QUALIFICATION REPORT SUMMARY

PCN#: CAAN-24ZJAT655

Date:
December 03, 2025

Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as a new fabrication location for selected 161-699102, MAQ3203, MIC21xx, MIC22xx, MIC25xx, MIC32xx, MIC422x, MIC44Fxx, MIC682xx, MIC68400, MIC68401, MIC691xx, MIC6930, MIC69502, MIC79110 and MIC920 device families of 2AK (BCD12) technology available in various packages. The MIC2168YMM, MIC2168YMM-TR, MIC2169YMM, MIC2169YMM-TR, MIC5190YML-TR, MIC5190YMM, MIC5190YMM-TR and SPN035005G-TR catalog part numbers (CPN) of 2AK (BCD12) technology available in various packages will qualify by similarity (QBS).

PROCESS QUALIFICATION

Purpose: Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as a new fabrication location for selected 161-699102, MAQ3203, MIC21xx, MIC22xx, MIC25xx, MIC32xx, MIC422x, MIC44Fxx, MIC682xx, MIC68400, MIC68401, MIC691xx, MIC6930, MIC69502, MIC79110 and MIC920 device families of 2AK (BCD12) technology available in various packages. The MIC2168YMM, MIC2168YMM-TR, MIC2169YMM, MIC2169YMM-TR, MIC5190YML-TR, MIC5190YMM, MIC5190YMM-TR and SPN035005G-TR catalog part numbers (CPN) of 2AK (BCD12) technology available in various packages will qualify by similarity (QBS).

I. Summary:

The purpose of this qualification is to release the BCD12 process fabricated at Fab 5 (Colorado Spring) per Die Qual CCB 7364.016, following guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements". Device MAQ3203YM assembled in 8-lead SOIC at MTAI with 1.0 mil Au wire is selected as the qualification vehicle.

Conclusion:

Based on successful Reliability stress results on device MAQ3203YM (with package qualification data reported in ML) and that ESD HBM, CDM and LU levels of Fab 5 material are comparable to those fabricated in Fab 2, BCD12 process at Fab 5 (Colorado Spring) is released to production as per guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements.

II. Device Description:

Device	MAQ3203
Document Control Number	ML
Document Revision	A1220255285
CCB No.	7364.016 and 7364.060

III. Die Qualification Material:

Test Lot	Lot 1	Lot 2	Lot 3
WAFER LOT	MCSO525477338.110/A5A0581	MCSO525477337.121/A5A0580	MCSO526159442.110/5C0131
ASSEMBLY LOT	MTAI261701090.000	MTAI262301610.000	MTAI262602214.000
PACKAGE	8-lead SOIC	8-lead SOIC	8-lead SOIC
QUAL TESTS	HTOL, ELFR CDM, HBM, LU	HTOL, ELFR	HTOL, ELFR

IV. Die Qualification Data:

a. High Temperature Operating Life (HTOL)-Mil STD 883

Test Method/Condition	Ta = 125C, 1000 hrs, VIN = 42V		
Sample Requirement	3 lots, minimum sample size = 77 units/lot.		
Test Material	Lot 1	Lot 2	Lot 3
ATE Result (fail/sample size)	0/82	0/82	0/82
Result	Passed		

Pre and Post testing conducted at -40◦C, +25◦C and +125◦C

b. High Temperature Erly Life Test (ELFR)-AEC-Q100-008

Test Method/Condition	Ta = 125C, 1000 hrs, VIN = 42V		
Sample Requirement	3 lots, minimum sample size = 77 units/lot.		
Test Material	Lot 1	Lot 2	Lot 3
ATE Result (fail/sample size)	0/800	0/800	0/800
Result	Passed		

Pre and Post testing conducted at +25◦C and +125◦C

c. ESD-HBM (ML0920251298)-AEC-Q100-002

Test Method/Condition	JS-001-2012
Test Material	Lot 1
Highest Passing Level	+/-2kV
Result	Passed

Pre and Post testing conducted at +25◦C and +125◦C

d. ESD-CDM (ML0920255989)-AEC-Q100-011

Test Method/Condition	JS-002-2014
Test Material	Lot 1
Highest Passing Level	+/- 2kV
Result	Passed

Pre and Post testing conducted at +25◦C and +125◦C

e. Latch Up (ML0920254657)-AEC-Q100-004

Test Method	JESD78C1
Test Material	Lot 1
Sample Size	12
Latch Up Result	Pass
Post LU ATE (fail/ss)	0/12
Result	Passed

Pre and Post testing conducted at +25◦C and +125◦C

PACKAGE QUALIFICATION

Purpose: Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as a new fabrication location for MIC2168YMM, MIC2168YMM-TR, MIC2169YMM, MIC2169YMM-TR, MIC5190YML-TR, MIC5190YMM, MIC5190YMM-TR and SPN035005G-TR catalog part numbers (CPN) of 2AK (BCD12) technology available in various packages will qualify by similarity (QBS). This is Q100 Grade 1 qualification.

Summary:

This report lists the Package Qualification test results required by CCB 7428.008. This is a part of the qualification of BCD12 process fabricated at Fab 5 (Colorado Spring), following guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements". Device MAQ3203YM assembled in 8-lead SOIC at MTAI with 1.0 mil Au wire is selected as the qualification vehicle.

Conclusion:

Reliability stress results on test device MAQ3203YM indicate no assembly-related quality problem with BCD12 material fabricated at Fab 5 as per guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements.

I. Device Description:

Device	MAQ3203YM
Document Control Number	ML1120256441
Document Revision	A
CCB No.	7428.008 and 7364.060

II. Package Qualification Material:

Test Lot	Lot 1
WAFER LOT	MCSO525477338.111/A5A0581
ASSEMBLY LOT	MTAI261701089.000
PACKAGE	8-lead SOIC
QUAL TESTS	HTSL, MSL1, HAST, UHAST, TC

III. BOM:

Misc.	Assembly site	MTAI
	BD Number	BD-003082-01
	MP Code (MPC)	2A6164C2XA02
	Part Number (CPN)	MIC3203YM
	MSL information	MSL-1
	Assembly Shipping Media (T/R, Tube/Tray)	Tube
	Base Quantity Multiple (BQM)	100
	Reliability Site	MTAI
Lead-Frame	Paddle size	90 x 90 mils
	Material	CDA194
	DAP Surface Prep	Bare Cu
	Treatment	Roughened
	Process	Stamp
	Lead-lock *(Locking Hole, Half Etched, Dimple, etc.)*	Yes
	Part Number	10100841
	Lead Plating	Matte Tin
	Strip Size	70 x 239.6 mm
	Strip Density	320 units/strip
Bond Wire	Material	Au
Die Attach	Part Number	8390A
	Conductive	Yes
MC	Part Number	G600V
PKG	Package Type	SOIC
	Pin/Ball Count	8L
	PKG width/size	0.150"

IV. Package Qualification Data:

a. Package Preconditioning:

Test Method/Condition	JEDEC J-STD-020 and JESD22-A113, MSL Level 1 soak at +85°C/85%RH/168hrs, 3x at 260°C peak Reflow Temperature
Sample Requirement	1 lot, minimum sample size = 231 units/lot.
Test Material	Lot 1
ATE Result (fail/sample size)	0/255
Result	Passed

Pre and Post testing performed at 25°C and 125°C

b. HAST Post MSL1 Preconditioning.

Test Method/Condition	JESD22-A110, VIn = 42V, Ta = +130°C/85%RH, 96 hrs
Sample Requirement	1 lot, minimum sample size = 77 units/lot.
Test Material	Lot 1
ATE Result (fail/sample size)	0/81
Result	Passed

Pre and Post testing performed at 25°C and 125°C

c. Unbiased HAST post MSL1 Preconditioning.

Test Method/Condition	JESD22-A118, Ta = +130°C/85%RH, 96hrs.
Sample Requirement	1 lot, minimum sample size = 77 units/lot.
Test Material	Lot 1
ATE Result (fail/sample size)	0/82
Result	Passed

Pre and Post testing performed at 25°C and 125°C

d. Temperature Cycling post MSL1 Preconditioning

Test Method/Condition	JESD22-A104, Ta = -65°C/+150 °C, 500 cycles.
Sample Requirement	1 lot, minimum sample size = 77 units/lot.
Test Material	Lot 1
ATE Result (fail/sample size)	0/82
Result	Passed

Pre and Post testing was conducted at +25°C

e. High Temperature Storage Life

Test Method/Condition	JESD22-A103, Ta = +175 °C, 500 hrs
Sample Requirement	1 lot, minimum sample size = 45 units/lot.
Test Material	Lot 1
ATE Result (fail/sample size)	0/50
Result	Passed

Pre and Post testing performed at 25°C and 125°C