QUALIFICATION REPORT SUMMARY

PCN #: GBNG-06LXXH156

Date
March 09, 2018

Qualification of Microchip Fabrication site (FAB 4) for selected Atmel products manufactured with the 59.91K process technology.

Purpose: Qualification of Microchip Fabrication site (FAB 4) for selected Atmel products manufactured with the 59.91K process technology.

CCB No.: 2856

Package and Assembly Materials Information

Table 1: Qualification Vehicle Information QFN32

Category	Material Reference
Device Type	ATMega168
Package Dimension	5 x 5 mm
Package Thickness	0.9mm (Max)
Die Size	2.47mm2
Wire Bond Material	Cu_Pd_Au wire
Leadframe/ Substrate Material	LF Copper
Marking material	Laser Marking
Plating Material	Plating Matt Sn with 1hr@150C annealing
Mold Compound Material	G700LA

Table 2: Qualification Vehicle Information TQFP32

Category	Material Reference
Device Type	ATMega168
Package Dimension	7 x 7 mm
Package Thickness	1.2 mm (Max)
Die Size	2.47mm2
Wire Bond Material	CuPdAu
Leadframe/ Substrate Material	LF Copper C194
Marking material	Laser Marking
Plating Material	Plating Matt Sn with 1hr@150C annealing
Mold Compound Material	G700LA

Qualification Results Summary

TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS

Test	#	Test Conditions	ss/lot	Lots	A/R	Step	Status	Comment
PC	A1	Preconditioning [260°C] – JESD22-A113, J-STD-020	285	3	0/1	L3	PASS	
HAST	A2	Biased Highly Accel. Stress Test (post PC) [130°C,85%RH] – JESD22-A101	77	3	0/1	96h	PASS	
UHST	A3	Unbiased High Accel. Stress Test (post PC) [130°C,85RH] – JESD22-A118	77	3	0/1	96h	PASS	
TC	A4	Temp. Cycling (post PC) [-65°C, 150°C] – JESD22 A104	77	3	0/1	500c	PASS	
HTSL	A6	High Temp. Storage Life [175°C] – JESD22-A103	45	3	0/1	500h	PASS	

TEST GROUP B – ACCELERATED LIFE TIME SIMULTION TESTS

Test	#	Test Conditions	ss/lot	Lots	A/R	Step	Status	Comment
HTOL	B1	High Temp. Operating Life [150°C] – JESD22 – A108	77	3	0/1	500h	PASS	
ELFR	B2	Early Life Failure Rate [150°C] – AEC-Q100-008	800	3	0/1	24h	PASS	
EDR	B3	NVM Endurance (Pg.&Erase) NVM Data Retention [175°C] AEC-Q100-005	77 77	3 3	0/1 0/1	100kc 500h	PASS PASS	10kc Flash/ 100kc EE

TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS

Test	#	Test Conditions	ss/lot	Lots	A/R	Step	Status	Comment
WBS	C1	Wire Bond Shear AEC-Q100-001	5p/30 w	1		-	PASS	
BPS	C2	Bond Pull strength (post TC) MIL-883-2011	5p/30 w	1		-	PASS	
SD	C3	Solderability – JESD22 B102	15	1	0/1	-	PASS	
PD	C4	Physical dimensions – JESD22-B100, JESD22-B108	10	3		-	PASS	Assembly Data
LI	C6	Lead Integrity – JESD22-B105	50l/3p	1	0/1	-	PASS	Assembly Data

TEST GROUP E – ELECTRICAL VERIFICATION

Test	#	Test Conditions	ss/lot	Lots	A/R	Step	Status	Comment
HBM / MM	E2	Electrostatic Discharge (HBM & MM) – AEC-Q100-002, 003	3	1	0/1	2kV / 200V	PASS	
CDM	E3	Electrostatic Discharge (CDM) – AEC-Q100-011	3	1	0/1	500V 750V	PASS	
LU	E4	Latch-up [25°C and125°C] – AEC-Q100-004, JESD78	6	1	0/1	+/- 100mA, 1.5xOV	PASS	
ED	E5	Electrical Distribution – AEC-Q100-009	30	3		-	PASS	
FG	E6	Fault Grading – AEC-Q100-007					PASS	
CHAR	E7	Characterization (VT/Leff/Rpoly corner run)	30	1		-	PASS	