



Reliability Report

Report Title: Reliability Data for Discrete Packages at UT3 Qualification

Report Number: 20152

Revision: A

Date: 22 September 2022

Summary

This report documents the available reliability data to qualify the discrete packages (SC70, SOT23 and TSOT) at UTAC Thailand (UT3).

Table 1: Die/Fab Product Characteristics

Product Characteristic	Product used for Substitution Data					
Generic/Root Part #	MAX5383EZT+T	MAX8877EZK+	MAX8863TEUK+	MAX4714EXT+T	MAX8881EUT18+T	MAX9618AXA+T
Die Id	DA78Y	PX50Y	PW84W	AH80Z	PY17X-1Z	OY41Z

Table 2: Package/Assembly Product Characteristics

Product Characteristic	Products used for Substitution Data					
Generic/Root Part #	MAX5383EZT+T	MAX8877EZX+	MAX8863TEUK+	MAX4714EXT+T	MAX8881EUT18+T	MAX9618AXA+T
Package	6L-TSOT	5L-TSOT	5L-SOT23	6L-SC70-SP	6L-SOT23	8L-SC70-COL
Body Size (mm)	1.60 x 2.90 x 0.87	1.60 x 2.90 x 0.80	1.60 x 2.90 x 1.15	1.25 x 2.00 x 0.90	1.60 x 2.90 x 1.15	2.20 x 2.40 x 1.10
Assembly Location	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)
MSL/Peak Reflow Temperature (°C)	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C
Mold Compound	Sumitomo G600	Sumitomo G600	Sumitomo G600	Sumitomo G600	Sumitomo G600	Sumitomo G600
Die Attach	Ablestik 84-1LMISR4	Ablestik 84-1LMISR4	Ablestik 84-1LMISR4	Ablestik AB8006NS	Ablestik AB8006NS-2X	Ablestik 2X-8000NS
Leadframe Material	Copper	Copper	Copper	Copper	Copper	Copper
Lead Finish	Matte Sn	Matte Sn	Matte Sn	NiPdAu	NiPdAu	NiPdAu
Wire Bond Material/Diameter (mils)	4N Au / 1.0	4N Au / 1.0	4N Au / 1.0	4N Au / 1.0	4N Au / 1.0	4N Au / 1.0

Table 3: Package/Assembly Test Results

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fails/SS
Solder Heat Resistance (SHR) ¹	J-STD-020	MSL-1	MAX5383EZT+ T	S3JAEA004Q7	0/300
				S3JAEA004Q8	0/300
				S3JAEA004Q9	0/300
			MAX8877EZK+	JM2AGA078Q1	0/300
				JM2AGA078Q2	0/300
				JM2AGA078Q3	0/300
			MAX8863TEUK +	ZVZAGA097Q1	0/150
				ZVZAGA097Q2	0/150
				ZVZAGA097Q3	0/150
			MAX4714EXT+ T	Q3V0AA028Q1	0/250
				Q3V0AA028Q2	0/250
				Q3V0AA028Q3	0/250
			MAX8881EUT1 8+T	D7GBGA037Q1	0/250
				D7GBGA037Q2	0/250
				D7GBGA037Q3	0/250
			MAX9618AXA+ T	SC3ZAQ001Q1	0/250
				SC3ZAQ001Q2	0/250
				SC3ZAQ001Q3	0/250
Solderability	JESD22-B102	Soldering Temp of 245°C, Single Duration	MAX8881EUT1 8+T	D7GBGA037Q1	0/15
				D7GBGA037Q2	0/15
				D7GBGA037Q3	0/15
			MAX4714EXT+ T	Q3V0AA028Q1	0/15
				Q3V0AA028Q2	0/15
				Q3V0AA028Q3	0/15
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	130C 85%RH 33.3 psia, Biased, 100 Hours	MAX5383EZT+ T	S3JAEA004Q7	0/45
				S3JAEA004Q8	0/45

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fails/SS				
			MAX8863TEUK +	S3JAEA004Q9	0/45				
				ZVZAGA097Q1	0/45				
				ZVZAGA097Q2	0/45				
			MAX9618AXA+ T			ZVZAGA097Q3	0/45		
						SC3ZAQ001Q1	0/45		
						SC3ZAQ001Q2	0/45		
						SC3ZAQ001Q3	0/45		
						MAX4714EXT+ T	85°C 85%RH, Biased, 1000 Hours	Q3V0AA028Q1	0/45
								Q3V0AA028Q2	0/45
Q3V0AA028Q3	0/45								
Temperature, Humidity, Bias (THB) ¹	JESD22-A101		MAX8881EUT1 8+T	D7GBGA037Q1	0/45				
				D7GBGA037Q2	0/45				
				D7GBGA037Q3	0/45				
Temperature Cycling (TC) ¹	JESD22-A104	- 65°C/+150°C, 500 Cycles	MAX5383EZT+ T	S3JAEA004Q7	0/77				
				S3JAEA004Q8	0/77				
				S3JAEA004Q9	0/77				
				- 65°C/+150°C, 1000 Cycles	MAX8877EZK+	JM2AGA078Q1	0/77		
						JM2AGA078Q2	0/77		
						JM2AGA078Q3	0/77		
					MAX8863TEUK +	ZVZAGA097Q1	0/77		
						ZVZAGA097Q2	0/77		
						ZVZAGA097Q3	0/77		
					MAX4714EXT+ T	Q3V0AA028Q1	0/77		
						Q3V0AA028Q2	0/77		
						Q3V0AA028Q3	0/77		
					MAX8881EUT1 8+T	D7GBGA037Q1	0/77		
						D7GBGA037Q2	0/77		

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fails/SS
				D7GBGA037Q3	0/77
			MAX9618AXA+ T	SC3ZAQ001Q1	0/77
				SC3ZAQ001Q2	0/77
				SC3ZAQ001Q3	0/77
High Temperature Storage Life (HTSL) ¹	JESD22-A103	150°C, 1000 Hours	MAX5383EZT+ T	S3JAEA004Q7	0/77
				S3JAEA004Q8	0/77
				S3JAEA004Q9	0/77
			MAX4714EXT+ T	Q3V0AA028Q1	0/77
				Q3V0AA028Q2	0/77
				Q3V0AA028Q3	0/77
			MAX8881EUT1 8+T	D7GBGA037Q1	0/77
				D7GBGA037Q2	0/77
				D7GBGA037Q3	0/77
High Temperature Storage Life (HTSL)			MAX8863TEUK +	ZVZAGA097Q1	0/77
				ZVZAGA097Q2	0/77
				ZVZAGA097Q3	0/77

¹These samples were subjected to preconditioning at MSL 1 with 3x reflow peak temp of 260°C prior to the start of the stress test.

Approvals

Reliability Engineer: Jordan Placido

Material Set Change:

Assembly Site	Carsem	UTAC
Wire	1.0 Au	1.0 Au
Die Attach	Hysol QMI519 Ablestik 8006NS	Ablestik 84-1LMISR4 Ablestik 8006NS
Mold Compound	Hitachi CEL8240HF10LX	Sumitomo G600
Plating	100% Matte Sn Pre-plated	100% Matte Sn Pre-plated