



August 5, 2013  
PPCN #130013 FINAL

**PROCESS/ PRODUCT CHANGE NOTIFICATION**

This is to inform you that Micrel is transferring 5 lead TO-247 assembly production to GTBF, Dong Guan City, Guang Dong Province, China, from TEAM Pacific located in Taguig City, Philippines. Originally manufactured at CEI, located in Ayutthaya, Thailand, CEI suspended operations due to the massive flood in Thailand in October of 2011. During recovery operations, CEI informed Micrel that the TO-247 line was destroyed and CEI would be discontinuing the TO-247 package. Since the assembly line was destroyed and was not brought back there was no opportunity for a last time buy from CEI. We announced the transfer to TEAM in PPCN 120006 in August 2012 but TEAM was not able to consistently produce a product that met our requirements. We have now tooled up GTBF for 5 lead, performed qualification activities, and started production. GTBF does not have a lead-tin plating capability so we will obsolete the tin-lead devices. All versions are available in matte-tin.

If you have any questions concerning this change, please contact:

NAME: Richard Zelenka  
EMAIL: Richard.zelenka@micrel.com  
PHONE: 408-435-3409

**TYPE OF CHANGE**

A new assembly subcontractor is being qualified for 5 lead TO-247. Tin-lead devices are obsoleted.

**EFFECTIVITY**

Product is available now

**PRODUCT ID (DESCRIPTION)**

<b>5 Lead TO-247</b>
MIC29751-3.3BWT (obsolete)
MIC29751-3.3WWT
MIC29751-5.0BWT (obsolete)
MIC29751-5.0WWT
MIC29752BWT (obsolete)
MIC29752WWT



## **DESCRIPTION OF CHANGE**

	<b>GTBF</b>	<b>TEAM</b>	<b>CEI</b>
Wire	Copper over Gold Bump	3.3 mil Aluminum	3 mil Gold (Au)
Die Coat	No	Yes (Q14939)	No
Mold Compound	Sumitomo G600	KTMC5400G (bromine free)	Nitto MP180s
Die Attach	Solder (92.5Pb/ 5Sn/ 2.5Ag)	Solder (92.5Pb/ 5Sn/ 2.5Ag)	Solder (92.5Pb/ 5Sn/ 2.5Ag)
Leadframe	Nickel plated Copper	Nickel plated Copper	Nickel plated Copper
Plating	Matte Tin	Matte Tin or Lead-tin (PbSn) based on part number	Matte Tin or Lead-tin (PbSn) based on part number

Dimensions of package body are nominally the same.

There is no change in test location or test program.

## **EFFECT OF CHANGE**

There is no change to the die or test program. Device meets the same electrical test requirements. There may be slight dimensional differences. The materials are the same as our TO-263. We have shipped millions of devices using this combination of wafer process and assembly materials from GTBF.

Products with lead-tin solder plated leads are obsoleted. Since CEI was destroyed by a natural disaster there is no opportunity for a lifetime buy. All device versions are available in matte-tin lead finish

### Package code

BWT=lead-tin TO-247

WWT=matte-tin TO-247

## **QUALIFICATION**

GTBF has had numerous audits including three this year  
Reliability results are on the following page.



DATE: 7/30/2013

QUALITY ENG :	PURPOSE : New Assembly Site					
H.Grimm	GTBF_TO-247_MIC29752WWT with ABC wire bonding					
QUAL VEHICLE:	PACKAGE TYPE :	ASSEMBLY LOC	LOT #	FAB	M/C	Plating
MIC29752WWT	TO-247-5L	GTBF CHINA	CA09702MQA-1322P	San Jose BCDM	Sumitomo G600	100% Matte Tin
MIC29752WWT	TO-247-5L	GTBF CHINA	CA09700MQA-1322P			
MIC29752WWT	TO-247-5L	GTBF CHINA	CA09700MQB-1322P			

**QUALIFICATION RESULTS**

TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	96 HR (rej/ss)	192 HR (rej/ss)		
PRESSURE POT	JESD22-A102 Ta = +121°C/100%RH 15 PSIG	CA09702MQA-1322P	0/45	0/45		
		CA09700MQA-1322P	0/45	0/45		
		CA09700MQB-1322P	0/45	0/45		
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	197 Cyc (rej/ss)	500 Cyc (rej/ss)	953 Cyc (rej/ss)	1000 Cyc (rej/ss)
TEMPERATURE CYCLE	JESD22-A104 Ta = -65°C/+150°C	CA09702MQA-1322P	0/45	0/45	0/45	0/45
		CA09700MQA-1322P	0/45	0/45	0/45	0/45
		CA09700MQB-1322P	0/45	0/45	0/45	0/45
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	500 HR (rej/ss)	1000 HR (rej/ss)		
High Temperature Storage	JESD22-A103 Ta = +150°C	CA09702MQA-1322P	0/45	0/45		
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	168 HR (rej/ss)	1000 HR (rej/ss)		
HTOL High Temperature Operating Life Test	JESD22-A108 Ta = + 125°C Vcc = + 26V	CA09702MQA-1322P	0/77	0/77		
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	96 HR (rej/ss)	192 HR (rej/ss)		
HAST	JESD22-A110 Ta = +130°C /85%RH Vcc = + 26V	CA09702MQA-1322P	0/45	0/45		
		CA09700MQA-1322P	0/45	0/45		
		CA09700MQB-1322P	0/44	0/45		
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