

附表 3-2:

批准证书附件

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No	Products, Materials	Items, Parameter		Title, Code of specification, standard or method used	Restriction or limitation	measuring capacity	Note
		No	Items, Parameter				
1	Integrated Circuits	1	Visual inspection (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	1X~100X	
		2	Temperature cycling (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	-65℃~150℃	
		3	Bake out (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION	/	125℃~130℃	

		FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023			
4	Moisture Soak (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	30°C~85°C、 60%RH~ 85%RH	
5	Reflow (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	TP: 220°C~ 260°C	
6	Biased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Ta: 105°C~ 132°C; 75~ 100%RH;	
7	Unbiased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE	/	Ta: 105°C~ 132°C; 75~100%RH;	

		APPLICATIONS AEC-Q100-REV-J August 11. 2023			
8	Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	-65°C ~ 150°C	
9	Power Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	-65°C ~ 150°C	
10	High Temperature Storage Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	125°C ~ 200°C	
11	High Temperature Operating Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August	/	+85°C ~ +150°C	

		11. 2023			
12	Early Life Failure Rate	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	+70°C ~ +175°C	
13	Wire Bond Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~100kg	
14	Wire Bond Pull	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~10kg	
15	Solderability	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Temperature range: Room Temperature ~300°C, ± 2°C	
16	Physical Dimensions	FAILURE MECHANISM BASED	/	(X/Y/Z)200	

		STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023		×100×100mm;	
17	Solder Ball Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~100kg	
18	Pre- and Post-Stress Function/Parameter	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Digital integrated circuit test capacity: 2048 digital channels、Per pin vector memory 112MB、Overall Timing Accuracy±36ps、Max data rate 16Gbps	
				/	Analog

						integrated circuit test capacity: voltage/current source: $\pm 3000V/\pm 500A$ Minimum resolution: $0.5 \mu V, 10fA$	
						Mix signal integrated circuit test: 16 bits/1GspS DAC、12 bits/1.2GHz ADC static parameters and dynamic parameters	
						Radio frequency integrated circuit: above 40GHz (up to 110GHz)	
19	Electrostatic Discharge Human Body Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE			/	(MK. 4) Range : $\pm 25 \sim \pm 8000V$; Channel:	

		APPLICATIONS AEC-Q100-REV-J August 11. 2023		2304;	
20	Electrostatic Discharge Charged Device Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	(Orion3) Range: \pm 25~ \pm 2000V;	
21	Mechanical Shock	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Y1 plane only, 5 pulses, 0.5ms duration, 1500g peak acceleratio n	
22	Variable Frequency Vibration	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	20 Hz to 2 KHz to 20 Hz; in >4 minutes, 4X in each orientation , 50 g peak acceleratio n.	
23	Constant Acceleration	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS	/	5000g~30000 g	

			AEC-Q100-REV-J August 11. 2023			
24	Gross/Fine Leak		FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	310~517kPa Leak rate: $\leq 10^{-4}$ (Pa · cm ³) /s	
25	Package Drop		FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Drop part on each of 6 axes once from a height of 1.2m onto a concrete surface. This test is for MEMS cavity devices only.	
26	Die Shear		FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~100kg	
27	Internal Water Vapor		FAILURE MECHANISM BASED STRESS TEST QUALIFICAION	/	(0.01-20) cc; ± 100 ppm	

				FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023			
2	Discrete Semiconductors	1	Visual inspection (Pre-conditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	40X	
		2	Temperature cycling (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	-40°C ~60°C	
		3	Bake out (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	125 ⁺⁵ ₋₀ °C	
		4	Moisture Soak (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	30°C ~85°C、 60%RH~ 85%RH	

5	Reflow (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	Tp: 220°C ~ 260°C	
6	Highly Accelerated Stress Test	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	108°C ~ 132°C、80%RH ~ 90%RH	
7	High Humidity High Temp. Reverse Bias	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	83°C ~ 87°C、80%RH ~ 90%RH	
8	Unbiased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	108°C ~ 132°C、80%RH ~ 90%RH	
9	Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March	/	-65°C ~ 150°C	

		1, 2021			
10	Temperature Cycling Hot Test	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	0~10kg	
11	Power Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	-65℃~150℃	
12	Physical Dimension	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	(X/Y/Z)200×100×100mm;	
13	Wire Bond Pull Strength	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	0~10kg	
14	Wire Bond Shear Strength	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS	/	0~100KG	

		AEC-Q101-Rev-E March 1, 2021			
15	Die Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	0~100KG	
16	Resistance to Solder Heat	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	Reflow: Room Temperature ~300°C; Dip Welding: Room Temperature ~300°C	
17	Thermal Resistance	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	Heat current: 20V/200A, 30V/18A; Test current IM: 1mA, 5 mA, 10 mA, 20 mA; Pulse width: 5ms~6s	
18	Solderability	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	Reflow: Room Temperature ~300°C; Dip Welding: Room	

		1, 2021		Temperature ~300°C Magnification: 10X~50X	
19	Constant Acceleration	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	5000g~ 30000g	
20	Vibration Variable Frequency	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	Use a constant displacement of 0.06 inches (double amplitude) over the range of 20Hz to 100 Hz and a 50g constant peak acceleration over the range of 100 Hz to 2 KHz.	
21	Mechanical Shock	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March	/	Y1 plane only, 5 pulses, 0.5ms duration, 1500g peak	

		1, 2021		acceleratio n	
22	Hermeticity	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	(310~517) kPa, Leak test: $\leq 10^{-4}$ (Pa · cm ³) /s	
23	External Visual	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	0~40X	
24	Pre- and Post-Stress Electrical Test	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	BC3193: Voltage: 2000V, Current: 200A	
				B1506A: Voltage 3000V, Current 500A	
				TRS4080 IGBT static test: Voltage: 8000V、 Current: 4000A	
				TRD4045	

				IGBT dynamic test: Voltage: 4500V, Current: 4000A	
				LX9600: Voltage: 1200V, Current: 200A	
				LX9605: Voltage: 600V, Current: 100A	
				LX9605: Voltage: 0~200V, Vgs ≤20V	
				LX9604: Voltage: 10V~100V, Current: 500mA~150A	
25	Parametric Verification	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	-65°C ~ 150°C	
26	ESD HBM Characterization	FAILURE MECHANISM BASED	/	(MK. 4)	

				STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021		Range: $\pm 25 \sim \pm 8000V$; Channel: 2304;	
		27	ESD CDM Characterization	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR DISCRETE SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q101-Rev-E March 1, 2021	/	(Orion3) Range: $\pm 25 \sim \pm 2000V$;	
3	Optoelectronic Semiconductors	1	Visual inspection (Pre-conditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	40X	
		2	Temperature cycling (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	$-40^{\circ}C \sim 60^{\circ}C$	
		3	Bake out (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	$125_{-0}^{+5}^{\circ}C$	

4	Moisture Soak (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	30°C ~ 85°C、 60%RH ~ 85%RH	
5	Reflow (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	Tp: 220°C ~ 260°C	
6	Wet High Temperature Operating Lifel	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	Temperature range: -40°C ~ 150°C; Humidity range: 25%RH ~ 98%RH Warming time: -40°C ~ 150°C, ≤ 60min Cooling time: 20°C ~ -40°C, ≤ 60min	
7	Wet High Temperature Operating Life2	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN	/	Temperature range: -40°C ~ 150°C; Humidity	

		AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020		range:: 25%RH~98%RH Warming time: -40°C ~150°C, ≤ 60min Cooling time: 20°C ~-40°C, ≤ 60min	
8	High Humidity High Temperature Reverse Bias	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	83°C~87°C、 80%RH~ 90%RH	
9	Power Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	-65°C~ 200°C	
10	Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020		-65°C~ 200°C	
11	High Temperature Operating Life 1	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION	/	-100°C~	

		FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020		400°C	
12	High Temperature Operating Life 2	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	-100°C~ 400°C	
13	Low Temperature Operating Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	Duration 500 h at Tambient = min	
14	Physical Dimension	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	(X/Y/Z)200 ×100× 100mm;	
15	Wire Bond Pull	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	0~10kg	
16	Wire Bond Shear	FAILURE MECHANISM BASED	/	0~100kg	

		STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020			
17	Die Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	0~100KG	
18	Resistance to Solder Heat	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	Reflow: Room Temperature ~300°C; Dip Welding: Room Temperature ~300°C	
19	Solderability	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	Reflow: Room Temperature ~300°C; Dip Welding: Room Temperature ~300°C Magnification: 10X~50X	
20	External Visual	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC	/	0~40X	

		SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020			
21	Electrostatic Discharge Human Body Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	(MK. 4) Range : ±25~ ±8000V; Channel: 2304;	
22	Electrostatic Discharge Charged Device Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	(Orion3) Range: ±25~ ±2000V;	
23	Constant Acceleration	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	15000g	
24	Vibration Variable Frequency	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	20 Hz to 2 KHz to 20 Hz; in >4 minutes, 4X in each orientation , 50 g peak acceleratio n.	

		25	Mechanical Shock	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	Y1 plane only, 5 pulses, 0.5ms duration, 1500g peak acceleration	
		26	Hermeticity	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR OPTOELECTRONIC SEMICONDUCTORS IN AUTOMOTIVE APPLICATIONS AEC-Q102-Rev-A April 6, 2020	/	(310~517) kPa, Leak test: $\leq 10^{-4}$ (Pa·cm ³)/s	
4	Multichip Modules (MCM)	1	Visual inspection (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	(1~100) X	
		2	Temperature cycling (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	-65°C~150°C	
		3	Bake out (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS	/	125°C~130°C	

		AEC-Q104-REV-September 14, 2017			
4	Moisture Soak (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	30°C~85°C、 60%RH~ 85%RH	
5	Reflow (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	TP: 220°C~ 260°C	
6	Biased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Temperature : 105°C ~132°C; Humidity: 75~100%RH;	
7	Unbiased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Temperature : 105°C ~132°C; Humidity: 75~100%RH;	
8	Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN	/	-65°C~ 150°C	

		AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017			
9	Power Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	-65°C~ 150°C	
10	High Temperature Storage Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	125°C~ 200°C	
11	High Temperature Operating Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	+85°C~ +150°C	
12	Early Life Failure Rate	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	+70°C~ +175°C	
13	Wire Bond Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP	/	0~10kg	

		MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017			
14	Wire Bond Pull	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Limit: ±0.05kgf; Test force: ±0.5gf"	
15	Solderability MCM External Leads	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Temperature range: Room Temperature ~300°C, ± 2°C	
16	Physical Dimensions	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	(X/Y/Z)200 ×100× 100mm;	
17	Solder Ball Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	0~100kg	
18	X-Ray	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION	/	Tube voltage: >	

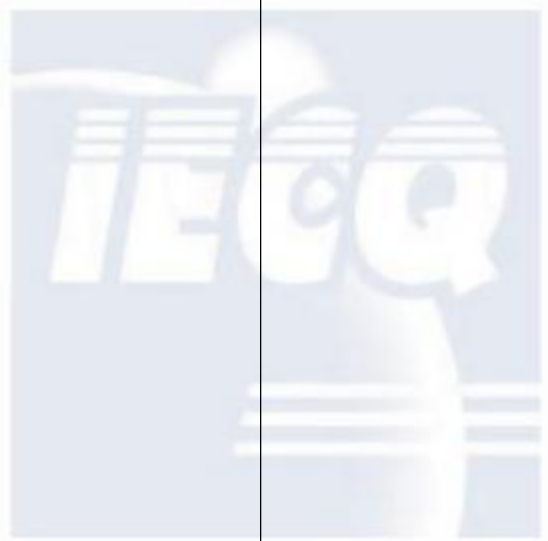
		FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017		50kV Magnificati on: 2X~1800X	
19	Acoustic Microscopy	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	C scan range maximum: 430×430mm	
20	Pre- and Post-Stress Function/Parameter	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Digital integrated circuit: 2048 digital channels、 Per pin vector memory 112MB、 Overall Timing Accuracy±3 6ps、 Max data rate 16Gbps	
			/	Analog integrated circuit: voltage/cur rent source:	

					±3000V/±50 0A Minimum resolution: 0.5μV, 10fA	
					/	Mix signal integrated circuit: 16 bits/1Gsps DAC、12 bits/1.2GHz ADC static parameters and dynamic parameters
					/	Radio frequency integrated circuit: above 40GHz (up to 110GHz)
21	Electrostatic Discharge Human Body Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	(MK. 4) Range : ±25~ ±8000V; Channel: 2304;		
22	Electrostatic Discharge Charged Device Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS	/	(Orion3) Range: ±25~ ±2000V;		

		AEC-Q104-REV-September 14, 2017			
23	Mechanical Shock	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Y1 plane only, 5 pulses, 0.5ms duration, 1500g peak acceleration	
24	Variable Frequency Vibration	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	20 Hz to 2 KHz to 20 Hz; in >4 minutes, 4X in each orientation, 50 g peak acceleration.	
25	Constant Acceleration	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	5000g~30000g	
26	Gross/Fine Leak	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	310 kPa~517kPa Leak rate: ≤10 ⁻⁴ (Pa·cm ³)/s	
27	Mechanical Shock Cavity Device	FAILURE MECHANISM BASED	/	Drop part on	

	Drop	STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017		each of 6 axes once from a height of 1.2m onto a concrete surface. This test is for MEMS cavity devices only.	
28	Die Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	0~100kg	
29	Internal Water Vapor	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	(0.01-20) cc; ±100ppm	
30	Low Temperature Storage Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Temperature range: -80°C ~150°C, 20°C~150°C Heat up time≤25min 20°C~-70°C	

						Cooling time≤55min	
		31	MCM Drop Test	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Drop part on each of 6 axes once from a height of 1.2m onto a concrete surface. This test is for MEMS cavity devices only.	
		32	X-ray	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	Tube voltage: > 50kV Magnification: 2X~1800X	
		33	Acoustic Microscopy	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MULTICHIP MODULES (MCM) IN AUTOMOTIVE APPLICATIONS AEC-Q104-REV-September 14, 2017	/	C scan range maximum: 430×430mm	
5	Passive components	1	Pre-and Post-Stress Electrical Test	STRESS TEST QUALIFICATION FOR	/	$R 1.0 \times 10^6 \sim 1.6 \times 10^{12} \Omega$; test	

			<p>PASSIVE COMPONENTS</p> <p>AEC-Q200 REV D June 1, 2010 Table2~ Table14</p>		<p>voltage: 10V~1000V</p>	
					<p>test voltage: AC 500V~5000V DC 500V~ 10000V</p>	
					<p>voltage 200V、 500V; Curren t 0.3 μ A~ 100 μ A 0.3mA~30mA</p>	
					<p>frequency: 1MHz~3GHz, L: 0.01nH~ 99.9999kH, Q: 0.01~ 99999.9 10 μ Ω ~ 100k Ω</p>	
2	High Temperature Exposure	STRESS TEST QUALIFICATION	/	20°C ~ 300°C		

		FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14			
3	Temperature Cycling	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	-65℃~ 150℃	
4	Destructive Physical Analysis	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	Magnifying power: 360 ×	
5	Moisture Resistance	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	-40℃~ +150℃; 25~ 98%RH	
6	Humidity Bias	STRESS TEST	/	temperature	

			<p>QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14</p>		<p>: -20℃、 20℃、40℃、 65℃、85℃、 105℃、 150℃、 Humidity: 20℃ 50%RH、 20℃ 98%RH、 40℃ 93%RH、 65℃ 25%RH、 85℃ 98%RH</p>	
7	High Temperature Operating Life		<p>STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14</p>	/	<p>Voltage: 20V、40V、 60V、80V、 100V; current: 1A、3A、5A; source ;load; ripple wave</p>	
					DC: 600V/1A	
					DC: 3000V/0.5A	

8	External Visual	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	Instrumental error: X/Y axis 0~ 100mm	
9	Physical Dimensions	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0 ~maximum range Instrumental error: X/Y axis 0~ 100mm	
10	Terminal Strength	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0 ~maximum range (push,pull) weight: / time:1s~1h	
11	Resistance to Solvent	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1,	/	time:1s~1h	

			2010 Table2~ Table14		
12	Mechanical Shock		<p>STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14</p>	/	<p>Peak value: 50~1500g; duration of pulse:0.5~ 30ms; wave: Half-sine、 final peak sawtooth; range: 16inch× 16inch</p>
13	Vibration		<p>STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14</p>	/	<p>5Hz~ 3000Hz, Peak value:76g</p> <p>Maximum thrust: 400kgf,</p> <p>Maximum displacemen t: 25.4mmp-p</p>

				Maximum load: 50kg	
14	Resistance to Solder Heat	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	temperature : 235℃、 245℃、 260℃、288℃	
15	Thermal Shock	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	20℃~300℃	
16	ESD	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	AD/DC	
				voltage:0~ 30kV	
17	Solderability	STRESS TEST QUALIFICATION FOR	/	temperature : 235℃、 245℃、	

		PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14		260℃、288℃	
18	Electrical Characterization	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	-70℃、 -20℃、 -10℃、55℃、 130℃、150℃	
19	Flammability	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	butane, flame height:12mm	
20	Board Flex	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	force:500N、 1000N、 2000N、 3000N、 4000N、4500; velocity:2、 5、10、20、 50、100、250	

				mm/min	
21	Terminal Strength (SMD)	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0 ~maximum range (push,pull) time:1s~1h	
22	Beam Load	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0 ~maximum range (push,pull)	
23	Flame Retardance	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	60V/400A voltage :20 0A/120A: 10 ~80V 60A: 20~ 160V; current: 10~200A 10~120A 5~60A;	

					source ;load;ripple wave	
24	Rotation Life	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	velocity: 0~ 80times/min ; angle:0° ~ 360° ; torque: 0~ 0.8Nm		
25	Surge Voltage	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	Voltage: 20V、40V、 60V、80V、 100V; current: 1A、3A、5A; source ;load;ripple wave		
				DC: 600V/1A		
				DC: 3000V/0.5A		

26	Salt Spray	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	temperature : 30℃~ 45℃; Salt Spray: 1~ 2ml/80cm2 h	
27	Shear Strength	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	Maximum tolerance: ±0.05kgf	
				pull: ± 0.5gf"	
28	Short Circuit Fault Current Durability	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0~500V, accuracy: 0.1%	
				0~875A accuracy: 0.2%	
29	Fault Current Durability	STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1,	/	0~500V, accuracy: 0.1%	
				0~875A accuracy:	

			2010 Table2~ Table14		0.2%	
30	End-of-Life Mode Verification		STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0~500V, accuracy: 0.1%	
					0~875A accuracy: 0.2%	
31	Jump Start Endurance		STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1, 2010 Table2~ Table14	/	0~500V, accuracy: 0.1%	
					0~875A accuracy: 0.2%	
					bandwidth:5 00MHz, sample rate: 2.5GS/s	
32	Load Dump Endurance		STRESS TEST QUALIFICATION FOR PASSIVE COMPONENTS AEC-Q200 REV D June 1,	/	0~500V, accuracy: 0.1%	
					0~875A accuracy:	


				2010 Table2~ Table14		0.2%	
						bandwidth:500MHz, sample rate:2.5GS/s	
6	Micro Electro-Mechanical System(MEMS) Pressure Sensor Devices	1	PrHTOL	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MICRO ELECTRO-MECHANICAL SYSTEM(MEMS) PRESSURE SENSOR DEVICES AEC-Q103-002 REV D March 1, 2019	/	-0.1 MPa ~20 Mpa, accuracy: 0.01%; -55°C ~150°C	
		2	PrLTOL	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MICRO ELECTRO-MECHANICAL SYSTEM(MEMS) PRESSURE SENSOR DEVICES AEC-Q103-002 REV D March 1, 2019	/	-0.1 MPa ~20 Mpa, accuracy: 0.01%; -55°C ~150°C	
		3	BPr	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR MICRO ELECTRO-MECHANICAL SYSTEM(MEMS) PRESSURE SENSOR DEVICES AEC-Q103-002 REV D March 1, 2019	/	-0.1 MPa ~20 Mpa, accuracy: 0.01%;	
		4	PPr	FAILURE MECHANISM BASED	/	-0.1 MPa ~20	

		STRESS TEST QUALIFICATION FOR MICRO ELECTRO-MECHANICAL SYSTEM(MEMS) PRESSURE SENSOR DEVICES AEC-Q103-002 REV D March 1, 2019		Mpa, accuracy: 0.01%;	
5	Visual inspection (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	1X~100X	
6	Temperature cycling (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	-65℃~ 150℃	
7	Bake out (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	125℃~ 130℃	
8	Moisture Soak (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS	/	30℃~85℃、 60%RH~ 85%RH	

		IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023			
9	Reflow (Preconditioning)	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	TP: 220°C ~ 260°C	
10	Biased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Ta: 105°C ~ 132°C; 75 ~ 100%RH;	
11	Unbiased HAST	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Ta: 105°C ~ 132°C; 75 ~ 100%RH;	
12	Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS	/	-65°C ~ 150°C	

		AEC-Q100-REV-J August 11. 2023			
13	Power Temperature Cycling	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	-65°C ~ 150°C	
14	High Temperature Storage Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	125°C ~ 200°C	
15	High Temperature Operating Life	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	+85°C ~ +150°C	
16	Early Life Failure Rate	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	+70°C ~ +175°C	

17	Wire Bond Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~100kg	
18	Wire Bond Pull	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~10kg	
19	Solderability	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Temperature range: Room Temperature ~300°C, ± 2°C	
20	Physical Dimensions	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	(X/Y/Z)200 × 100 × 100mm;	
21	Solder Ball Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICATION	/	0~100kg	

				FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023		
		22	Pre- and Post-Stress Function/Parameter	 FAILURE MECHANISM BASED STRESS TEST QUALIFICATION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Digital integrated circuit test capacity: 2048 digital channels, Per pin vector memory 112MB, Overall Timing Accuracy \pm 36ps、Max data rate 16Gbps
						Analog integrated circuit test capacity: voltage/cur rent source: \pm 3000V/ \pm 500A Minimum

				resolution: 0.5 μ V, 10fA	
				Mix signal integrated circuit test: 16 bits/1Gsps DAC、12 bits/1.2GHz ADC static parameters and dynamic parameters	
				Radio frequency integrated circuit: above 40GHz (up to 110GHz)	
23	Electrostatic Discharge Human Body Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	(MK. 4) Range : $\pm 25 \sim \pm$ 8000V; Channel: 2304;	
24	Electrostatic Discharge Charged Device Model	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS	/	(Orion3) Range: \pm 25 \sim \pm 2000V;	

		AEC-Q100-REV-J August 11. 2023			
25	Mechanical Shock	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Y1 plane only, 5 pulses, 0.5ms duration, 1500g peak acceleratio n	
26	Variable Frequency Vibration	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	20 Hz to 2 KHz to 20 Hz; in >4 minutes, 4X in each orientation , 50 g peak acceleratio n.	
27	Constant Acceleration	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	5000g~30000 g	
28	Gross/Fine Leak	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August	/	310~517kPa Leak rate: $\leq 10^{-4}$ (Pa · cm ³) /s	

			11. 2023			
29	Package Drop	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	Drop part on each of 6 axes once from a height of 1.2m onto a concrete surface. This test is for MEMS cavity devices only.		
30	Die Shear	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	0~100kg		
31	Internal Water Vapor	FAILURE MECHANISM BASED STRESS TEST QUALIFICAION FOR INTEGRATED CIRCUITS IN AUTOMOTIVE APPLICATIONS AEC-Q100-REV-J August 11. 2023	/	(0.01-20) cc; ±100ppm		