



QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: MFOL-09SXBY416

Date:
March 31, 2026

Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as a new fabrication location for MIC5317, MIC5365, MIC5366, MIC5361, MIC5362, MIC5367, MIC5368, MIC5301, MIC5302, MIC5303 device families of 22K (CSI05) technology available in various packages.



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PROCESS QUALIFICATION REPORT

Purpose: Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as a new fabrication location for MIC5317, MIC5365, MIC5366, MIC5361, MIC5362, MIC5367, MIC5368, MIC5301, MIC5302, MIC5303 device families of 22K (CSI05) technology available in various packages.

CCB No: 7364.055

Test	Lot Qty	# units/lot	Result
HTOL 1000HRS at +125°C. Pre / Post ATE at Room.	3	77	Pass
ESD/HBM Pre / Post ATE at Room.	1	12	Pass
ESD/CDM Pre / Post ATE at Room.	1	12	Pass
Latch Up Pre / Post ATE at Room.	1	12	Pass

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I. Summary:

The purpose of this qualification is to release the CSI05 process fabricated at Fab 5 (Colorado Spring) per **Die Qual CCB 7364.003** and **Package Qual CCB 7428.004**, following guidelines established in Microchip specification QCI-39000, “Worldwide Quality Conformance Requirements”. Device MIC23250-S4YMT in in 10L UDFN COL assembled at UNIS with 1.3 mil Au wire is selected as the qualification vehicle. CSI05 process is currently fabricated at Fab 2 (Tempe).

Conclusion:

Based on successful Reliability stress results on test device MIC23250-S4YMT and the fact that ESD HBM, CDM and LU levels of Fab 5 material are comparable to those fabricated in Fab 2, CSI05 process at Fab 5 (Colorado Spring) is released to production.

II. Device Description:

Device	MIC23250-S4YMT
Document Control Number	ML0720258469
Document Revision	B
CCB No.	7428.004 and 7364.055

III. Qualification Material:

Die Qual Material (CCB# 7364.003)

Test Lot	Lot 1	Lot 2	Lot 3
WAFER LOT	MCS0525376352.210/B4D1521	MCS0525447112.222/D5A0438	MCS0525396512.112/B4D1602
ASSEMBLY LOT	UNIS254400021.000	UNIS260500035.000	UNIS260500036.000
PACKAGE	10-lead UDFN2mmx2mm	10-lead UDFN2mmx2mm	10-lead UDFN2mmx2mm
QUAL TESTS	HTOL, ESD-CDM, ESD HBM, LU	HTOL, ESD-CDM, ESD HBM, LU	HTOL, ESD-CDM, ESD HBM

Package Qual Material (CCB# 7428.004)

Test Lot	Lot 4	Lot 5	Lot 6
WAFER LOT	MCS0525376352.220/B4D1521	MCS0525447112.220/D5A0438	MCS0525396512.113/B4D1602
ASSEMBLY LOT	UNIS254900019.000	UNIS260600001.000	UNIS260600002.000
PACKAGE	10-lead UDFN2mmx2mm	10-lead UDFN2mmx2mm	10-lead UDFN2mmx2mm
QUAL TESTS	HTSL, HAST, UHAST, TC, WBP, WBS	HTSL, HAST, UHAST, TC, WBP, WBS	HAST, UHAST, TC, WBP, WBS

IV. BOM:

<u>Misc.</u>	Assembly site	UNIS
	BD Number	D-003999
	MP Code (MPC)	22601YJ4AA07
	Part Number (CPN)	MIC23250-S4YMT
	MSL information	MSL-1
	Assembly Shipping Media (T/R, Tube/Tray)	T/R
	Base Quantity Multiple (BQM)	5000
<u>Lead-Frame</u>	Material	A194ESH
	DAP Surface Prep	NiPdAu
	Process	Etched
	Lead-lock	Yes
	Part Number	40100097
	Lead Plating	NiPdAu
<u>Bond Wire</u>	Material	Au
<u>Die Attach</u>	Part Number	8006NS
	Conductive	Yes
<u>MC</u>	Part Number	G770HCD
<u>PKG</u>	Package Type	UDFN
	Pin/Ball Count	10L
	PKG width/size	2x2x0.6 mm

V. Die Qualification Data:

a. High Temperature Operating Life (HTOL)

Test Method/Condition	Ta = 125C, 1000 hrs, VIN = 5.5V		
Sample Requirement	3 lots, minimum sample size = 77 units/lot.		
Test Material	Lot 1	Lot 2	Lot 3
ATE Result (fail/sample size)	0/81	0/82	0/82
Result	Pass		

Pre and Post testing conducted at +25°C.

b. ESD-HBM

Test Method/Condition	JS-001-2012			
Test Material	Lot 1	Lot 2	Lot 3	Fab 2 Control
Highest Passing Level	+/-0.5kV	+/-0.5kV	+/-0.5kV	+/- 0.5kV
Result	Pass			

Pre and Post testing conducted at +25°C.

Note on ESD-HBM: ESD level of this product in Fab 5 is identical to Fab 2. Both pass up to 0.5kV. For the ESD HBM performance of Fab 2 material, please refer to ML0720251148.

c. ESD-CDM

Test Method/Condition	JS-002-2014		
Test Material	Lot 1	Lot 2	Lot 3
Highest Passing Level	+/- 2kV	+/- 2kV	+/- 2kV
Result	Pass		

Pre and Post testing conducted at +25°C

d. Latch Up (LU)

Test Method	JESD78C1	
Test Material	Lot 1	Lot 2
Sample Size	12	12
Latch Up Result	Pass	Pass
Post LU ATE (fail/ss)	0/12	0/12
Result	Pass	

Pre and Post testing conducted at +25°C

VI. 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	3 lots, minimum sample size = 231 units/lot.		
Test Material	Lot 4	Lot 5	Lot 6
ATE Result (fail/sample size)	0/251	0/255	0/255
Result	Pass		

Pre and Post testing was conducted at +25°C

b. HAST Post MSL1 Preconditioning.

Test Method/Condition	JESD22-A110, VIn = +5.5V, Ta = +130°C/85%RH, 96 hrs		
Sample Requirement	3 lots, minimum sample size = 77 units/lot.		
Test Material	Lot 4	Lot 5	Lot 6
ATE Result (fail/sample size)	0/82	0/82	0/80
Result	Pass		

Pre and Post testing was conducted at +25°C

c. Unbiased HAST post MSL1 Preconditioning.

Test Method/Condition	JESD22-A118, Ta = +130°C/85%RH, 96hrs.		
Sample Requirement	3 lots, minimum sample size = 77 units/lot.		
Test Material	Lot 4	Lot 5	Lot 6
ATE Result (fail/sample size)	0/82	0/82	0/82
Result	Pass		

Pre and Post testing was conducted at +25°C

d. Temperature Cycling post MSL1 Preconditioning

Test Method/Condition	JESD22-A104, Ta = -65°C/+150 °C, 500 cycles.		
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	Pass		

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 4	Lot 5
ATE Result (fail/sample size)	0/50	0/50
Result	Pass	

Pre and Post testing was conducted at +25°C