

Reliability Test Category

Environmental Test

No	Test Category	Test Conditions	Related Standards					Purpose
			MIL-STD-883G	IEC 60749	IEC 60068-2	JESD22	EIAJ ED-4701	
1	THB (High Temperature / Humidity with Bias Life Test)	Ta=85°C, 85% RH Power supply voltage = Max. operating voltage	—	Part 5	—	A101-C	Method 102	To evaluate the endurance of the devices when used in high temperature and high humidity ambient.
2	HTS (High Temperature Storage Test)	Ta=150°C No power supply	1008.2	Part 6	Part 2-2	A103-C	Method 201	To evaluate the endurance of the devices when stored under high temperature for long time.
3	LTS (Low Temperature Storage Test)	Ta=-50°C No power supply	—	—	Part 2-1	A119	Method 202	To evaluate the endurance of the devices when stored under low temperature for long time.
4	TCT (Temperature Cycling Test)	Condition: -65°C~150°C	1010.7	Part 25	Part 2-14	A104-C	Method 105	To evaluate the endurance of the devices when exposed to repeated temperature variation cycles between high temperature and low temperature.
5	PCT (Pressure Cooker Test)	Ta=121°C, 100% RH 2.0E5 Pa (2 ATM)	—	Part 33	—	A102-C	Method 102 Method 103	To evaluate the endurance of plastic mouled package devices when used in high temperature and high humidity ambient.
6	HTOL (High Temperature Operation Life Test)	Ta=125°C Power supply voltage = Max. operating voltage	1005.8	Part 23	—	A108-C	Method 101	To evaluate the endurance of the devices when they are submitted to electric stress and thermal stress of long duration.

Mechanical Test

No	Test Category	Test Conditions	Related Standards					Purpose
			MIL-STD-883G	IEC 60749	IEC 60068-2	JESD22	EIAJ ED-4701	
1	Soldering Heat Resistance	a. Precondition:TCT⇄IR Reflow b. PCT: 121°C,2atm,168hr c. TCT:-65°C~150°C,500cycles d. Solderability:Steam aging 8hr, Dipping with flux 245°C 5sec e. Lead Fatigue:bend 90°	—	—	Part 2-20	A113-F	Method 301	To simulate the board mounting process., which is representative of typical standard industrial solder reflow process. For surface mount device, the preconditioning test shall be required prior to TCT, PCT and HAST tests.
2	Solder ability	Solder bath temperature: 230°C, dipping time: 5 sec Solder bath temperature: 245°C, dipping time: 5 sec (lead-free solder)	2003.8	Part 21	Part 2-20	B102-E	Method 303	To evaluate the solderability of the teminals of the devices that are generally conneced by soldering.
3	Lead integrity	bend 90°	2004.5 Condition B2	Part 14	—	B105-C	Method 401	To evaluate the resistance of terminals of the devices against forces applied during their handling and/or normal assembly work.

Electrical Test

No	Test Category	Test Conditions	Related Standards					Purpose
			MIL-STD-883G	IEC 60749	IEC 60068-2	JESD22	EIAJ ED-4701	
1	ESD (HBM)	Ta=25°C HBM: C=100pF, R=1.5kΩ	3015.7	Part 26	—	A114-F	Method 304	To evaluate the endurance of a semiconductor device to human body model electrostatic discharges while the Semiconductor device is handled until mounting into electronic equipment.
2	ESD (MM)	Ta=25°C MM: C=200pF	—	Part 27	—	A115-A	Method 305	To evaluate sensitivity of integrated circuits to electrostatic discharges that such integrated circuits are exposed to before they are installed in an electronic equipment.
3	Latch up	Ta=25°C Power supply voltage = Max. operating voltage	3023.1	Part 29	—	JESD78A	Method 306	To evaluate the resistance of a CMOS device to electric noise.