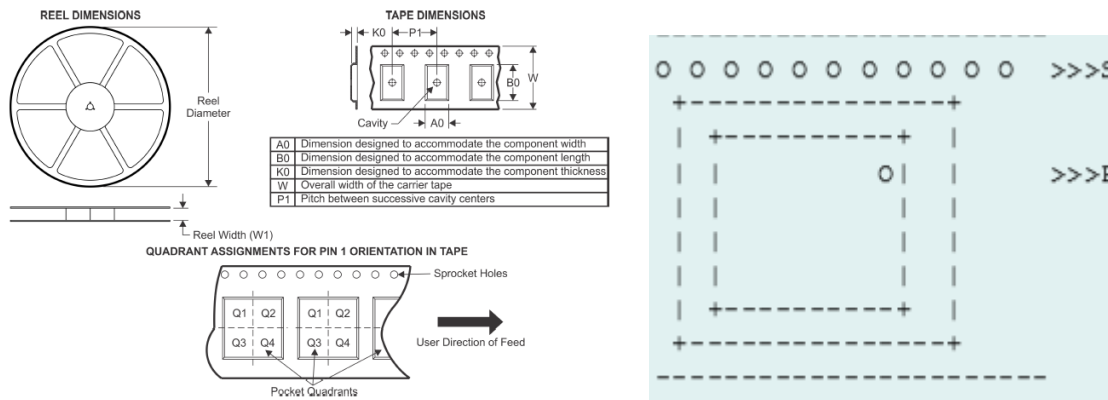


物料编码 Part number	供应 商名 称 Suppli er Name	物料信息 Info of material				最小包装信息 Info of inner packing					
		包装 方式 Packin g type	料带宽度 Width of tape (MM)	开孔 方式 Feedin g hole type	物料步 距 Feedin g step (MM)	内 装 数 量 Qty	毛重 Gross weight (KG)	包装 件 长 Leng th (MM)	包 装 件 宽 Wid th (M M)	包 装 件 高 Hig ht (M M)	包装 材质 Mate rial
TUSB544 RNQR	TI	tape reel	12		8	30 00		367	367	35	PIZZA BOX



Marking picture	vendor Name (供应商名称)	Part No. (器件型号)	Marking Rule (丝印规则)
TUSB544 TI YMS LLLL G4	TI	TUSB544RNQR	丝印 TUSB544 代表型号，通过识别本体丝印 TUSB544 可判定物料正确 the marking " TUSB544" represents the device name, by identifying units marking TUSB544 correctly to determine device

TI Part	*拆分部位名称 Disassembly Unit/component description	*均质材料名称 Homogeneous Material Name.	物质名称 Substance Name	*CAS No.	*物质重量 Substance Mass. (mg)	Content Rate(%) (均质材 料中的含 量)
TUSB544RNQR	Bond Wire	Copper and Its Alloys	Copper	7440-50-8	0.252898	98.190318
		Nickel and Its Alloys	Nickel	7440-02-0	0.000001	0.000388
		Not Categorized	Proprietary Materials		0.000018	0.006989
		Precious Metals	Palladium	7440-05-3	0.004636	1.799976
		Precious Metals	Silver	7440-22-4	0.000006	0.00233
	Die Attach Adhesive	Precious Metals	Silver	7440-22-4	0.878191	79.999982
		Thermoplastics	Epoxy	85954-11-6	0.219548	20.000018
	Lead Frame	Copper and Its Alloys	Copper	7440-50-8	41.9336	97.52
		Copper and Its Alloys	Iron	7439-89-6	0.989	2.3
		Copper and Its Alloys	Phosphorus	7723-14-0	0.0129	0.03
		Zinc and Its Alloys	Zinc	7440-66-6	0.0645	0.15
	Lead Frame Plating	Nickel and Its Alloys	Nickel	7440-02-0	1.23656	95.12
		Precious Metals	Gold	7440-57-5	0.01014	0.78
		Precious Metals	Palladium	7440-05-3	0.0533	4.1
	Mold Compound	Other Inorganic Materials	Fused Silica	60676-86-0	22.898855	88
		Other Organic Materials	Chlorine	7782-50-5	0.00026	0.001
		Other Plastics and Rubber	Carbon Black	1333-86-4	0.078064	0.299999
		Thermoplastics	Epoxy	85954-11-6	3.044247	11.699001
	Semiconductor Device	Ceramics / Glass	Doped Silicon	7440-21-3	2.428802	100

类别 Category	需求项目 Requirement Items	供应商反馈 Vendor 's Feedback
基本信息 General Information	供应商名称 Supplier Name	TI
	器件型号 Device Part Number	TUSB544RNQR
晶圆信息 Wafer related Information	晶圆代工厂信息，工艺类别和工艺节点 Wafer fab information, process type and node	FFAB
	芯片尺寸（长*宽*高） Die Size (Length*Width*Height)	Can't provide
	复杂度： To get failure rate per SR332 Complexity (transistor or gate number): To get failure rate per SR332	NA
	该晶圆工艺已经使用多长时间 Number of year/months since this wafer process was qualified and released to production.	Mature
	有多少个产品已经使用了该晶圆工艺 How many of your products have been applied with this wafer process?	>500
	客户已使用的同晶圆族器件（同工艺技术、同工厂） Is there any part from the same wafer process family have been used in customer? If yes, please list the part number.	YES
	晶圆工艺制程能力（SPC） Wafer Process Capability(SPC)	Meet customer request
	是否存在 Cpk<1.33 的制程监控参数？如有，请列出该监控参数及其改进计划。 Is there any wafer process CPK<1.33? If yes, please list it and provide the improvement plan.	NO
	芯片 ID Chip ID:Do you have chip ID or die ID for this device?	NO
封装信息 Assembly related Information	封装代工厂，封装类型 Assembly Factory, Package type	CDAT QFN
	封装尺寸（长*宽*高） Package Size (Length*Width*Height)	4x6x0.8mm

焊球/引脚间距 Ball/Lead pitch		0.4MM
客户已使用的同封装族器件（同封装技术、同封装厂） Is there any part from the same package family have been used in customer? If yes, please list the part number.		YES
划片工艺 Wafer cutting method		NA
键合工艺 Wire Bonding (Only for Wire Bonding Package)	键合线成分 Wire composition	Cu
	键合线直径 Wire diameter	1.0mil
BGA 基板工艺信息 Substrate Information (Only for BGA package)	基板供应商 Substrate vendor	NA
	基板工艺 Substrate technology	NA
	基板金属层数 Substrate metal layers	NA
BGA 倒装内焊球制作工艺 Flip Chip Bumping, for BGA package (Only for Flipchip Package)	内焊球供应商 Bumping vendor	NA
	内焊球工艺 Bumping Technology	NA
	内焊球材料成分 Bump material composition	NA
	内焊球直径和间距 Bump diameter,Bump pitch	NA
	内焊球的空洞指标 The Specification/criteria of bump void	NA
	焊球电迁移测试结果 Bump Electromigration test result, required for SnPb bump only	NA
BGA 倒装底部填充工艺 Flip Chip Underfill, for BGA package (Only for Flipchip Package)	Underfill 材料型号, Tg 温度(玻璃化转变温度) Underfill Part Number, The glass transition temperature of	NA

		Underfill	
		底部填充的空洞指标 The Specification/criteria of underfill void	NA
	封装工艺制程能力（SPC） Assembly Process Capability(SPC)		Meet customer request
	是否存在 Cpk<1.33 的制程监控参数？如有，请列出该监控参数及其改进计划。 Is there any assembly process CPK<1.33? If yes, please list it and provide the improvement plan.		NO
器件基本规格 General Specification	工作寿命 Operating Lifetime at max Tj		Not shared
	非易失存储器擦写次数 Nonvolatile memory erase times		N/A
	工作温度范围 Range of Operation Temperature （Ta, Tj or Tc）		-0~70C
	存储温度范围 Storage Temperature range		-65 ~ 150C
	存储期限 Storage limit		1years at customer side
	最大结温 Max.Junctioin Temperature		NA

	最大功耗 Max. Power Dissipation		NA
	早期失效率 EFR, Early Failure Rate, FIT		-
	长期失效率 IFR, Intrinsic Failure Rate, FIT		1.5FIT@60%CL
	器件反复上下电次数规格 The number of power cycle which component can endure		NA
	潮湿敏感等级 MSL, Moisture Sensitive Level		MSL 2
	封装热阻 Theta ja, jc and jb	Θja	37.6 °C/W
		Θjc	20.7 °C/W
		Θjb	9.5 °C/W
	ESD (HBM、CDM, for all pin)	HBM	6000
		CDM	1500
软失效相关 Soft Error related	抗闩锁能力 Latch-Up (At max. Ambient Temperature)		Meet qual test requirement
	RAM 大小 RAM size		NA
	软失效率(SER, 仅限于有 RAM 结构器件) Soft Error Rate, Only for RAM & Flip Flop structure device	with ECC	NA
		without ECC	NA

	是否使用超低 α 放射性的晶圆和封装材料，如果不是，请列出各种辐射材料及其辐射强度 Does ultra-low-alpha (<0.002 cph/cm²) material have been used? If No, pls list the emission material and its emission rate(counts per hour per cm²). [Only for RAM & Flip Flop structure device]	NA
测试相关 Testing related	Test Factory	CDAT
	电测试故障覆盖率(For Stuck at, Transition fault, Path-delay fault respectively) ATE fault coverage rate(For Stuck at, Transition fault, Path-delay fault respectively)	NA
		NA
		NA
		NA
		NA
	漏电流测试门限 leakage test limits	Can't provide
机械应力相关 Mechanical stress related	短期机械压力规格 Transient compressive load limit: To measure of BGA crushing potential or die crack potential;	NA
	长期机械压力规格 static compressive load force limit: To measure of BGA crushing potential or die crack potential;	NA
	短期弯曲应变规格 Short-term Bending Strain (ue)	NA
	长期弯曲应变规格 Long-term Bending Strain (ue)	NA
	三点弯 Three dot bend (Only For WLCSP)	NA
	盖子扭力 lid toeque limit (Only for Lid Package)	NA

	盖子拉力 lid pull limit (Only for Lid Package)	NA
	表面粘接能力 TIM adhesive strength	NA
可靠性认证 Reliability Qualification	新工艺或新设计器件的可靠性或寿命极限测试数据 If the chip is new process or new design, And some Lifetime limit test (Test to fail or beyond JEDEC standard) had been down. Please specify the test condition and result detailly.	NO
	晶圆可靠性认证报告 Wafer reliability Qualification Report, including: TDDb, HCI, NBTI, PBTI, EM, SM .etc	YES
	封装可靠性认证报告 Package Qualification Report, including: PC, THB, HAST, UHAST, HTSL, TC, BLTC, DT, Bend, PDT, PVT .etc	See TI.com qual report
	器件可靠性认证报告 Device Qualification Report, including: ELFR, HTOL, LTOL, ASER, SSER, ESD-HBM, ESD-CDM, LU .etc	See TI.com qual report
	器件量产应该进行可靠性试验监控，请提供最新的可靠性监控报告 The device should be done reliability monitoring. Please provide the latest Reliability Monitoring Report, including: PC, THB, HAST, UHAST, TC, HTSL, HTOL .etc	NA
	含 RAM 结构的器件的软失效认证报告 Soft Error Qualification Report (Only for RAM & Flip Flop structure device)	N/A

	性能报告 Characterization report, follow JESD86	Can't provide
建议或要求 The suggestion and requirement	对客户应用的建议或要求（质量和可靠性维度） The suggestion and requirement to customer (From Quality and Reliability Point of view): Please specify the suggestions and requirements.	N/A

器件信息 Component information				调查结果 Investigation Result	
器件俯视图、底视图 Top view photo、bottom view photo				请在表格右侧位置，粘贴对应的器件图片 Device supplier stick a Top view and a bottom view in the right form	
引脚/端子材料 Materials of Lead / termination	非面阵列器件 Non grid array components	表面镀层 Surface plating/ coating material	材料成分 Composition	NIPDAU	
			厚度(μm) Thickness(μm)	Confidential	
			制作工艺 (选填) Plating/coating process (optional)	其它 Other(please specify):	
		阻挡层/ 中间层 Barrier layer/intermediate layer	如果没有该层请选择 NA please click here if without this layer		
			材料成分 Composition		
			厚度(μm) Thickness(μm)		
		第三层 The third layer	如果没有该层请选择 NA please click here if without this layer		
			材料成分 Composition		

			厚度(μm) Thickness(μm)	
		引脚基体材料 Basic metal		Cu
元器件封装 Package	封装遵循的标准 Package standard			JEDEC
				其它 other(please specify):
	表贴元器件 /SMD	元器件重量 Weight of component (g)		0.0741
		元件重量/贴片吸取面积是否 ≤0.06g/mm2 Weight/ available P&P area ≤ 0.06g/mm2		是 Yes 如果不满足，请给出具体值: If not, give the actual data:
		共面度 coplanarity	整个回流过程中共面度（三个引脚、焊端及其以上适用 /mm） coplanarity during reflow process	refer to datasheet
		热变形 warpage	LGA 器件动态变形数据，其他封装器件可不填 Warpage(RT-220C-260C-220C-RT)	NA
		0201、0402 元件焊端尺寸要求 soldering terminal size of 0201 and 0402 component	0201、0402 器件（同一器件）两焊端长度（实际长度）差值不超过底部焊端长度标称值的 50% The difference of two soldering	是 Yes

			terminal size is less than 50% of the length of soldering terminal(normal value of bottom side)	
		1 脚标识 Mark point	器件上表面 MARK 信息是否有方向性标志点 (例如“1”引脚标志)? Is there any Mark point in the top side of component?	是 Yes
			器件表面方向性标志点是否唯一?(如果不唯一请附图说明标志点与引脚对应关系。) Is the mark point sole? (if not, pls. give the relationship between mark and terminals)	是 Yes
			器件资料是否明确标注引脚位置号? Is there any specific location number of terminals in the component	是 Yes

			specification?	
			方向性器件在 AOI 上实际确认，需要设备能识别器件极性 component orientation can be Identified by mounting machine or AOI?	是 Yes
		密封性 seal	器件底部/焊端附近是否存在助焊剂渗入导致器件功能不良的孔或缝隙？ Is there any hole or gap in package body, flux enter pacakage inside form the hole or gap, resulting in function fail	无孔或缝隙，密实性好 Yes
		器件本体的裸露非绝缘体（非焊接位置的金属/半导体等） exposed Non-insulator on component body	非焊接位置，是否存在裸露非绝缘体？裸露非绝缘体与邻近焊接引脚是否为同一网络属性？ Whether there exist non-insulator at no	是 Yes

			soldering position. Are non-insulator and adjacent soldering pin the same circuit?	
			所有裸露非绝缘体的尺寸和位置在器件规格书中是否图示标注清楚？ Have Dimension and Position of non-insulator been indicated in component spec.	是 Yes
		MIC	顶部出音孔表面是否有贴膜保护，避免异物进入？ Does film protect sound hole surface?	不涉及 Not mentioned
		气压计或类似封装器件 Barometer and resemble package	器件可见部位是否使用银浆粘胶工艺 dose use Silver Adhesive Technology on Visible part?	不涉及 Not mentioned

		器件侧焊盘总面积 Total soldering joint area	器件侧焊盘总面积（LGA 器件必填，其他器件选填） Total soldering joint area of the component (LGA device is required, other devices are optional)	不涉及
		LGA 面阵列器件载板材料 LGA substrate material		非 LGA 器件 Not mentioned
				其它 other (please specify):
	本体抬高 standoff	带散热焊盘的 QFP QFP with exposed Pad	散热焊盘距离 PCB 的高度 A1 A1: Top distance from the exposed Pad on body to seating plane	不涉及
器件环保要求 requirements of environment compliant	下面所列物质的重量比是否满足 RoHS 要求？ （请参考此调查表的“sheet7 RoHS Compliant”） 铅、镉、汞、六价铬、多溴联苯、多溴二苯醚 Are matters RoHS compliant listed below? (please refer to "sheet7 RoHS Compliant" in this file) Lead, Cd, Hg, Cr VI, PBB, PBDE Lead-free			是 Yes
	是否无卤 Halogen-free			是 Yes
元器件存储、包装、湿敏等级 Storage, packing MSD	存储 Storage	相对湿度（%） Relative humidity (%)	≥20%&≤70%	
			其它 other (please specify):	
		温度（℃） Temperature (℃)	≥-10℃&≤35℃	
			其它 other (please specify):	
		可存储期限（月）		Follow MSL rating rules Allowed 1 year stored at customer

		Maximum storage time (month)	<i>side</i>
	包装 Packing	表贴元器件包装类型 Packaging type	<i>卷带包装 tape and reel</i> <i>其它 other(please specify):</i>
		器件 pin1 脚标识在包装中的位置（见右图 2） Position of component pin 1 in packing（see right figure 2）	<i>figure ②</i>
		料带或 Tray 盘高度（H）,见右图 3 Packaging height(H),see right figure 3	<i>1.1</i>
		包装宽度（W）,见右图 3 Packaging width(W),see right figure 3	<i>12mm</i>
		卷带器件料带步距:P1 component pitch:P1	<i>8mm</i>
		防静电包装 ESD packaging	<i>是 Yes</i>
		镀银器件是否采用防硫包装 Anti-sulfur packaging (Required for components with Ag plating)	<i>非银镀层, 不涉及 not mentioned</i>
		镀银器件的包装袋上面是否有 Ag 标示? Whether Ag logo printed on the packaging.	<i>非银镀层, 不涉及 not mentioned</i>
		能否满足: 料带包装中侧翻率 $\leq 0.05\%$ Rollover rate $\leq 0.05\%$ in packing	<i>是 Yes</i>
		能否满足: 卷带包装, 器件在料槽旋转角度是否小于 10° Maximum component rotation	<i>是 Yes</i>

		for punched $\leq 10^\circ$	
		能否承受：托盘包装 125℃/24 小时的烘烤条件 tray packing Baking conditions: 125℃@24h	是 Yes
		能否承受：卷带包装 40℃/192 小时的烘烤条件 reel tape packing Baking conditions: 40℃@192h	是 Yes
		卷带包装是否符合 EIA 481 标准?	EIA
		can reel tape packing meet EIA 481 standard?	其它 other(please specify):
	潮湿敏感元器件 MSD	潮湿敏感等级 MSL	2
		受潮后的烘烤要求是否满足 J-STD-033? Baking requirement if moisture meets J-STD-033?	是 Yes
		潮敏等级在 2 级及 2 级以上，潮敏防护必须包含：潮敏指示卡、干燥剂、潮敏等级标识等 Moisture sensitive level at level 2 and level 2 above, moisture sensitive protection must include: moisture sensitive indicator card, desiccant, moisture sensitive grade logo	是 Yes
组装工艺 Assembly process	手工焊接参数 Manual soldering parameters recommended	能否满足：烙铁空载实测温度 400℃，每个引脚焊接时间 ≥ 5 秒。或者热风枪加热，器件本体温度达到 340℃ 以上时间 ≥ 10 S。按照上述方法实现焊接后，器件外观要无损伤，电气性能要满足要求 manual soldering conditions: soldering iron tip temperature 400℃，time ≥ 5 s。 Or hot gun temperature 340℃，time ≥ 10 s	是 Yes
			如无法满足，请填写实际规格: If not, please specify:
	推荐的返修参数（选填）	返修方法 Repair method	
			其它 other(please specify):

	Repair method and parameters recommended (optional)	可返修次数 rework times	请选择 <i>please click here</i>
		返修温度和时间 Repair temperature and time	温度 <i>temperature(°C)</i> : 时间 <i>time(s)</i> :
	耐热性 Heat Resistance	是否满足：能承受的回流焊接次数 ≥ 3 次 Maximum soldering times ≥ 3	是 <i>Yes</i>
			如无法满足，请填写实际规格： <i>If not, please specify:</i>
		针对表贴器件，其耐温性是否满足 J-STD-020D 要求？（重点关注耐温性和回流曲线分级两部分，即表 4-1, 4-2 和 5-2，请参考此调查表“sheet6 J-STD-020D”） Can heat resistance of SMT components meet JSTD020D. (should focus on the classification of temperature and reflow profiles, that is table 4-1, 4-2 and 5-2, please refer to sheet6 J-STD-020D in this file)	是 <i>Yes</i>
	是否满足：表贴器件中心能承受的贴片压力 $\geq 2N$ Maximum pick-and-place pressure (N)		是 <i>Yes</i>
	焊接加工特殊要求 Other requirements	器件的焊接加工和设计要求是否已经全部写入器件规格书？ Whether the welding process and design requirements of component have all written to the component specifications	是 <i>Yes</i>
			如有设计要求，请在此说明
		器件规格书中提供的焊盘及钢网设计（包括钢网厚度）是否为强制要求？ Whether Pad & stencil design as Mandatory requirements in component spec?	推荐 <i>recommended</i>
		器件对回流焊升温斜率和降温斜率是否有特殊要求？客户采用 J-STD-002D 标准 Whether the device has special requirements for the reflow temperature ramp-up rata and ramp-down rata? Customer follow J-STD-002 standard	无 <i>No</i>
			如有其他特殊要求，请在此说明

		器件规格书中有无其他强制要求？ Are there other mandatory requirements in component spec?	无 No
			如有其他强制要求，请在此说明
测试报告 Test Report	无铅器件锡须测试报告 Tin whisker test report for lead-free components	当表面镀层为暗锡（Matte Sn）或锡铜合金（SnCu），且引脚/焊端 pitch $\leq$ 0.5mm 时必须进行该测试。测试根据标准 JESD22- A 121.01 进行，结果需要满足标准 JESD201A 中 Class 2 要求（请参考此调查表“sheet3 JESD201A”）。 The test shall be done when the lead pitch is $\leq$ 0.5mm with the surface plating of Sn(matte) or SnCu. Tin whisker shall be tested per JESD22- A 121.01, and the result must meet the demand of Class 2 in JESD201A (please refer to sheet3 JESD201A in this file).	不涉及 Not mentioned
			添加报告 please add test report here
	可焊性测试报告 Solderability test report	可焊性测试除测试温度、使用助焊剂和锡膏按照下列要求执行外，其余条件及方法根据 J-STD-002D 标准执行，并提供测试报告。 待测试样品需先做老化预处理，化学锡镀层使用 155℃烘烤 4 小时预处理方式，非化学锡镀层使用蒸汽老化 8 小时预处理方式。 1.焊料温度 可焊性检测时焊料的温度维持在 245℃ $\pm$ 5℃。 2.锡膏 无铅测试锡膏成分应该为 Sn96.5/Ag3.0/Cu0.5 (SAC305)。锡膏采用 ROLO 型，锡粉 4 号粉或者 5 号粉。 3.焊剂 可焊性测试采用非活性天然松香基液体焊剂，型号为 ROLO。 Solderability shall be tested per J-STD-002D and the report must	是 Yes
			添加报告 please add test report here

		be offered, some special demands are required as below: The samples to be tested shall be pretreated, immersion tin coated is baked at 155 °C for 4 hours, and non-immersion tin coated is pretreated by steam for 8 hours. - soldering temperature 245°C±5 °C for lead-free - solder paste the composition of solder paste must be Sn96.5/Ag3.0/Cu0.5 (SAC305) for lead-free. The type of solder paste must be ROL0, type4 or 5. - flux the flux must be a non-active rosin flux, type ROL0.	
	耐熔蚀性测试报告（针对有引脚器件） Resistance to dissolution of metallization report(for lead components)	耐熔蚀性测试除测试温度、时间、使用助焊剂和锡膏按照下列要求执行外，其余条件及方法根据 J-STD-002D 标准执行，并提供测试报告。 - 焊料温度 可焊性检测时焊料的温度维持在 245°C±5 °C。 - 锡膏 对于无铅测试锡膏成分应该为 Sn96.5/Ag3.0/Cu0.5 (SAC305)。锡膏采用 ROL0 型，锡粉 4 号粉或者 5 号粉。 - 焊剂 可焊性测试采用非活性天然松香基液体焊剂，型号为 ROL0。 - 测试时间 表贴器件引脚在熔融焊料内的停留时间为 120±5s。 Solderability shall be tested per J-STD-002 and the report should be offered, some special demands are required as below: - soldering temperature 245°C±5 °C for lead-free - solder paste	<i>无引脚器件 Not mentioned</i> <i>添加报告 please add test report here</i>

		the composition of solder paste must be Sn96.5/Ag3.0/Cu0.5 (SAC305) for lead-free. The type of solder paste must be ROL0, type4 or 5. 3. flux the flux must be a non-active rosin flux, type ROL0. 4. The SMT components leads should stay 120±5s.	
	工艺板级可靠性测试报告 Board level reliability test report		否 No
			添加报告 (选填) please add test report here (optional)

Stress	Reference	Min Lot Qty	Sample Size / Lot	Condition	Duration	Result
TC	JESD22-A104	3	25	Temperature Cycle -65/150C	500 Cycles	PASS
AC/UHAST	JESD22-A102/JESD22-A118	3	25	Autoclave 121C or Unbiased HAST 130C / 85% RH	96 Hours	PASS
HTSL	JESD22-A103	3	25	High Temp Storage Bake 150C	1000 Hours	PASS
THB/HAST	JESD22-A101/JESD22-A110	3	25	THB 85C/85%RH or HAST 130C/110C /85%RH	1000 Hours or 96 Hours	PASS
CDM	JESD22-C101	1	3	ESD - CDM	Classification	See datasheet
HBM	JS-001	1	3	ESD - HBM	Classification	See datasheet
HTOL	JESD22-A108	3	77	Life Test, 125C	1000 Hours	PASS
LU	JESD78	1	3	Latch-up	Per JESD78	PASS
MSL	JEDEC J-STD-020E			Per JEDEC J-STD-020E	Classification	See datasheet