



May 23, 2014
PPCN #140007

PROCESS/ PRODUCT CHANGE NOTIFICATION

This is to inform you that Micrel Inc has qualified Chipbond Technology Corp. in Hsinchu, Taiwan as an alternative production site for wafer backside grinding and backside Tri-metal deposition processes. This manufacturing subcontractor is in addition to the current QBBS (Quality Backgrinding & Backmetal Service) and SCL (Scientific Coating Labs) in USA as qualified locations for back grinding and Tri-metal processes. This change adds more capacity and provides for the flexibility of back grinding and Tri-metal processing locations. This will enable Micrel to continue to make on-time deliveries to our growing end customers.

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

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TYPE OF CHANGE

Tri-metal (BSM, Back Side Metal) is a technique to improve the heat dissipation of the high power IC. BSM Tri-metal is a layer of three metals evaporating on the backside of the wafer as a connection of the metal and the basic material (heat sink / lead frame) so as to have the better heat dissipation and the electrical conduction. We are adding Chipbond as a back grinding and Tri-metal source in addition to the current QBBS and SCL. There is no change in the back grinding thickness and Tri-metal materials and thicknesses. There are no other changes on the Fab, assembly, and test. The package type, form, fit and function of the products will not be affected. Products will be shipped with the same packing and shipment format.

EFFECTIVITY

Starting August 1st, 2014, Micrel will begin to deliver the listed devices from Chipbond. After August 1st, 2014, the products shipped to customers could be either assembled from QBBS, SCL or Chipbond. In order to make on-time deliveries to our growing end customers, we will reserve the flexibility to deliver certain part numbers at earlier date if un-expected material or capacity shortage occurs at QBBS and SCL in the future.

PRODUCT ID (DESCRIPTION)

See the product list in the attached Excel file "PPCN 140007 part list Add Chipbond additional wafer back grinding and Tri-metal" for Micrel's products that would have back grinding and Tri-metal deposition at QBBS, SCL or Chipbond site.



DESCRIPTION OF CHANGE

Micrel has qualified Chipbond, Taiwan for back grinding and Tri-metal of the listed Micrel products. This will provide additional capacity for back grinding and Tri-metal of these products.

EFFECT OF CHANGE

Back grinding thickness and Tri-metal materials and thicknesses remain the same; there is no change in form, fit or function of the product. There are no other changes on the Fab, assembly, and test. Products will be shipped with the same packing and shipment format.

QUALIFICATION

Chipbond is a Micrel's qualified subcontractor. Chipbond has pass Micrel's production audit every time. We attach a representative reliability report for qualifying products back grounded and Tri-metal deposited at Chipbond, Taiwan.



RELIABILITY REPORT

DATE : 3/31/2014

QUALITY ENG :	PURPOSE:
Dinh Pham	Chipbond Technology Corporation back side Metal Qual (Taiwan)

PART NUMBER	PACKAGE TYPE	ASSEMBLY LOCATION	FAB LOCATION	PROCESS NAME
MIC29302	TO263	GTBF CHINA SWPb2Sn2.5Ag Die Attach M/C G600FB	SAN JOSE, California	BCDM

DIE QUALIFICATION RESULTS :

TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	DATE CODE	168 HR Rej/ss	1000 HR Rej/ss	COMMENTS
HTOL High Temperature Operating Life Test	JESD22, Method A108	CA05304MEA	1350	0/77	0/77	
	TA= + 125°C	CA05304MEB	1350	0/77	0/77	
	VCC = +26V	CA05304MEC	1351	0/77	0/77	
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	DATE CODE	Rej/ss	L1 PRE-CONDITIONING FLOW	
<i>Level 3</i> <i>Pre-conditioning Flow</i>	<i>JESD22-A113</i>	CA05304MEA	1350	0/273	STEP1-> ELECTRICAL TEST STEP2-> EXTERNAL VISUAL STEP3-> SOAK 168H +85c/85% rh STEP4-> 3X IR REFLOW +260c STEP5-> FLUX IMMERSION STEP6-> RINSE STEP7-> EXTERNAL VISUAL STEP8-> ELECTRICAL TEST	
		CA05304MEB	1350	0/170		
		CA05304MEC	1351	0/170		

PACKAGE QUALIFICATION RESULTS :

TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	DATE CODE	96 HR Rej/ss	COMMENTS
HAST <i>With Level 3 Pre-conditioning</i>	JESD22-A110	CA05304MEA	1350	0/45	
	Ta= +131°C/85%RH	CA05304MEB	1350	0/45	
		CA05304MEC	1351	0/45	
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	DATE CODE	1000 CYC rej/ss	COMMENTS



TEMP CYCLE <i>W Pre-conditioning</i>	JESD22-A104 Ta = -65°C/+150°C	CA05304MEA CA05304MEB CA05304MEC	1350 1350 1351	0/45 0/45 0/45	
TEST DESCRIPTION	METHOD/CONDITIONS	LOT ID.	DATE CODE	1000 HR Rej/ss	COMMENTS
<i>HTSL High Temperature Storage Life</i> <i>W Pre-conditioning</i>	JESD22-A103 Ta = +150°C	CA05304MEA	1350	0/76	
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.			
<p>New tri-metal process at Chipbond Passed Reliability testing.</p> <p>BSM(Back Side Metal) sealing & packing technique to improve the heat dissipation of the high power IC. BSM is a layer of metal evaporating on the backside of the wafer as a connection of the metal and the basic material (heat sink / lead frame) so as to have the better heat dissipation and the electrical conduction.</p>					

PackageType	Part number
SSOP-24L	MIC2179-3.3YSM
SSOP-24L	MIC2179-3.3YSM TR
SSOP-24L	MIC2179-5.0YSM
SSOP-24L	MIC2179-5.0YSM TR
SSOP-24L	MIC2179YSM
SSOP-24L	MIC2179YSM TR
TO-247-05L	MIC29752WWT
TO-247-05L	MIC29751-3.3WWT
TO-247-05L	MIC29751-5.0WWT
TO-247-05L	MIC29751-3.3WWT
TO-247-05L	MIC29751-5.0WWT
TO-247-05L	MIC29752WWT
TO-220-05L	LM2575-12WT
TO-220-05L	LM2575-3.3WT
TO-220-05L	LM2575-5.0WT
TO-220-05L	LM2575-5.0WT L3
TO-220-05L	LM2575WT
TO-220-05L	LM2575-12WT
TO-220-05L	LM2575-3.3WT
TO-220-05L	LM2575-5.0WT
TO-220-05L	LM2575-5.0WT L3
TO-220-05L	LM2575WT
TO-220-05L	LM2576-12WT
TO-220-05L	LM2576-3.3WT
TO-220-05L	LM2576-5.0WT
TO-220-05L	LM2576WT
TO-220-05L	LM2576-12WT
TO-220-05L	LM2576-3.3WT
TO-220-05L	LM2576-5.0WT
TO-220-05L	LM2576WT
TO-220-05L	LM2576WT L3
TO-220-05L	MIC29151-12WT
TO-220-05L	MIC29151-3.3WT
TO-220-05L	MIC29151-5.0WT
TO-220-05L	MIC29152WT
TO-220-05L	MIC29152WT L2
TO-220-05L	MIC29152WT L3
TO-220-05L	MIC29201-12WT
TO-220-05L	MIC29201-3.3WT
TO-220-05L	MIC29201-4.8WT
TO-220-05L	MIC29201-5.0WT
TO-220-05L	MIC29202WT
TO-220-05L	MIC29301-12WT
TO-220-05L	MIC29301-3.3WT
TO-220-05L	MIC29301-5.0WT
TO-220-05L	MIC29301-5.0WT L2

TO-220-05L	MIC29301WT
TO-220-05L	MIC29302WT
TO-220-05L	MIC29302WT L3
TO-220-05L	MIC29302WTL01
TO-220-05L	MIC29303WT
TO-220-05L	MIC29311-5.1WT
TO-220-05L	MIC29312WT
TO-220-05L	MIC29371-12WT
TO-220-05L	MIC29371-3.3WT
TO-220-05L	MIC29371-5.0WT
TO-220-05L	MIC29371-5.0WT L3
TO-220-05L	MIC29372WT
TO-220-05L	MIC2941AWT
TO-220-05L	MIC2941AWT L3
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TO-220-05L	MIC29502WTL01
TO-220-05L	MIC29501-3.3WT
TO-220-05L	MIC29501-5.0WT
TO-220-05L	MIC29502WT
TO-220-05L	MIC29502WT L2
TO-220-05L	MIC29502WT L3
TO-220-05L	MIC29502WTL01
TO-220-05L	MIC29503WT
TO-220-05L	MIC29512WT
TO-220-05L	MIC29712WT
TO-220-05L	MIC29712WT L2
TO-220-05L	MIC29712WT
TO-220-05L	MIC29712WT L2
TO-220-05L	MIC2171WT
TO-220-05L	MIC39151-1.65WT
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TO-220-05L	MIC39151-2.5WT
TO-220-05L	MIC39301-1.8WT
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TO-220-05L	MIC4576-3.3WT

TO-220-05L	MIC4576-5.0WT
TO-220-05L	MIC4576WT
TO-220-05L	MIC4576WT L2
TO-220-05L	MIC4576WT L3
TO-220-05L	MIC4576-3.3WT
TO-220-05L	MIC4576-5.0WT
TO-220-05L	MIC4576WT
TO-220-05L	MIC4576WT L2
TO-220-05L	MIC4576WT L3
TO-263-05L	LM2575-12WU
TO-263-05L	LM2575-12WU TR
TO-263-05L	LM2575-12WUI05
TO-263-05L	LM2575-3.3WU
TO-263-05L	LM2575-3.3WU TR
TO-263-05L	LM2575-5.0WU
TO-263-05L	LM2575-5.0WU TR
TO-263-05L	LM2575WU
TO-263-05L	LM2575WU TR
TO-263-05L	LM2575-12WU
TO-263-05L	LM2575-12WU TR
TO-263-05L	LM2575-12WUI05
TO-263-05L	LM2575-3.3WU
TO-263-05L	LM2575-3.3WU TR
TO-263-05L	LM2575-5.0WU
TO-263-05L	LM2575-5.0WU TR
TO-263-05L	LM2575WU
TO-263-05L	LM2575WU TR
TO-263-05L	LM2576-12WU
TO-263-05L	LM2576-12WU TR
TO-263-05L	LM2576-3.3WU
TO-263-05L	LM2576-3.3WU TR
TO-263-05L	LM2576-5.0WU
TO-263-05L	LM2576-5.0WU TR
TO-263-05L	LM2576WU
TO-263-05L	LM2576WU TR
TO-263-05L	LM2576-12WU
TO-263-05L	LM2576-12WU TR
TO-263-05L	LM2576-3.3WU
TO-263-05L	LM2576-3.3WU TR
TO-263-05L	LM2576-5.0WU
TO-263-05L	LM2576-5.0WU TR
TO-263-05L	LM2576WU
TO-263-05L	LM2576WU TR
TO-263-05L	MIC29151-12WU
TO-263-05L	MIC29151-12WU TR
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TO-263-05L	MIC29151-3.3WU TR

TO-263-05L	MIC29151-5.0WU
TO-263-05L	MIC29151-5.0WU TR
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TO-263-05L	MIC29152WU TR
TO-263-05L	MIC29152WUL01
TO-263-05L	SPN020188Y
TO-263-05L	SPN020188Y TR
TO-263-05L	MIC29201-12WU
TO-263-05L	MIC29201-12WU TR
TO-263-05L	MIC29201-3.3WU
TO-263-05L	MIC29201-3.3WU TR
TO-263-05L	MIC29201-4.8WU
TO-263-05L	MIC29201-4.8WU TR
TO-263-05L	MIC29201-5.0WU
TO-263-05L	MIC29201-5.0WU TR
TO-263-05L	MIC29202WU
TO-263-05L	MIC29202WU TR
TO-263-05L	MIC29202WUL01
TO-263-05L	MIC29203WU
TO-263-05L	MIC29203WU TR
TO-263-05L	MIC29301-12WU
TO-263-05L	MIC29301-12WU TR
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TO-263-05L	MIC29301-3.3WU TR
TO-263-05L	MIC29301-5.0WU
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TO-263-05L	MIC29302WU TR
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TO-263-05L	MIC29312WU
TO-263-05L	MIC29312WU TR
TO-263-05L	MIC39152WU
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TO-263-05L	MIC29371-12WU
TO-263-05L	MIC29371-12WU TR

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TO-263-05L	MIC29371-3.3WU TR
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TO-263-05L	MIC29371-5.0WU TR
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TO-263-05L	MIC29501-5.0WU TR
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TO-263-05L	MIC29502WU TR
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TO-263-05L	MIC2171WU TR
TO-263-05L	MIC37252WU
TO-263-05L	MIC37252WU TR
TO-263-05L	MIC37302WU
TO-263-05L	MIC37302WU TR
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TO-263-05L	MIC37502WU TR
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TO-263-05L	MIC39301-1.8WU
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TO-263-05L	MIC39501-1.8WU TR
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TO-263-05L	MIC39501-1.8WU TR
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TO-263-05L	MIC4575WU TR
TO-263-05L	MIC4575-3.3WU
TO-263-05L	MIC4575-3.3WU TR
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TO-263-05L	MIC4576-5.0WU TR
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TO-263-05L	MIC4576WU TR
TO-263-05L	MIC4576-3.3WU
TO-263-05L	MIC4576-3.3WU TR
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TO-263-05L	MIC4576-5.0WU TR
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TO-263-05L	MIC59300WU TR
TO-263-05L	MIC59300-1.2WU
TO-263-05L	MIC59300-1.2WU TR
TO-263-05L	MIC69301-1.2WU
TO-263-05L	MIC69301-1.2WU TR
TO-263-05L	MIC69302WU

TO-263-05L	MIC69302WU TR
WAFERSALES	MIC29501-5.0CYW
WAFERSALES	MIC29501-5.0CYW
WAFERSALES	MIC29712CYW
WAFERSALES	MIC29712CYW
WAFERSALES	MIC29751-3.3CYW
WAFERSALES	MIC29751-5.0CYW
WAFERSALES	MIC29751-3.3CYW
WAFERSALES	MIC29751-5.0CYW
WAFERSALES	MIC4575CYW
WAFERSALES	MIC4575CYW
WAFERSALES	MIC4680-3.3CYW
WAFERSALES	MIC4685CYW
TO-252-05L	MIC29152WD TR
TO-252-05L	MIC29302AWD
TO-252-05L	MIC29302AWD TR
TO-252-05L	MIC39152WD
TO-252-05L	MIC39152WD TR
TO-252-05L	MIC35152WD
TO-252-05L	MIC35152WD TR
TO-252-05L	MIC35302WD
TO-252-05L	MIC35302WD TR
TO-252-05L	MIC47150WD
TO-252-05L	MIC47150WD TR
TO-252-05L	MIC47300WD
TO-252-05L	MIC47300WD TR
SOIC-08L	MIC29201-3.3YM
SOIC-08L	MIC29201-3.3YM TR
SOIC-08L	MIC29204YM
SOIC-08L	MIC29204YM TR
SOIC-08L	MIC2954-07YM
SOIC-08L	MIC2954-07YM TR
SOIC-08L	MIC2954-08YM
SOIC-08L	MIC2954-08YM TR
SOIC-08L	MIC4680BM
SOIC-08L	MIC4680BM TR
SOIC-08L	MIC4680-3.3YM
SOIC-08L	MIC4680-3.3YM TR
SOIC-08L	MIC4680-3.3YM
SOIC-08L	MIC4680-3.3YM TR
SOIC-08L	MIC4680YM
SOIC-08L	MIC4680YM TR
SOIC-08L	MIC4681YM
SOIC-08L	MIC4681YM TR
SOIC-08L	MIC4682YM
SOIC-08L	MIC4682YM TR
SOIC-08L	MIC4684YM

SOIC-08L	MIC4684YM TR
SOIC-08L	MIC4690YM
SOIC-08L	MIC4690YM TR
PDIP-08L	MIC29204YN
TO-92-03L	MIC2954-02BZ
TO-92-03L	MIC2954-02BZ TR
TO-92-03L	MIC2954-02YZ
TO-92-03L	MIC2954-02YZ TR
TO-92-03L	MIC2954-03BZ
TO-92-03L	MIC2954-03BZ TR
TO-92-03L	MIC2954-03YZ
TO-92-03L	MIC2954-03YZ TR
SOT-223-03L	MIC2920A-12WS
SOT-223-03L	MIC2920A-12WS TR
SOT-223-03L	MIC2920A-3.3WS
SOT-223-03L	MIC2920A-3.3WS TR
SOT-223-03L	MIC2920A-5.0WS
SOT-223-03L	MIC2920A-5.0WS TR
SOT-223-03L	MIC2954-02WS
SOT-223-03L	MIC2954-02WS TR
SOT-223-03L	MIC2954-03WS
SOT-223-03L	MIC2954-03WS TR
SOT-223-03L	MIC37100-1.5WS
SOT-223-03L	MIC37100-1.5WS TR
SOT-223-03L	MIC37100-1.65WS
SOT-223-03L	MIC37100-1.65WS TR
SOT-223-03L	MIC37100-1.8WS
SOT-223-03L	MIC37100-1.8WS TR
SOT-223-03L	MIC37100-2.5WS
SOT-223-03L	MIC37100-2.5WS TR
SOT-223-03L	MIC37100-3.3WS
SOT-223-03L	MIC37100-3.3WS TR
SOT-223-03L	MIC37110-1.0YS
SOT-223-03L	MIC37110-1.0YS TR
SOT-223-03L	MIC37110-1.8YS
SOT-223-03L	MIC37110-1.8YS TR
SOT-223-03L	MIC37110-2.5YS
SOT-223-03L	MIC37110-2.5YS TR
SOT-223-03L	MIC37110-3.3YS
SOT-223-03L	MIC37110-3.3YS TR
SOT-223-03L	MIC39100-1.8WS
SOT-223-03L	MIC39100-1.8WS TR
SOT-223-03L	MIC39100-2.5WS
SOT-223-03L	MIC39100-2.5WS TR
SOT-223-03L	MIC39100-3.3WS
SOT-223-03L	MIC39100-3.3WS TR
SOT-223-03L	MIC39100-5.0WS

SOT-223-03L	MIC39100-5.0WS TR
S-PAK-03L	MIC37150-1.5WR
S-PAK-03L	MIC37150-1.5WR TR
S-PAK-03L	MIC37150-1.65WR
S-PAK-03L	MIC37150-1.65WR TR
S-PAK-03L	MIC37150-1.8WR
S-PAK-03L	MIC37150-1.8WR TR
S-PAK-03L	MIC37150-2.5WR
S-PAK-03L	MIC37150-2.5WR TR
S-PAK-03L	MIC37150-3.3WR
S-PAK-03L	MIC37150-3.3WR TR
S-PAK-03L	MIC37300-1.5WR
S-PAK-03L	MIC37300-1.5WR TR
S-PAK-03L	MIC37300-1.65WR
S-PAK-03L	MIC37300-1.65WR TR
S-PAK-03L	MIC37300-1.8WR
S-PAK-03L	MIC37300-1.8WR TR
S-PAK-03L	MIC37300-2.5WR
S-PAK-03L	MIC37300-2.5WR TR
S-PAK-03L	MIC37300-3.3WR
S-PAK-03L	MIC37300-3.3WR TR
S-PAK-03L	SPN020149W
S-PAK-03L	SPN020149W TR
S-PAK-05L	MIC69301-1.2WR
S-PAK-05L	MIC69301-1.2WR TR
S-PAK-05L	MIC69302WR
S-PAK-05L	MIC69302WR TR
S-PAK-05L	MIC37102WR
S-PAK-05L	MIC37102WR TR
S-PAK-05L	MIC37151-1.5WR
S-PAK-05L	MIC37151-1.5WR TR
S-PAK-05L	MIC37151-1.65WR
S-PAK-05L	MIC37151-1.65WR TR
S-PAK-05L	MIC37151-1.8WR
S-PAK-05L	MIC37151-1.8WR TR
S-PAK-05L	MIC37151-2.5WR
S-PAK-05L	MIC37151-2.5WR TR
S-PAK-05L	MIC37151-3.3WR
S-PAK-05L	MIC37151-3.3WR TR
S-PAK-05L	MIC37152WR
S-PAK-05L	MIC37152WR TR
S-PAK-05L	MIC37252WR
S-PAK-05L	MIC37252WR TR
S-PAK-05L	MIC37301-1.5WR
S-PAK-05L	MIC37301-1.5WR TR
S-PAK-05L	MIC37301-1.8WR
S-PAK-05L	MIC37301-1.8WR TR

S-PAK-05L	MIC37301-2.5WR
S-PAK-05L	MIC37301-2.5WR TR
S-PAK-05L	MIC37301-3.3WR
S-PAK-05L	MIC37301-3.3WR TR
S-PAK-05L	MIC37302WR
S-PAK-05L	MIC37302WR TR
S-PAK-05L	MIC49150-0.9WR
S-PAK-05L	MIC49150-0.9WR TR
S-PAK-05L	MIC49150-1.2WR
S-PAK-05L	MIC49150-1.2WR TR
S-PAK-05L	MIC49150-1.5WR
S-PAK-05L	MIC49150-1.5WR TR
S-PAK-05L	MIC49150-1.8WR
S-PAK-05L	MIC49150-1.8WR TR
S-PAK-05L	MIC49150WR
S-PAK-05L	MIC49150WR TR
S-PAK-05L	MIC49200-1.0WR
S-PAK-05L	MIC49200-1.0WR TR
S-PAK-05L	MIC49200-1.8WR
S-PAK-05L	MIC49200-1.8WR TR
S-PAK-05L	MIC49200WR
S-PAK-05L	MIC49200WR TR
S-PAK-05L	MIC49300-0.9WR
S-PAK-05L	MIC49300-0.9WR TR
S-PAK-05L	MIC49300-1.2WR
S-PAK-05L	MIC49300-1.2WR TR
S-PAK-05L	MIC49300-1.5WR
S-PAK-05L	MIC49300-1.5WR TR
S-PAK-05L	MIC49300-1.8WR
S-PAK-05L	MIC49300-1.8WR TR
S-PAK-05L	MIC49300WR
S-PAK-05L	MIC49300WR TR
S-PAK-07L	MIC69502WR
S-PAK-07L	MIC69502WR TR
S-PAK-07L	MIC69302WR-7
S-PAK-07L	MIC69302WR-7 TR
S-PAK-07L	MIC37501-1.5WR
S-PAK-07L	MIC37501-1.5WR TR
S-PAK-07L	MIC37501-1.65WR
S-PAK-07L	MIC37501-1.65WR TR
S-PAK-07L	MIC37501-1.8WR
S-PAK-07L	MIC37501-1.8WR TR
S-PAK-07L	MIC37501-2.5WR
S-PAK-07L	MIC37501-2.5WR TR
S-PAK-07L	MIC37501-3.3WR
S-PAK-07L	MIC37501-3.3WR TR
S-PAK-07L	MIC37502WR

S-PAK-07L	MIC37502WR TR
S-PAK-07L	MIC4685WR
S-PAK-07L	MIC4685WR TR
S-PAK-07L	MIC49500-0.9WR
S-PAK-07L	MIC49500-0.9WR TR
S-PAK-07L	MIC49500-1.2WR
S-PAK-07L	MIC49500-1.2WR TR
S-PAK-07L	MIC49500WR
S-PAK-07L	MIC49500WR TR
SOT-143-04L	MIC94030YM4
SOT-143-04L	MIC94030YM4 TR
SOT-143-04L	MIC94031YM4
SOT-143-04L	MIC94031YM4 TR
SOT-143-04L	MIC94050YM4
SOT-143-04L	MIC94050YM4 TR
SOT-143-04L	MIC94050YM4K16
SOT-143-04L	MIC94050YM4K16 TR
SOT-143-04L	MIC94051YM4
SOT-143-04L	MIC94051YM4 TR