



MICROCHIP

QUALIFICATION PLAN SUMMARY

PCN #: RMES-19QWFS608

**Date:
August 22, 2019**

Introduction of new package for existing ATMEGA3209 and ATMEGA4809 device families available in 48L UQFN (6x6x0.5mm) package. This is Q006 Grade 1 qualification.

Purpose: Introduction of new package for existing ATMEGA3209 and ATMEGA4809 device families available in 48L UQFN (6x6x0.5mm) package. This is Q006 Grade 1 qualification.

Memo Number: ML112019001A

<u>Misc.</u>	Assembly site	MMT
	BD Number	BDE005692-02
	MP Code (MPC)	59B20Y6MXVA1
	Part Number (CPN)	ATMEGA4809-MFR-VAO
	MSL information	MSL1
	Assembly Shipping Media (T/R, Tube/Tray)	T/R
	Base Quantity Multiple (BQM)	6000
	Reliability Site	MPHIL
<u>Lead-Frame</u>	Paddle size	177x177
	Material	A194
	DAP Surface Prep	CU
	Treatment	BOT with Bare Cu on Paddle
	Process	Etched
	Lead-lock	Yes
	Part Number	TBD
	Lead Plating	Matte Tin
	Strip Size	70x x250
	Strip Density	440
<u>Bond Wire</u>	Material	CuPdAu
<u>Die Attach</u>	Part Number	3280
	Conductive	Yes
<u>MC</u>	Part Number	G700LTD
<u>PKG</u>	PKG Type	VQFN
	Pin/Ball Count	48
	PKG width/size	6 x 6 mm
<u>Die</u>	Die Thickness	11 mils
	Die Size	2.614x2.794 mm
	Fab Process (site)	59.91K / UMC 8D

Test Name	Conditions	Reliability Stress Read Point	Pre & Post Reliability Stress Test Temperature	Sample Size	Min. Qty of Spares per Lot (should be properly marked)	Qty of Lots	Total Units	Fail Accept Qty	Est. Dur. Days	ATE Test Site	REL Test Site	Pkg. Type	Special Instructions
Package Reliability Tests													
Standard Pb-free Solderability	J-STD-002E ; Perform 8 hours of steam aging for Matte tin finish and 1 hour steam aging for NiPdAu finish prior to testing. Standard Pb-free: Matte tin/ NiPdAu finish, SAC solder, wetting temp 245°C for both SMD & through hole packages.			22	5	1	27	>95% lead coverage	5				Standard Pb-free solderability is the requirement. SnPb solderability (backward solderability- SMD reflow soldering) is required for any plating related changes and highly recommended for other package BOM changes.
Wire Bond Pull - WBP	Mil. Std. 883-2011			5	0	1	5	0 fails after TC	5				30 bonds from a min. 5 devices.
Wire Bond Shear - WBS	CDF-AEC-Q100-001			5	0	1	5	0	5				30 bonds from a min. 5 devices.
Physical Dimensions	Measure per JESD22 B100 and B108			10	0	3	30	0	5				
External Visual	Mil. Std. 883-2009/2010			All devices prior to submission for qualification testing	0	3	ALL	0	5				
HTSL (High Temp Storage Life)	JESD22-A103 +175°C 2x Stress	Grade 1: 500 hrs (+175°C) <u>2nd Readpoint:</u> Grade 1: 1000 hrs (+175°C)	Grade 1: +25°C, +85°C, +125°C	45	5	3	150	0	21 - 167				Perform per the requirements in AEC-Q100/Q101. Spares should be properly identified.

Test Name	Conditions	Reliability Stress Read Point Grade 1: -40°C to +125°C (MCHP E Temp)	Pre & Post Reliability Stress Test Temperature Grade 1: -40°C to +125°C (MCHP E Temp)	Sample Size	Min. Qty of Spares per Lot (should be properly marked)	Qty of Lots	Total Units	Fail Accept Qty	Est. Dur. Days	ATE Test Site	REL Test Site	Pkg. Type	Special Instructions
Preconditioning - Required for surface mount devices	J-STD-020 JESD22-A113 +150°C Bake for 24 hours, moisture loading requirements per MSL level 1 / 260°C + 3X reflow at peak reflow temperature per Jedec-STD-020E for package type.		Grade 1 : +25°C	231	15	3	738	0	15				Spares should be properly identified. 77 parts from each lot to be used for HAST, uHAST, Temp Cycle test.
HAST	JESD22-A101 or A110 +130°C/85% RH for 96 hrs 2x Stress	<u>1st Readpoint:</u> Grade 1: 96 hrs (+130°C/85% RH) <u>2nd Readpoint:</u> Grade 1: 192 hrs (+130°C/85% RH)	Grade 1: +25°C, +85°C, +125°C	77	5	3	246	0	10 - 22				Perform per the requirements in AEC-Q006. Spares should be properly identified. Use the parts which have gone through Pre-conditioning.
uHAST	JESD22-A102, A118, or A101 +130°C/85% RH for 96 hrs	Grade 1: 96 hrs (+130°C/85% RH)	Grade 1: +25°C	77	5	3	246	0	10				Spares should be properly identified. Use the parts which have gone through Pre-conditioning.
Temp Cycle	JESD22-A104 -65°C to +150°C 2x Stress	Grade 1: 500 cycles (-65°C to 150°C) <u>2nd Readpoint:</u> Grade 1: 1000 cycles (-65°C to 150°C)	Grade 1: +85°C, +125°C	77	5	3	246	0	15 - 120				Perform per the requirements in AEC-Q006. Spares should be properly identified. Use the parts which have gone through Pre-conditioning.