

Reliability Information for Automotive

(AEC-Q 100, AEC-Q 101)

1. Discrete Semiconductor : AEC-Q101 Qualification Test

No	Stress	Abrv.	Sample Size	Reference	Additional Requirements & Test Condition
1	Pre-and-Post Stress Electrical Test	TEST	All Qualification Parts	Specification	Test is performed as specified in the applicable stress reference at room temperature.
2	Pre-conditioning	PC	SMD qualification parts	JESD22-A113	Performed on surface mount devices (SMDs) prior to TC, AC, H3TRB & IOL stresses only. Use J-STD-020 Sensitivity Level.
3	High Temperature Reverse Bias	HTRB	77	JESD22-A108	1000 hours at the maximum DC Reverse Voltage rated junction temperature specified in the user/supplier specification.
4	High Temperature Gate Bias	HTGB	77	JESD22-A108	1000 hours at the specified TJ(max) rating, with gate biased at 100% of maximum gate voltage rating.
5	Temperature Cycling	TC	77	JESD22-A104	1000 cycles (TA = minimum range of -55°C to maximum rated junction temperature, not to exceed 150°C).
6	Autoclave	AC	77	JESD22-A102	96 hours, TA=121°C, RH=100%, 15psig.
7	High Humidity High Temp. Reverse Bias	H3TRB	77	JESD22-A101	1000 hours at TA=85°C/85%RH with part reverse biased at 80% of rated breakdown voltage.
8	Intermittent Operational Life	IOL	77	MIL-STD-750 Method 1037	TA=25°C. Parts powered to insure $\Delta T_J \geq 100^\circ\text{C}$ (not to exceed absolute maximum ratings).
9	ESD Characterization	ESD	30	AEC-Q101 -001, 002, 005	HBM, MM, CDM
10	Resistance to Solder Heat	RSH	30	JESD22-A111 JESD22-B106	SMD parts shall be fully submerged during test and preconditioned per MSL rating.
11	Solderability	SD	10	J-STD-002 JESD22-B102	Refer to AEC-Q005 Pb-Free Test Requirements for solderability requirements of Pb-free terminated parts.

2. Integrated Circuit : AEC-Q100 Qualification Test

No	Stress	Abrv.	Sample Size	Reference	Additional Requirements & Test Condition
1	Pre-and-Post Stress Electrical Test	TEST	All Qualification Parts	Specification	Test is performed as specified in the applicable stress reference at room temperature.
2	Pre-conditioning	PC	SMD qualification parts	JESD22-A113	Performed on surface mount devices (SMDs) prior to THB, AC, TC stresses only. Use J-STD-020 Sensitivity Level.
3	Temperature Humidity Bias	THB	77	JESD22-A101	1000 hours at TA=85°C/85%RH with minimize power dissipation.
4	Autoclave	AC	77	JESD22-A102	96 hours, TA=121°C, RH=100%, 15psig.
5	Temperature Cycling	TC	77	JESD22-A104	1000 cycles (TA=minimum range of -55°C to maximum range of 150°C).
6	High Temperature Storage Life	HTSL	45	JESD22-A103	1000 hours at TA=150°C.
7	High Temperature Operating Life	HTOL	77	JESD22-A108	1000 hours at TA=maximum operating temperature.
8	ESD Characterization	ESD	30	AEC-Q100-002, 003, 011	HBM, MM, CDM
9	Resistance to Solder Heat	RSH	30	JESD22-A111 JESD22-B106	SMD parts shall be fully submerged during test and preconditioned per MSL rating.
10	Solderability	SD	10	J-STD-002 JESD22-B102	Refer to AEC-Q005 Pb-Free Test Requirements for solderability requirements of Pb-free terminated parts.

3. AEC-Q Assurance Product

PKG	Product Category
TFSC	Switching DIODE, ZENER DIODE, SBD, TVS
TFSM	General Purpose TR, BRT
TFSV/6	BRT
VSC	Switching DIODE, ZENER DIODE, SBD, TVS
VSM	Switching DIODE, SBD, General Purpose TR, BRT
ESC	Switching Diode, ZENER DIODE, SBD, TVS
ESM	Switching DIODE, SBD, TVS, General Purpose TR, BRT
TESV/6	Switching DIODE, TVS, BRT
USC	Switching DIODE, ZENER DIODE, SBD, TVS
USM	Switching DIODE, SBD, TVS, General Purpose TR, BRT,
USV/6	Switching DIODE, TVS, BRT, LMOS
USF	ZENER DIODE, SBD
SOT-23	Switching DIODE, ZENER DIODE, SBD, TVS, General Purpose TR, BRT, Detector IC(CMOS)
TSM	SBD, GP TR, Low $V_{CE(SAT)}$ TR
TSV/6	BRT, TVS, Current Regulation Device, Detector IC(CMOS)
SMF	ZENER DIODE, SBD
SMA	ZENER DIODE, SBD
SOT-89	General Purpose TR, Detector IC(BIP), Reg. IC, Shunt Reg.,
DPAK	General Purpose TR
FLP-8	USB Power SW IC
TO-92	General Purpose TR, BRT, Detector IC(BIP, CMOS), Shunt Reg.
TO-92L	General Purpose TR, Reg. IC
IPAK	General Purpose TR
DPAK	Power SBD, UFRD, General Purpose TR, LDO(BIP), Q-LDO, Reg. IC
TO-126	General Purpose TR
TO-220IS	Power SBD, UFRD, General Purpose TR, LDO(BIP), Q-LDO, Reg. IC