



January 20, 2014 Preliminary  
December 8, 2014 Final  
PPCN #140001

**PROCESS/ PRODUCT CHANGE NOTIFICATION**

This is to inform you that Amkor, a Micrel assembly subcontractor, is transferring TQFP/LQFP production from Amkor Korea (ATK) to Amkor Philippines (ATP1). ATP1 is an already qualified supplier to Micrel for more than 15 years. TQFP packages are also already qualified at ATP1.

On January 20, 2014, we have sent out a preliminary PPCN 140001 to inform customers in advance. This is the final PPCN notification with the reliability qualification report completed.

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

NAME: Hank Chou  
EMAIL: hank.chou@micrel.com  
PHONE: 408-474-2242

**TYPE OF CHANGE**

This is an assembly location transfer from Amkor Korea (ATK) to Amkor Philippines (ATP1).

**EFFECTIVITY**

Amkor has announced that Amkor Korea will no longer produce TQFP products in early 2015. Starting March 1st, 2015, Micrel will deliver the listed devices assembled from ATP1 Amkor. Listed Micrel products will not be assembled in ATK after March 1st, 2015.

**PRODUCT ID (DESCRIPTION)**

Packages Transferring to ATP1

eP-TQFP14X14-80L	Exposed Pad 14X14 80 lead TQFP
eP-TQFP10X10-64L	Exposed Pad 10X10 64 lead TQFP
LQFP10x10-52L	10X10 52 lead LQFP
eP-TQFP7x7-32L	Exposed Pad 7X7 32 lead TQFP
TQFP7X7-48L	7X7 48 lead TQFP
TQFP7x7-32L	7X7 32 lead TQFP

See the product list in the attached Excel file "PPCN 140001 part list Amkor TQFP Transfer from Korea ATK to Philippines ATP1" for Micrel's products that would be transferring from ATK to ATP1.



## **DESCRIPTION OF CHANGE**

This is an assembly location transfer from Amkor Korea (ATK) to Amkor Philippines (ATP1). There is no change in the material composition including mold compound, die attach, bond wires, leadframe, or plating. Amkor Philippines is a qualified supplier to Micrel on other package types for more than 15 years. Amkor Philippines does provide TQFP packages already to other suppliers. Micrel does not perform electrical test at Amkor so there is no effect on the testing or shipping of the product.

## **EFFECT OF CHANGE**

There will be no change to form, fit, or function since the materials and tooling are the same. This is an assembly transfer from Korea to Philippines. Country of origin will change from Korea to Philippines.

## **QUALIFICATION**

Amkor is one of the world's largest assembly and test subcontractors. Amkor Philippines is a qualified supplier to Micrel for more than 15 years. Micrel has audited Amkor Philippines many times and Amkor has a mature quality system. Amkor Philippines already offers TQFP assembly as a qualified process. We include a representative reliability report for qualifying products assembled at Amkor Philippines. Two assembly qualification report files, "PPCN 140001 Qualification Report\_10x10\_64L\_Final" and "PPCN 140001 Qualification Report\_7x7 ePad 64L\_Finals" are also attached.



## RELIABILITY REPORT

DATE: 10/10/14

<b>QUALITY ENG :</b>	<b>PURPOSE :</b>			
D. TRINH	TO QUALIFY QFP PACKAGE FAMILY ASSEMBLY AT AMKOR-PHILIPPINES			
<b>QUAL VEHICLE:</b>	<b>PACKAGE TYPE :</b>	<b>ASSEMBLY LOC</b>	<b>FAB</b>	<b>PROCESS</b>
SY100EP111UTG	TQFP-32L	AMKOR-PHILIPPINE	San Jose	ASSET 2
SY89824LHZ	EPTQFP-64L	AMKOR-PHILIPPINE	San Jose	ASSET 1

**QUALIFICATION RESULTS**

TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	168H Rej/ss	1000H Rej/ss	COMMENTS
HTOL High Temperature Operating Life Test	JESD22-A108  Tj = +140 °C	SY100EP111UTG	BA46974MQC	0/77	0/77	
		SY100EP111UTG	BA46974MQD	0/77	0/77	
		SY89824LHZ	0A20473MQA	0/77	0/77	
TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	500CYC Rej/ss	1000CYC Rej/ss	COMMENTS
TEMPERATURE CYCLE  With Pre- conditioning	JESD22-A104  Ta = -65°C/ +150°C	SY100EP111UTG	BA46974MQC	0/77	0/77	
		SY100EP111UTG	BA46974MQD	0/77	0/77	
		SY89824LHZ	0A20473MQA	0/77	0/77	
TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	1000H Rej/ss		COMMENTS
High Temperature Storage With Pre- conditioning	JESD22-A103  Ta = +150°C	SY100EP111UTG	BA46974MQC	0/76		
		SY89824LHZ	0A20473MQA	0/76		
TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	96HRS Rej/ss		COMMENTS



<b>PRESSURE POT</b>  <i>With Pre-conditioning</i>	JESD22-A102  Ta = +121°C/100%RH H 15 PSIG	SY100EP111UTG  SY100EP111UTG  SY89824LHZ	BA46974MQC  BA46974MQD  0A20473MQA	0/77  0/77  0/77	
<b>TEST DESCRIPTION</b>	<b>METHOD/ CONDITIONS</b>	<b>PART NO.</b>	<b>LOT ID.</b>	<b>96HRS</b> Rej/ss	<b>COMMENTS</b>
<b>HAST</b>  <i>With Pre-conditioning</i>	JESD22-A110  Ta= 130C/85%RH Unbias/bias	SY100EP111UTG  SY100EP111UTG  SY89824LHZ	BA46974MQC  BA46974MQD  0A20473MQA	0/77  0/77  0/45	
<b>TEST DESCRIPTION</b>	<b>METHOD/ CONDITIONS</b>	<b>PART NO.</b>	<b>LOT ID.</b>	<b>RESULTS</b> Rej/ss	<b>COMMENTS</b>
<b>SOLDER IRON REWORK</b>	JESD22-B106  380°C	SY100EP111UTG	BA46974MQC	0/5	
<b>SOLDERABILITY TEST</b>	MIL-STD-883 TM.2003 +245C	SY100EP111UTG  SY100EP111UTG	BA46974MQC  BA46974MQD	0/5  0/5	
<b>FLAMMABILITY</b>	UL-94V-0  Certified	All mold compounds used by Micrel meet this standard. See the UL website on-line list of material flammability certifications. Micrel requires a Certificate of Compliance from the assembly house and we verify the certifications on the web.			