



MICROCHIP

QUALIFICATION PLAN

PCN #: IIRA-15EPQR322

**Date:
April 9, 2014**

**Qualification of C194 lead-frame in 3L SOT-23A package at LPI
assembly site.**

Distribution

Surasit P.	Rangsun K.
A. Navarro	Irina K.
Wichai K.	Fernando C.
Chaweng W.	Gerry O.
Chalermpon P.	Arnel M.
Mitch R.	Ponpitug Y.
Sunisa K.	Peter B.
Maitree Y.	Fannie Lin
Jeffrey J.	Vassilis D.

Microchip Technology (Thailand) Co., Ltd.
14 Moo 1 T. Wangtakien A. Muangchacherngsao,
Chacherngsao, Thailand, 24000
Tel. (6638) 857119-45, 857311-19 ext. 1231
Fax (6638) 857149-50

Purpose: _____ Qualification of C194 lead-frame in 3L SOT-23A package at LPI assembly site.

MP code: _____ HBAA1YM7XA12
Part No.: _____ MCP1702T-1202E/CB
Fab/Node: _____ 135k
Die size: _____ 46.50x41.50 mil
BD No.: _____ BDE-002639
CCB No.: _____ 1402.01

Package

Type: _____ 3L SOT-23A
Width or Size: _____ 2.9x1.6x1.1
Die thickness: _____ 8 mils
MSL: _____ MSL1

Lead frame:

Paddle size: _____ 1.5x1.2mm
Manufacturer: _____ ASM
Material: _____ C194
Surface: _____ None
Paddle plating: _____ Bare
Process: _____ Stamped
Lead Lock: _____ No
Part Number: _____ N/a
Strip dimensions: _____ 288 devices per strip

Wire:

Material: _____ Au

Backside Film:

Part Number: _____ 8006NS
Manufacturer: _____ Henkel
Conductive: _____ No

Die attach epoxy:

Part Number: _____ 84-3J
Manufacturer: _____ Henkel
Conductive: _____ No

Mold Compound:

Part Number: _____ G600
Manufacturer: _____ Sumitomo
Lead finish _____ Matte tin

Reliability Test plan: _____ STD Package Reliability Test plan on each package. Per QCI39000

Test Name	Conditions	Sample Size	Min. Qty of Spares per Lot (should be properly marked)	Qty of Lots	Total Units	Fail Accept Qty	Est. Dur. Days	Special Instructions
Standard Pb-free Solderability	JESD22B-102E; Perform 8 hour 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.
Standard SnPb Solderability	JESD22B-102E; Perform 8 hour steam aging prior to testing. Standard SnPb: SnPb finish, SnPb solder, wetting temp 215°C for SMD & 245°C for through hole packages.	22	5	1	27	> 95% lead coverage	5	
Backward Solderability	JESD22B-102E; Perform 8 hours steam aging for Matte tin finish and 1 hour steam aging for NiPdAu finish prior to testing. Backward: Matte tin/ NiPdAu finish, SnPb solder, wetting temp 215°C for SMD.	22	5	1	27	> 95% lead coverage	5	
Wire Bond Pull - WBP	Mil. Std. 883-2011	5	3	3	24	0 fails after TC	5	30 bonds from a minimum of 5 devices.
Wire Bond Shear - WBS	CDF-AEC-Q100-001	5	3	3	24	0	5	30 bonds from a minimum of 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)	+175°C for 504 hours or 150°C for 1008 hrs. Electrical test pre and post stress at +25°C and 85°C. 1lot to be tested at 125°C	45	5	3	150	0	10	Must be in progress at time of package release to production, but completion is not required for release to production.

Test Name	Conditions	Sample Size	Min. Qty of Spares per Lot (should be properly marked)	Qty of Lots	Total Units	Fail Accept Qty	Est. Dur. Days	Special Instructions
Preconditioning - Required for surface mount devices	+150°C Bake for 24 hours, moisture loading requirements per MSL level + 3X reflow at peak reflow temperature per Jedec-STD-020D for package type; Electrical test pre and post stress at +25°C. Perform SAM analysis using the standard sample size. MSL1 @ 260°C	231	15	3	738	0	15	Spares should be properly identified. 77 parts from each lot to be used for HAST, Autoclave, Temp Cycle test.
HAST	+130°C/85% RH for 96 hours. Electrical test pre and post stress at +25°C and 85°C. 1lot to be tested at 125°C	77	5	3	246	0	10	Spares should be properly identified. Use the parts which have gone through Pre-conditioning.
Unbiased HAST	+130°C/85% RH for 96 hrs or +110°C/85% RH for 264 hrs. Electrical test pre and post stress at +25°C.	77	5	3	246	0	10	Spares should be properly identified. Use the parts which have gone through Pre-conditioning.
Temp Cycle	-65°C to +150°C for 500 cycles. Electrical test pre and post stress at +25°C and 85°C. 1lot to be tested at 125°C 3 gram force WBP, on 5 devices from 1 lot, test following Temp Cycle stress.	77	5	3	246	0	15	Spares should be properly identified. Use the parts which have gone through Pre-conditioning.