)"
2081         value="2"/>
2082         <list-param-item code="EC_CC_TYPE_03"
2083         name="Ceramic capacitor with non-defined temperature coefficient (Type II X7R)"
2084         value="3"/>

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2085         <list-param-item code="EC_CC_TYPE_04"
2086         name="Ceramic capacitor with polymer terminations and a non-defined temperature coefficient
(Type II X5R)"
2087         value="4"/>
2088         <list-param-item code="EC_CC_TYPE_05"
2089         name="Ceramic capacitor with polymer terminations and a non-defined temperature coefficient
(Type II X7R)"
2090         value="5"/>
2091     </family-param>
2092     <family-param code="ec_top_end" name="Top end" value-type="BOOL" optional="false" in-hmc="false"/>
2093     <family-param code="ec_c_rated" name="C" value-type="NUMERIC" unit="F" optional="false" in-hmc="false"/>
2094     <family-param code="ec_v_rated" name="V_rated" value-type="NUMERIC" unit="V" optional="false"
2095         in-hmc="false"/>
2096     <app-stress code="ec_v_appl" name="V_applied" value-type="NUMERIC" unit="V" optional="false"
2097         in-hmc="false"/>
2098     <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2099     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2100         in-hmc="true">
2101         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2102         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2103     </family-param>
2104     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2105         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2106         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2107         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2108         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2109     </family-param>
2110 </family>
2111 <family code="mwrf_mc" name="RF/MW Inductors">
2112     <family-param code="ec_mc_type" name="Type" value-type="LIST" optional="false" in-hmc="false"
2113         default-val="3">
2114         <list-param-item code="EC_MC_TYPE_01" name="Low-current (or low-level) wirewound inductor" value="1"/>
2115         <list-param-item code="EC_MC_TYPE_02" name="High-current (or power) wirewound inductor" value="2"/>
2116         <list-param-item code="EC_MC_TYPE_03" name="Multilayer inductor" value="3"/>
2117         <list-param-item code="EC_MC_TYPE_04" name="Low-power (or low-level) transformer" value="4"/>
2118         <list-param-item code="EC_MC_TYPE_05" name="High-power transformer" value="5"/>
2119     </family-param>
2120     <app-stress code="ec_delta_t" name="ΔT" value-type="NUMERIC" unit="°C" optional="false" in-hmc="false"/>
2121     <app-stress code="mwrf_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2122     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2123         in-hmc="true">

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2124         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2125         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2126     </family-param>
2127     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2128         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2129         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2130         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2131         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2132     </family-param>
2133 </family>
2134 <family code="mwrp_pa" name="Other RF/MW passive components">
2135     <family-param code="mwrp_pa_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
2136         <list-param-item code="MWRP_PA_TYPE_01"
2137             name="Passive components for microwave applications, fixed: attenuator, load (50 Ohm), filter,
power divider (combiner, splitter)"
2138             value="1"/>
2139         <list-param-item code="MWRP_PA_TYPE_02"
2140             name="Passive components for microwave applications, variable: variable attenuator, tuneable
filter"
2141             value="2"/>
2142         <list-param-item code="MWRP_PA_TYPE_03"
2143             name="Passive components for microwave applications, with ferrites: circulator, isolator,
phase shifter"
2144             value="3"/>
2145         <list-param-item code="MWRP_PA_TYPE_04"
2146             name="Passive components for microwave applications: surface wave filters" value="4"/>
2147     </family-param>
2148     <app-stress code="mwrp_delta_t" name="Rise of temperature" value-type="NUMERIC" unit="°C" optional="false"
2149         in-hmc="false"/>
2150     <app-stress code="mwrp_eta" name="&eta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2151     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2152         in-hmc="true">
2153         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2154         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2155     </family-param>
2156     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2157         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2158         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2159         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2160         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2161 </family-param>

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2162     </family>
2163 </macro-family>
2164 <macro-family code="cots">
2165     <family code="cots_co" name="Common functions">
2166         <family-param code="cots_ff" name="Form factor" value-type="NUMERIC" optional="false" in-hmc="false"/>
2167         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2168             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2169             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2170             <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2171             <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2172         </family-param>
2173     </family>
2174     <family code="cots_cpu" name="CPU function">
2175         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2176             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2177             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2178             <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2179             <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2180         </family-param>
2181     </family>
2182     <family code="cots_fmb" name="Flash memory boot function">
2183         <family-param code="cots_d_fb" name="D_flash_boot" value-type="NUMERIC" optional="false" in-hmc="false"/>
2184         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2185             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2186             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2187             <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2188             <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2189         </family-param>
2190     </family>
2191     <family code="cots_fms" name="Flash memory storage function">
2192         <family-param code="cots_d_fs" name="D_flash_stock" value-type="NUMERIC" optional="false" in-hmc="false"/>
2193         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2194             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2195             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2196             <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2197             <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2198         </family-param>
2199     </family>
2200     <family code="cots_dm" name="DRAM memory function">
2201         <family-param code="cots_d_dram" name="D_DRAM" value-type="NUMERIC" optional="false" in-hmc="false"/>
2202         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
```

```
2203         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2204         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2205         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2206         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2207     </family-param>
2208 </family>
2209 <family code="cots_llcs" name="L2, L3 cache or SRAM function">
2210     <family-param code="cots_d_sram" name="D_SRAM" value-type="NUMERIC" optional="false" in-hmc="false"/>
2211     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2212         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2213         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2214         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2215         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2216     </family-param>
2217 </family>
2218 <family code="cots_sc" name="SCSI controller function">
2219     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2220         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2221         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2222         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2223         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2224     </family-param>
2225 </family>
2226 <family code="cots_ch" name="Chipset function">
2227     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2228         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2229         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2230         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2231         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2232     </family-param>
2233 </family>
2234 <family code="cots_ec" name="Ethernet control function">
2235     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2236         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2237         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2238         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2239         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2240     </family-param>
2241 </family>
2242 <family code="cots_gc" name="Graphic control function">
2243     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
```

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2244         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2245         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2246         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2247         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2248     </family-param>
2249 </family>
2250 <family code="cots_fc" name="Fieldbus control function">
2251     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2252         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2253         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2254         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2255         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2256     </family-param>
2257 </family>
2258 <family code="cots_wc" name="Wireless control function">
2259     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2260         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2261         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2262         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2263         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2264     </family-param>
2265 </family>
2266 <family code="cots_adc" name="Analog-to-digital or digital-to-analog conversion function">
2267     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2268         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2269         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2270         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2271         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2272     </family-param>
2273 </family>
2274 <family code="cots_pbd" name="Parallel bus digital line">
2275     <family-param code="cots_m_parallel" name="M parallel" value-type="NUMERIC" optional="false" in-hmc="false"/>
2276     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2277         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2278         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2279         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2280         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2281     </family-param>
2282 </family>
2283 <family code="cots_adl" name="Analog or discrete line">
2284     <family-param code="cots_m_analog" name="M analog" value-type="NUMERIC" optional="false" in-hmc="false"/>
```

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2285     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2286         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2287         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2288         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2289         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2290     </family-param>
2291 </family>
2292 <family code="cots_spl" name="Serial peripheral line">
2293     <family-param code="cots_m_serial" name="M serial" value-type="NUMERIC" optional="false" in-hmc="false"/>
2294     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2295         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2296         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2297         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2298         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2299     </family-param>
2300 </family>
2301 <family code="cots_sbl" name="Serial bus line">
2302     <family-param code="cots_m_serial" name="M serial" value-type="NUMERIC" optional="false" in-hmc="false"/>
2303     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2304         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2305         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2306         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2307         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2308     </family-param>
2309 </family>
2310 <family code="cots_ioio" name="Input/output isolation by optocoupling">
2311     <family-param code="cots_io_quantity" name="I/O Quantity" value-type="NUMERIC" optional="false"
2312         in-hmc="false"/>
2313     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2314         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2315         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2316         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2317         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2318     </family-param>
2319 </family>
2320 <family code="cots_ioier" name="Input/output isolation or switching by electromechanical relay">
2321     <family-param code="cots_io_quantity" name="I/O Quantity" value-type="NUMERIC" optional="false"
2322         in-hmc="false"/>
2323     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2324         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2325         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
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2326         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2327         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2328     </family-param>
2329 </family>
2330 </macro-family>
2331 <macro-family code="misc">
2332     <family code="misc_ls" name="LCD (TFT,STN) screens">
2333         <family-param code="misc_op_life" name="Operating Life" value-type="NUMERIC" unit="h" optional="false"
2334             in-hmc="false"/>
2335         <family-param code="misc_t_use" name="T-use" value-type="NUMERIC" optional="false" in-hmc="false"/>
2336         <family-param code="misc_prpm" name="PrPM" value-type="NUMERIC" unit="h" optional="false" in-hmc="false"/>
2337         <family-param code="misc_beta" name="&beta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2338         <family-param code="misc_ls_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
2339             <list-param-item code="MISC_LS_TYPE_01" name="TFT" value="1"/>
2340             <list-param-item code="MISC_LS_TYPE_02" name="STN" value="2"/>
2341         </family-param>
2342         <family-param code="misc_ls_mob" name="Mobility" value-type="LIST" optional="false" in-hmc="false">
2343             <list-param-item code="MISC_LS_MOBILITY_01" name="Portable" value="1"/>
2344             <list-param-item code="MISC_LS_MOBILITY_02" name="Fixed" value="2"/>
2345         </family-param>
2346         <family-param code="misc_ls_class" name="Class" value-type="LIST" optional="false" in-hmc="false">
2347             <list-param-item code="MISC_LS_CLASS_01" name="I" value="1"/>
2348             <list-param-item code="MISC_LS_CLASS_02" name="II" value="2"/>
2349             <list-param-item code="MISC_LS_CLASS_03" name="III" value="3"/>
2350             <list-param-item code="MISC_LS_CLASS_04" name="IV" value="4"/>
2351         </family-param>
2352         <family-param code="misc_ls_diag" name="Diagonal" value-type="NUMERIC" unit=""" optional="false"
2353             in-hmc="false"/>
2354         <family-param code="misc_ls_pwr" name="Power" value-type="NUMERIC" unit="W" optional="false"
2355             in-hmc="false"/>
2356     </family>
2357     <family code="misc_hd" name="Hard Drives">
2358         <family-param code="misc_op_life" name="Operating Life" value-type="NUMERIC" unit="h" optional="false"
2359             in-hmc="false"/>
2360         <family-param code="misc_t_use" name="T-use" value-type="NUMERIC" optional="false" in-hmc="false"/>
2361         <family-param code="misc_prpm" name="PrPM" value-type="NUMERIC" unit="h" optional="false" in-hmc="false"/>
2362         <family-param code="misc_beta" name="&beta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2363         <family-param code="misc_hd_use" name="Usage" value-type="LIST" optional="false" in-hmc="false">
2364             <list-param-item code="MISC_HD_USE_01" name="Normal use" value="1"/>
2365             <list-param-item code="MISC_HD_USE_02" name="Intensive use, ventilated" value="2"/>
2366             <list-param-item code="MISC_HD_USE_03" name="Intensive use, non-ventilated" value="3"/>
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2367         </family-param>
2368         <family-param code="misc_hd_prot" name="Shocks/vibrations protection" value-type="LIST" optional="false"
2369             in-hmc="false">
2370             <list-param-item code="MISC_HD_PROT_01" name="Protection against shocks/vibrations" value="1"/>
2371             <list-param-item code="MISC_HD_PROT_02" name="Qualification for shocks/vibrations" value="2"/>
2372             <list-param-item code="MISC_HD_PROT_03" name="No specific protection or qualification" value="3"/>
2373         </family-param>
2374         <family-param code="misc_hd_mob" name="Mobility" value-type="LIST" optional="false" in-hmc="false">
2375             <list-param-item code="MISC_HD_MOBILITY_01" name="Portable or rack" value="1"/>
2376             <list-param-item code="MISC_HD_MOBILITY_02" name="Fixed" value="2"/>
2377         </family-param>
2378         <family-param code="misc_hd_family" name="HD Family" value-type="LIST" optional="false" in-hmc="false">
2379             <list-param-item code="MISC_HD_FAMILY_01"
2380                 name="IDE hard drive family (IDE, EIDE, E-IDE, ATA, SATA,S-ATA, Ultra ATA, DMA, Ultra DMA,
etc.)"
                value="1"/>
2381             <list-param-item code="MISC_HD_FAMILY_02"
2382                 name="SCSI hard drive family (SCSI-1, 2, 3, Ultra Wide SCSI 1, 2, 3, 4, SAS, etc.)"
2383                 value="2"/>
2384         </family-param>
2385         <family-param code="misc_hd_ta" name="Mean access time" value-type="NUMERIC" unit="ms" optional="false"
2386             in-hmc="false"/>
2387         <family-param code="misc_hd_pc" name="Platter count" value-type="NUMERIC" optional="false" in-hmc="false"/>
2388         <family-param code="misc_hd_dc" name="Duty cycle" value-type="NUMERIC" optional="false" in-hmc="false"/>
2389         <family-param code="misc_hd_ft" name="Format" value-type="NUMERIC" unit="&quot;" optional="false"
2390             in-hmc="false"/>
2391     </family>
2392     <family code="misc_cm" name="CRT Monitors">
2393         <family-param code="misc_op_life" name="Operating Life" value-type="NUMERIC" unit="h" optional="false"
2394             in-hmc="false"/>
2395         <family-param code="misc_t_use" name="T-use" value-type="NUMERIC" optional="false" in-hmc="false"/>
2396         <family-param code="misc_prpm" name="PrPM" value-type="NUMERIC" unit="h" optional="false" in-hmc="false"/>
2397         <family-param code="misc_beta" name="&beta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2398         <family-param code="misc_cm_wt" name="Weight" value-type="NUMERIC" unit="Kg" optional="false"
2399             in-hmc="false"/>
2400         <family-param code="misc_cm_diag" name="Diagonal" value-type="NUMERIC" unit="&quot;" optional="false"
2401             in-hmc="false"/>
2402         <family-param code="misc_cm_fh" name="Max Horizontal scanning frequency" value-type="NUMERIC" unit="KHz"
2403             optional="false" in-hmc="false"/>
2404         <family-param code="misc_cm_pwr" name="Max operating power" value-type="NUMERIC" unit="W" optional="false"
2405             in-hmc="false"/>

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2407     <family-param code="sa_hermeticity" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2408         <list-param-item code="SA_HERMETICITY_TYPE_01" name="Hermetic" value="1"/>
2409         <list-param-item code="SA_HERMETICITY_TYPE_02" name="Non-hermetic" value="2"/>
2410     </family-param>
2411     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2412         in-hmc="true">
2413         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2414         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2415     </family-param>
2416     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2417         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2418         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2419         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2420         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2421     </family-param>
2422 </family>
2423 <family code="misc_vc" name="AC/DC and DC/DC voltage converters">
2424     <family-param code="misc_vc_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
2425         <list-param-item code="MISC_VM_TECH_AC" name="AC/DC" value="1"/>
2426         <list-param-item code="MISC_VM_TECH_DC" name="DC/DC" value="2"/>
2427     </family-param>
2428     <family-param code="misc_vc_pwr" name="Output Power" value-type="NUMERIC" unit="W" optional="false"
2429         in-hmc="false"/>
2430     <family-param code="misc_vc_vol" name="Volume" value-type="NUMERIC" unit="cm3" optional="false"
2431         in-hmc="false"/>
2432     <family-param code="misc_vc_case" name="Case type" value-type="LIST" optional="false" in-hmc="false">
2433         <list-param-item code="MISC_VM_CASE_01" name="Moulded" value="1"/>
2434         <list-param-item code="MISC_VM_CASE_02" name="Others" value="2"/>
2435     </family-param>
2436     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2437         in-hmc="true">
2438         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2439         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2440     </family-param>
2441     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2442         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2443         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2444         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2445         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2446     </family-param>
2447 </family>
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2448 <family code="misc_lnb" name="Lithium and nickel batteries">
2449   <family-param code="misc_lnb_ol1" name="Operating Life 1" value-type="NUMERIC" unit="h" optional="false"
2450     in-hmc="false"/>
2451   <family-param code="misc_lnb_ol2" name="Operating Life 2" value-type="NUMERIC" unit="h" optional="false"
2452     in-hmc="false"/>
2453   <family-param code="misc_prpm" name="PrPM" value-type="NUMERIC" unit="h" optional="false" in-hmc="false"/>
2454   <family-param code="misc_beta" name="&beta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2455   <family-param code="misc_lnb_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
2456     <list-param-item code="MISC_LNB_TYPE_01" name="Lithium - Li-ion Polymer" value="1"/>
2457     <list-param-item code="MISC_LNB_TYPE_02" name="Lithium - Li-ion" value="2"/>
2458     <list-param-item code="MISC_LNB_TYPE_03" name="Lithium - Li-metal Phosphate" value="3"/>
2459     <list-param-item code="MISC_LNB_TYPE_04" name="Lithium - Nano Titanium" value="4"/>
2460     <list-param-item code="MISC_LNB_TYPE_05" name="Nickel - NiMH Metal Hydride" value="5"/>
2461     <list-param-item code="MISC_LNB_TYPE_06" name="Nickel - Ni-Zn Zinc" value="6"/>
2462     <list-param-item code="MISC_LNB_TYPE_07" name="Nickel - Ni-Cd Cadmium" value="7"/>
2463   </family-param>
2464   <family-param code="misc_lnb_ncell" name="Number of cells" value-type="NUMERIC" optional="false"
2465     in-hmc="false"/>
2466   <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2467     in-hmc="true">
2468     <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2469     <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2470   </family-param>
2471   <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2472     <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2473     <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2474     <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2475     <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2476   </family-param>
2477 </family>
2478 <family code="misc_fa" name="Fans">
2479   <family-param code="misc_fa_ol" name="Operating Life Calendar" value-type="NUMERIC" unit="h"
2480     optional="false" in-hmc="false"/>
2481   <family-param code="misc_prpm" name="PrPM" value-type="NUMERIC" unit="h" optional="false" in-hmc="false"/>
2482   <family-param code="misc_beta" name="&beta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2483   <app-stress code="misc_fa_bear_t" name="Bearing Temperature" value-type="NUMERIC" unit="°C" optional="false"
2484     in-hmc="false"/>
2485   <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2486     in-hmc="true">
2487     <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2488     <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
```

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2489     </family-param>
2490     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2491         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2492         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2493         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2494         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2495     </family-param>
2496 </family>
2497 <family code="misc_ke" name="Keyboards">
2498     <family-param code="misc_ke_ol" name="Operating Life" value-type="NUMERIC" unit="h" optional="false"
2499         in-hmc="false"/>
2500     <family-param code="misc_prpm" name="PrPM" value-type="NUMERIC" unit="h" optional="false" in-hmc="false"/>
2501     <family-param code="misc_beta" name="&beta;" value-type="NUMERIC" optional="false" in-hmc="false"/>
2502 </family>
2503 <family code="misc_ke_bd" name="Keyboards - Board">
2504 </family>
2505 <family code="misc_ke_kb" name="Keyboards - Keyboard">
2506     <family-param code="misc_ke_key" name="Number of keys" value-type="NUMERIC" optional="false"
2507         in-hmc="false"/>
2508     <family-param code="hmc_mount_type" name="Mount type (H&M)" value-type="LIST" optional="false"
2509         in-hmc="true">
2510         <list-param-item code="HMC_MOUNT_TYPE_01" name="By gluing (conductive glue)" value="1"/>
2511         <list-param-item code="HMC_MOUNT_TYPE_02" name="By soldering (solder)" value="2"/>
2512     </family-param>
2513     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2514         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2515         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2516         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2517         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2518     </family-param>
2519 </family>
2520 </macro-family>
2521 <macro-family code="pc">
2522     <family code="pc_dic" name="Digital integrated circuit">
2523         <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2524             <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2525             <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2526         </family-param>
2527         <family-param code="pc_np" name="Np" value-type="LIST" optional="false" in-hmc="false">
2528             <list-param-item code="PC_NP_01" name="≤ 24 p" value="1"/>
2529             <list-param-item code="PC_NP_02" name="24 to 48 p" value="2"/>
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2530         <list-param-item code="PC_NP_03" name="48 to 144 p" value="3"/>
2531         <list-param-item code="PC_NP_04" name="144 to 288 p" value="4"/>
2532         <list-param-item code="PC_NP_05" name="&gt; 288 p" value="5"/>
2533     </family-param>
2534     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2535         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2536         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2537         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2538         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2539     </family-param>
2540 </family>
2541 <family code="pc_mic" name="Memory integrated circuit">
2542     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2543         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2544         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2545     </family-param>
2546     <family-param code="pc_np" name="Np" value-type="LIST" optional="false" in-hmc="false">
2547         <list-param-item code="PC_NP_01" name="&lt;= 24 p" value="1"/>
2548         <list-param-item code="PC_NP_02" name="24 to 48 p" value="2"/>
2549         <list-param-item code="PC_NP_03" name="48 to 144 p" value="3"/>
2550         <list-param-item code="PC_NP_04" name="144 to 288 p" value="4"/>
2551         <list-param-item code="PC_NP_05" name="&gt; 288 p" value="5"/>
2552     </family-param>
2553     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2554         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2555         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2556         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2557         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2558     </family-param>
2559 </family>
2560 <family code="pc_sic" name="Micro*, DSP, simple ASIC integrated circuit">
2561     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2562         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2563         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2564     </family-param>
2565     <family-param code="pc_np" name="Np" value-type="LIST" optional="false" in-hmc="false">
2566         <list-param-item code="PC_NP_01" name="&lt;= 24 p" value="1"/>
2567         <list-param-item code="PC_NP_02" name="24 to 48 p" value="2"/>
2568         <list-param-item code="PC_NP_03" name="48 to 144 p" value="3"/>
2569         <list-param-item code="PC_NP_04" name="144 to 288 p" value="4"/>
2570         <list-param-item code="PC_NP_05" name="&gt; 288 p" value="5"/>
```

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2571     </family-param>
2572     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2573         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2574         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2575         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2576         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2577     </family-param>
2578 </family>
2579 <family code="pc_cic" name="Integrated circuit Analog, Mixed, FPGA, CPLD, complex ASIC">
2580     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2581         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2582         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2583     </family-param>
2584     <family-param code="pc_np" name="Np" value-type="LIST" optional="false" in-hmc="false">
2585         <list-param-item code="PC_NP_01" name="&lt;= 24 p" value="1"/>
2586         <list-param-item code="PC_NP_02" name="24 to 48 p" value="2"/>
2587         <list-param-item code="PC_NP_03" name="48 to 144 p" value="3"/>
2588         <list-param-item code="PC_NP_04" name="144 to 288 p" value="4"/>
2589         <list-param-item code="PC_NP_05" name="&gt; 288 p" value="5"/>
2590     </family-param>
2591     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2592         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2593         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2594         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2595         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2596     </family-param>
2597 </family>
2598 <family code="pc_di" name="Diode">
2599     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2600         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2601         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2602     </family-param>
2603     <family-param code="pc_smd_thl" name="SMD or through-hole" value-type="LIST" optional="false"
2604         in-hmc="false">
2605         <list-param-item code="PC_SMD_THL_01" name="SMD" value="1"/>
2606         <list-param-item code="PC_SMD_THL_02" name="THL" value="2"/>
2607     </family-param>
2608     <family-param code="pc_dt_pwr" name="Power type" value-type="LIST" optional="false" in-hmc="false">
2609         <list-param-item code="PC_DT_PWR_01" name="Low-power" value="1"/>
2610         <list-param-item code="PC_DT_PWR_02" name="Power" value="2"/>
2611 </family-param>
```

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2612     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2613         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2614         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2615         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2616         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2617     </family-param>
2618 </family>
2619 <family code="pc_ts" name="Transistor">
2620     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2621         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2622         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2623     </family-param>
2624     <family-param code="pc_smd_thl" name="SMD or through-hole" value-type="LIST" optional="false"
2625         in-hmc="false">
2626         <list-param-item code="PC_SMD_THL_01" name="SMD" value="1"/>
2627         <list-param-item code="PC_SMD_THL_02" name="THL" value="2"/>
2628     </family-param>
2629     <family-param code="pc_dt_pwr" name="Power type" value-type="LIST" optional="false" in-hmc="false">
2630         <list-param-item code="PC_DT_PWR_01" name="Low-power" value="1"/>
2631         <list-param-item code="PC_DT_PWR_02" name="Power" value="2"/>
2632     </family-param>
2633     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2634         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2635         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2636         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2637         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2638     </family-param>
2639 </family>
2640 <family code="pc_phd" name="Photodiode">
2641     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2642         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2643         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2644     </family-param>
2645     <family-param code="pc_smd_thl" name="SMD or through-hole" value-type="LIST" optional="false"
2646         in-hmc="false">
2647         <list-param-item code="PC_SMD_THL_01" name="SMD" value="1"/>
2648         <list-param-item code="PC_SMD_THL_02" name="THL" value="2"/>
2649     </family-param>
2650     <family-param code="pc_dt_pwr" name="Power type" value-type="LIST" optional="false" in-hmc="false">
2651         <list-param-item code="PC_DT_PWR_01" name="Low-power" value="1"/>
2652         <list-param-item code="PC_DT_PWR_02" name="Power" value="2"/>
```

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2653     </family-param>
2654     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2655         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2656         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2657         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2658         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2659     </family-param>
2660 </family>
2661 <family code="pc_pht" name="Phototransistor">
2662     <family-param code="pc_herme" name="Hermeticity" value-type="LIST" optional="false" in-hmc="false">
2663         <list-param-item code="PC_HERME_01" name="Hermetic" value="1"/>
2664         <list-param-item code="PC_HERME_02" name="Non-hermetic" value="2"/>
2665     </family-param>
2666     <family-param code="pc_smd_thl" name="SMD or through-hole" value-type="LIST" optional="false"
2667         in-hmc="false">
2668         <list-param-item code="PC_SMD_THL_01" name="SMD" value="1"/>
2669         <list-param-item code="PC_SMD_THL_02" name="THL" value="2"/>
2670     </family-param>
2671     <family-param code="pc_dt_pwr" name="Power type" value-type="LIST" optional="false" in-hmc="false">
2672         <list-param-item code="PC_DT_PWR_01" name="Low-power" value="1"/>
2673         <list-param-item code="PC_DT_PWR_02" name="Power" value="2"/>
2674     </family-param>
2675     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2676         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2677         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2678         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2679         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2680     </family-param>
2681 </family>
2682 <family code="pc_po" name="Potentiometer">
2683     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2684         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2685         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2686         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2687         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2688     </family-param>
2689 </family>
2690 <family code="pc_re" name="Resistor">
2691     <family-param code="pc_re_pwr" name="Power type" value-type="LIST" optional="false" in-hmc="false">
2692         <list-param-item code="PC_RE_PWR_01" name="High-power" value="1"/>
2693         <list-param-item code="PC_RE_PWR_02" name="Low-power" value="2"/>
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2694     </family-param>
2695     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2696         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2697         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2698         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2699         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2700     </family-param>
2701 </family>
2702 <family code="pc_emfr" name="Etched metal foil resistor">
2703     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2704         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2705         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2706         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2707         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2708     </family-param>
2709 </family>
2710 <family code="pc_rnc" name="Resistor network, Resistor chip">
2711     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2712         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2713         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2714         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2715         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2716     </family-param>
2717 </family>
2718 <family code="pc_cc" name="Ceramic capacitor">
2719     <family-param code="pc_cc_cv_cat" name="CV category" value-type="LIST" optional="false" in-hmc="false">
2720         <list-param-item code="PC_CC_CV_CAT_01" name="Moderate CV product" value="1"/>
2721         <list-param-item code="PC_CC_CV_CAT_02" name="High CV product" value="2"/>
2722     </family-param>
2723     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2724         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2725         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2726         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2727         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2728     </family-param>
2729 </family>
2730 <family code="pc_ac" name="Aluminium capacitor">
2731     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2732         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2733         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2734         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
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2735         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2736     </family-param>
2737 </family>
2738 <family code="pc_tc" name="Tantalum capacitor">
2739     <family-param code="pc_tc_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
2740         <list-param-item code="PC_TC_TECH_01" name="Gel" value="1"/>
2741         <list-param-item code="PC_TC_TECH_02" name="Solid" value="2"/>
2742     </family-param>
2743     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2744         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2745         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2746         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2747         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2748     </family-param>
2749 </family>
2750 <family code="pc_in" name="Inductor">
2751     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2752         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2753         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2754         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2755         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2756     </family-param>
2757 </family>
2758 <family code="pc_tf" name="Transformer">
2759     <family-param code="pc_tf_pwr" name="Power type" value-type="LIST" optional="false" in-hmc="false">
2760         <list-param-item code="PC_TF_PWR_01" name="Low-power" value="1"/>
2761         <list-param-item code="PC_TF_PWR_02" name="High-power" value="2"/>
2762     </family-param>
2763     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2764         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2765         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2766         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2767         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2768     </family-param>
2769 </family>
2770 <family code="pc_qcr" name="Quartz crystal resonator">
2771     <family-param code="pc_smd_thl" name="SMD or through-hole" value-type="LIST" optional="false"
2772         in-hmc="false">
2773         <list-param-item code="PC_SMD_THL_01" name="SMD" value="1"/>
2774         <list-param-item code="PC_SMD_THL_02" name="THL" value="2"/>
2775     </family-param>
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2776     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2777         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2778         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2779         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2780         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2781     </family-param>
2782 </family>
2783 <family code="pc_qco" name="Quartz crystal oscillator">
2784     <family-param code="pc_smd_thl" name="SMD or through-hole" value-type="LIST" optional="false"
2785         in-hmc="false">
2786         <list-param-item code="PC_SMD_THL_01" name="SMD" value="1"/>
2787         <list-param-item code="PC_SMD_THL_02" name="THL" value="2"/>
2788     </family-param>
2789     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2790         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2791         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2792         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2793         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2794     </family-param>
2795 </family>
2796 <family code="pc_ril0c" name="Relay up to 10 contacts">
2797     <family-param code="pc_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
2798         <list-param-item code="PC_LOAD_TYPE_01" name="Resistive load" value="1"/>
2799         <list-param-item code="PC_LOAD_TYPE_02" name="Non-resistive load" value="2"/>
2800     </family-param>
2801     <family-param code="pc_act_rate" name="Actuation rate" value-type="LIST" optional="false" in-hmc="false">
2802         <list-param-item code="PC_ACT_RATE_01" name="< 3 actuations/h" value="1"/>
2803         <list-param-item code="PC_ACT_RATE_02" name="≥ 3 actuations/h" value="2"/>
2804     </family-param>
2805     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2806         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2807         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2808         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2809         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2810     </family-param>
2811 </family>
2812 <family code="pc_rs10c" name="Relay > 10 contacts">
2813     <family-param code="pc_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
2814         <list-param-item code="PC_LOAD_TYPE_01" name="Resistive load" value="1"/>
2815         <list-param-item code="PC_LOAD_TYPE_02" name="Non-resistive load" value="2"/>
2816     </family-param>
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2817 <family-param code="pc_act_rate" name="Actuation rate" value-type="LIST" optional="false" in-hmc="false">
2818 <list-param-item code="PC_ACT_RATE_01" name="&lt; 3 actuations/h" value="1"/>
2819 <list-param-item code="PC_ACT_RATE_02" name="≥ 3 actuations/h" value="2"/>
2820 </family-param>
2821 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2822 <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2823 <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2824 <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2825 <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2826 </family-param>
2827 </family>
2828 <family code="pc_pbsi" name="Push button, switch, inverter (&lt; 4 pins)">
2829 <family-param code="pc_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
2830 <list-param-item code="PC_LOAD_TYPE_01" name="Resistive load" value="1"/>
2831 <list-param-item code="PC_LOAD_TYPE_02" name="Non-resistive load" value="2"/>
2832 </family-param>
2833 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2834 <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2835 <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2836 <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2837 <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2838 </family-param>
2839 </family>
2840 <family code="pc_de" name="DIP, encoder (4 to 10 pins)">
2841 <family-param code="pc_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
2842 <list-param-item code="PC_LOAD_TYPE_01" name="Resistive load" value="1"/>
2843 <list-param-item code="PC_LOAD_TYPE_02" name="Non-resistive load" value="2"/>
2844 </family-param>
2845 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2846 <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2847 <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2848 <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2849 <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2850 </family-param>
2851 </family>
2852 <family code="pc_sw" name="Switch (&gt; 10 pins)">
2853 <family-param code="pc_load_type" name="Load type" value-type="LIST" optional="false" in-hmc="false">
2854 <list-param-item code="PC_LOAD_TYPE_01" name="Resistive load" value="1"/>
2855 <list-param-item code="PC_LOAD_TYPE_02" name="Non-resistive load" value="2"/>
2856 </family-param>
2857 <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
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2858         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2859         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2860         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2861         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2862     </family-param>
2863 </family>
2864 <family code="pc_coic" name="Connector for printed circuits and IC supports">
2865     <family-param code="pc_contact" name="Contact count" value-type="LIST" optional="false" in-hmc="false">
2866         <list-param-item code="PC_CONTACT_01" name="Up to 20 contacts" value="1"/>
2867         <list-param-item code="PC_CONTACT_02" name="20 to 200 contacts" value="2"/>
2868         <list-param-item code="PC_CONTACT_03" name="Over 200 contacts" value="3"/>
2869     </family-param>
2870     <family-param code="pc_co_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
2871         <list-param-item code="PC_CO_TECH_01" name="Soldered (PTH or SMD)" value="1"/>
2872         <list-param-item code="PC_CO_TECH_02" name="Wrapping or insertion" value="2"/>
2873     </family-param>
2874     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2875         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2876         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2877         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2878         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2879     </family-param>
2880 </family>
2881 <family code="pc_coo" name="Other connector">
2882     <family-param code="pc_contact" name="Contact count" value-type="LIST" optional="false" in-hmc="false">
2883         <list-param-item code="PC_CONTACT_01" name="Up to 20 contacts" value="1"/>
2884         <list-param-item code="PC_CONTACT_02" name="20 to 200 contacts" value="2"/>
2885         <list-param-item code="PC_CONTACT_03" name="Over 200 contacts" value="3"/>
2886     </family-param>
2887     <family-param code="pc_co_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
2888         <list-param-item code="PC_CO_TECH_01" name="Soldered (PTH or SMD)" value="1"/>
2889         <list-param-item code="PC_CO_TECH_02" name="Wrapping or insertion" value="2"/>
2890     </family-param>
2891     <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2892         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2893         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2894         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2895         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2896     </family-param>
2897 </family>
2898 <family code="pc_pcp" name="Printed circuit, PTH">
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2899     <family-param code="pc_mount_pt" name="Mounting point count" value-type="LIST" optional="false"
2900         in-hmc="false">
2901         <list-param-item code="PC_MOUNT_PT_01" name="Up to 2000 mounting points" value="1"/>
2902         <list-param-item code="PC_MOUNT_PT_02" name="> 2000 mounting points" value="2"/>
2903     </family-param>
2904     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2905         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2906         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2907         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2908         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2909     </family-param>
2910 </family>
2911 <family code="pc_pcs" name="Printed circuit, SMD">
2912     <family-param code="pc_mount_pt" name="Mounting point count" value-type="LIST" optional="false"
2913         in-hmc="false">
2914         <list-param-item code="PC_MOUNT_PT_01" name="Up to 2000 mounting points" value="1"/>
2915         <list-param-item code="PC_MOUNT_PT_02" name="> 2000 mounting points" value="2"/>
2916     </family-param>
2917     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2918         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2919         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2920         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2921         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2922     </family-param>
2923 </family>
2924 <family code="pc_hd" name="Hard drive">
2925     <family-param code="pc_hd_tech" name="Technology" value-type="LIST" optional="false" in-hmc="false">
2926         <list-param-item code="PC_HD_TECH_01" name="EIDE" value="1"/>
2927         <list-param-item code="PC_HD_TECH_02" name="SCSI" value="2"/>
2928     </family-param>
2929     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2930         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2931         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2932         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2933         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2934     </family-param>
2935 </family>
2936 <family code="pc_ls" name="LCD screen (Class III)">
2937     <family-param code="pc_ls_type" name="Type" value-type="LIST" optional="false" in-hmc="false">
2938         <list-param-item code="PC_LS_TYPE_01" name="STN" value="1"/>
2939         <list-param-item code="PC_LS_TYPE_02" name="TFT" value="2"/>
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2940     </family-param>
2941     <family-param code="pc_ls_diag" name="Diagonal" value-type="LIST" optional="false" in-hmc="false">
2942         <list-param-item code="PC_LS_DIAG_01" name="Up to 14"" value="1"/>
2943         <list-param-item code="PC_LS_DIAG_02" name="14" to 20"" value="2"/>
2944         <list-param-item code="PC_LS_DIAG_03" name="Over 20"" value="3"/>
2945     </family-param>
2946     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2947         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2948         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2949         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2950         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2951     </family-param>
2952 </family>
2953 <family code="pc_crtm" name="CRT monitor">
2954     <family-param code="pc_crtm_diag" name="Diagonal" value-type="LIST" optional="false" in-hmc="false">
2955         <list-param-item code="PC_CRTM_DIAG_01" name="Up to 20"" value="1"/>
2956         <list-param-item code="PC_CRTM_DIAG_02" name="!!!PC_CRTM_DIAG_02_KEY!!!" value="2"/>
2957     </family-param>
2958     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2959         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2960         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2961         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2962         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2963     </family-param>
2964 </family>
2965 <family code="pc_sps" name="Switching power supply">
2966     <family-param code="pc_sps_pwr" name="Power" value-type="LIST" optional="false" in-hmc="false">
2967         <list-param-item code="PC_SPS_PWR_01" name="Up to 500W" value="1"/>
2968         <list-param-item code="PC_SPS_PWR_02" name="Over 500W" value="2"/>
2969     </family-param>
2970     <family-param code="hmc_c_mould" name="C moulding" value-type="LIST" optional="false" in-hmc="true">
2971         <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2972         <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2973         <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2974         <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2975     </family-param>
2976 </family>
2977 <family code="pc_dc" name="DC/DC converter">
2978     <family-param code="pc_dc_pwr" name="Power" value-type="LIST" optional="false" in-hmc="false">
2979         <list-param-item code="PC_DC_PWR_01" name="Up to 50W" value="1"/>
2980         <list-param-item code="PC_DC_PWR_02" name="Over 50W" value="2"/>
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2981         </family-param>
2982         <family-param code="hmc_c_mould" name="C_moulding" value-type="LIST" optional="false" in-hmc="true">
2983             <list-param-item code="HMC_C_MOULDING_01" name="Hermetic circuit non-moulded" value="1"/>
2984             <list-param-item code="HMC_C_MOULDING_02" name="Moulded circuit, silicon-embedded" value="2"/>
2985             <list-param-item code="HMC_C_MOULDING_03" name="Moulded circuit, polyurethane-embedded" value="3"/>
2986             <list-param-item code="HMC_C_MOULDING_04" name="Moulded circuit, epoxy-embedded" value="4"/>
2987         </family-param>
2988     </family>
2989 </macro-family>
2990 </open-fides-notice>
```