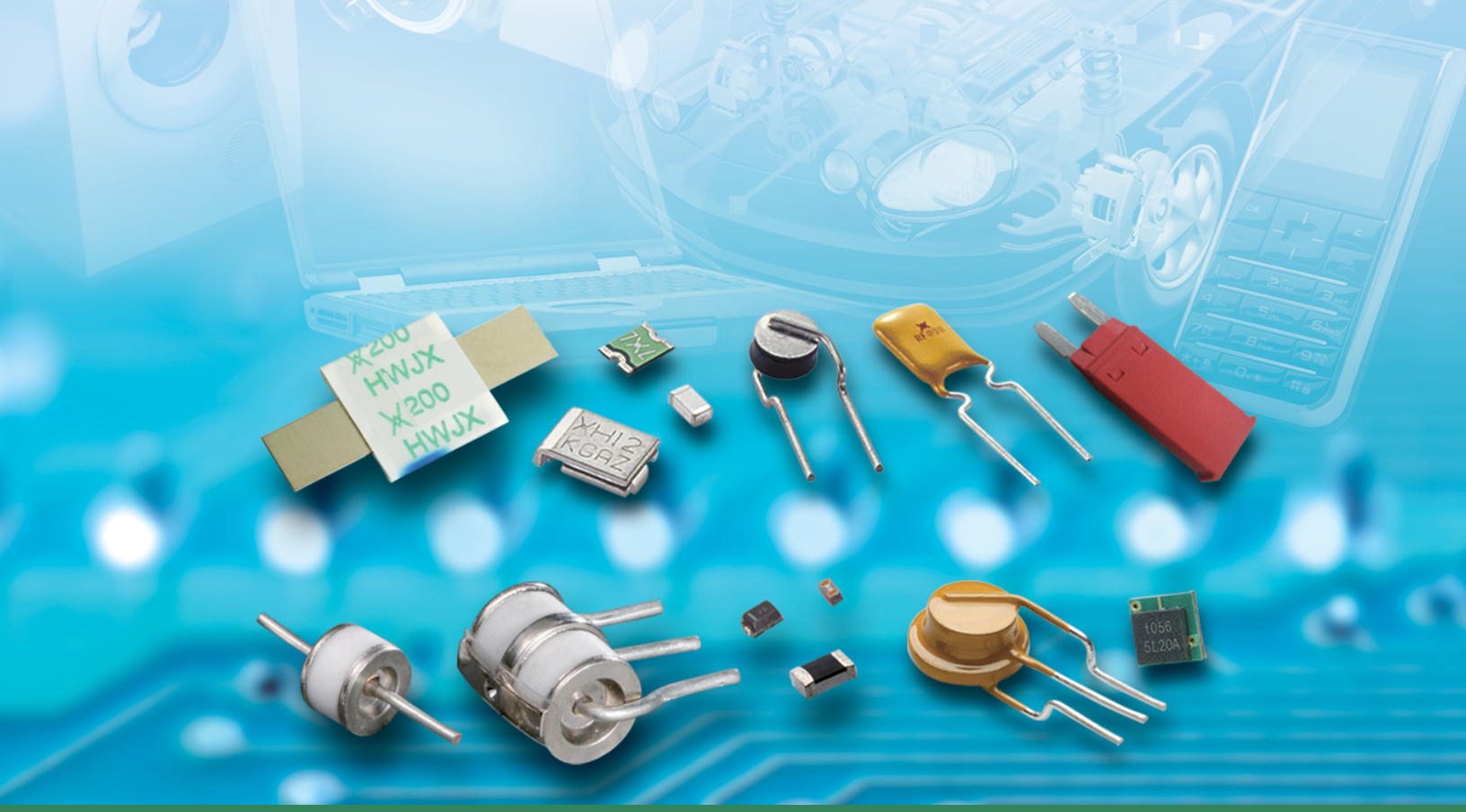

Introducing MSL Classification

Littelfuse overvoltage, overcurrent and overtemperature circuit protection devices help designers provide effective protection for the portable medical products.

Littelfuse®

Expertise Applied | Answers Delivered

MSL Classification

The IPC/JEDEC J-STD-020C Moisture/Reflow Sensitivity Classification for Non-Hermetic Solid State Surface-Mount Devices standard is used to determine what classification level should be used for initial reliability qualification. Once identified, the surface-mount devices can be properly packaged, stored and handled to avoid subsequent thermal and mechanical damage during the assembly solder reflow attachment and/or repair operation.

The standard is based upon several conditions including relative humidity and uses a lead-free reflow profile that results in a 250°C temperature (+0/-5°C) on the package topside surface in an eight-minute maximum (25°C to peak temperature) profile. Peak oven temperature settings of more than 300°C are typical in order to generate this 250°C surface temperature.

Although many circuit protection products, including all radial-leaded and strap PolySwitch devices, ESD devices, 2Pro devices, gas discharge tubes, and fuse products are classified to MSL Level 1, all surface-mount PolySwitch devices and PolyZen devices are classified to MSL Level 2a according to IPC/JEDEC J-STD 020C. Essentially, this means that:

1. These parts are sensitive to moisture.
2. Once these parts are removed from the moisture barrier bag at factory ambient temperature of ≤ 30°C/60% RH, they must be assembled within 4 weeks from the date the bag was opened.
3. If above condition is exceeded, a rebake is necessary prior to assembly.

MOISTURE LEVEL CLASSIFICATION AND FLOOR LIFE

Level	Time	Conditions
1	Unlimited	≤ 30°C/85% RH
2	1 year	≤ 30°C/60% RH
2a	4 weeks	≤ 30°C/60% RH
3	168 hours	≤ 30°C/60% RH
4	72 hours	≤ 30°C/60% RH
5	48 hours	≤ 30°C/60% RH
5a	24 hours	≤ 30°C/60% RH
6	Time On Label (TOL)	≤ 30°C/60% RH

Product Type	MSL Classification							
	1	2	2a	3	4	5	5a	6
PolySwitch femtoSMD and picoSMD Devices	X							
PolySwitch nanoSMD, microSMD, miniSMD, decaSMD and SMDC Devices			X					
PolySwitch AHS, ASMD and SMD Devices			X					
PolySwitch Telecom SMD Devices — TS250, TSx250 Families TS600, TSx600 Families	X		X					
PolySwitch Lowrho SMD Devices			X					
Chip Fuses	X							
Telecom FT600 Fuses	X							
Diode Arrays (SPA® Diodes)	X							
PolyZen Devices			X					
TVS SMD Devices	X							
SIDACtor® Protection Thyristor	X							
LED Protector (PLED)	X							