



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:

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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

QUALITY ENG :	PURPOSE :			
D. TRINH	TO QUALIFY QFP PACKAGE FAMILY ASSEMBLY AT AMKOR-PHILIPPINES			
QUAL VEHICLE:	PACKAGE TYPE :	ASSEMBLY LOC	FAB	PROCESS
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	SY100EP111UTG	BA46974MQC	0/77	0/77	
	Tj = +140 °C	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	SY100EP111UTG	BA46974MQC	0/77	0/77	
	Ta = -65°C/ +150°C	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	SY100EP111UTG	BA46974MQC	0/76		
	Ta = +150°C	SY89824LHZ	0A20473MQA	0/76		
TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	96HRS Rej/ss		COMMENTS



PRESSURE POT <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	
TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	96HRS Rej/ss	COMMENTS
HAST <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	
TEST DESCRIPTION	METHOD/ CONDITIONS	PART NO.	LOT ID.	RESULTS Rej/ss	COMMENTS
SOLDER IRON REWORK	JESD22-B106 380°C	SY100EP111UTG	BA46974MQC	0/5	
SOLDERABILITY TEST	MIL-STD-883 TM.2003 +245C	SY100EP111UTG SY100EP111UTG	BA46974MQC BA46974MQD	0/5 0/5	
FLAMMABILITY	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.			

Part number	PackageType
SY87721LHY	eP-TQFP10x10-64L
SY87725LHY	eP-TQFP10x10-64L
SY89218UHY	eP-TQFP10x10-64L
SY89221UHY	eP-TQFP10x10-64L
SY89467UHY	eP-TQFP10x10-64L
SY89468UHY	eP-TQFP10x10-64L
SY89531LHH	eP-TQFP10x10-64L
SY89531LHZ	eP-TQFP10x10-64L
SY89532LHH	eP-TQFP10x10-64L
SY89532LHZ	eP-TQFP10x10-64L
SY89534LHZ	eP-TQFP10x10-64L
SY89536LHZ	eP-TQFP10x10-64L
SY89538LHY	eP-TQFP10x10-64L
SY89538LHZ	eP-TQFP10x10-64L
SY89823LHY	eP-TQFP10x10-64L
SY89824LHZ	eP-TQFP10x10-64L
SY89825UHY	eP-TQFP10x10-64L
SY89826LHY	eP-TQFP10x10-64L
SY89827LHY	eP-TQFP10x10-64L
SY89828LHY	eP-TQFP10x10-64L
SY89829UHY	eP-TQFP10x10-64L
SY55856UHG	eP-TQFP7x7-32L
SY55858UHG	eP-TQFP7x7-32L
SY69753ALHG	eP-TQFP7x7-32L
SY69753LHG	eP-TQFP7x7-32L
SY69754ALHG	eP-TQFP7x7-32L
SY87700ALHG	eP-TQFP7x7-32L
SY87700LHG	eP-TQFP7x7-32L
SY87700VHH	eP-TQFP7x7-32L
SY87701ALHG	eP-TQFP7x7-32L
SY87701LHG	eP-TQFP7x7-32L
SY87701VHH	eP-TQFP7x7-32L
SY87729LHY	eP-TQFP7x7-32L
SY87739LHY	eP-TQFP7x7-32L
SY87813LHG	eP-TQFP7x7-32L
SY87724LHEY	eP-TQFP14x14-80L
SY100E222LTY	LQFP10x10-52L
SY100EP195VTG	TQFP7x7-32L
SY100EP196VTG	TQFP7x7-32L
SY100EP210UTG	TQFP7x7-32L
SY100EP451LTG	TQFP7x7-32L
SY10EP451LTG	TQFP7x7-32L
SY89295UTG	TQFP7x7-32L
SY89296UTG	TQFP7x7-32L
SY89809ALTZ	TQFP7x7-32L
SY89809LTH	TQFP7x7-32L

SY898531LTZ	TQFP7x7-32L
SY100EP111UTG	TQFP7x7-32L
SY100EP196VTG	TQFP7x7-32L
SY733940UTH	TQFP7x7-32L
SY733940UTZ	TQFP7x7-32L
SY89808LTG	TQFP7x7-32L
MIC2341-2YTQ	TQFP7x7-48L
MIC2341R-2YTQ	TQFP7x7-48L
MIC2342-2YTQ	TQFP7x7-48L
MIC2342R-2YTQ	TQFP7x7-48L
MIC2590B-2YTQ	TQFP7x7-48L
MIC2591B-2YTQ	TQFP7x7-48L
MIC2592B-2YTQ	TQFP7x7-48L
MIC2593-2YTQ	TQFP7x7-48L
SY898530UTZ	TQFP7x7-48L
SPN012004Y	TQFP7x7-48L