



RELIABILITY REPORT

DATE: 7/05/05

QUALITY ENG :	PURPOSE:					
D. TRINH	NiPdAu (lead-frame) Lead-free Qualification					
QUAL VEHICLES:	PACKAGE TYPE :	LEAD FINISH	MOLD COMPOUND	FAB LOCATION	ARRAY	PROCESS
SY100ELT22	8L SOIC	NiPdAu	G600	MICREL	EL	ASSET 1
SY10EL16	8L SOIC	NiPdAu	G600	MICREL	EL	ASSET 1
SY100EL16	8L SOIC	NiPdAu	G600	MICREL	EL	ASSET 1
SY69952	20L TSSOP	NiPdAu	G600	MICREL	U5	ASSET 1
SY100EP14	10L MSOP	NiPdAu	G700	MICREL	SA	ASSET 2
SY88993	28L WSOIC	NiPdAu	G700	MICREL	HL	ASSET 1
SY58040	44L MLF	NiPdAu	CEL9220	MICREL	GA	SiGe
SY89856	32L MLF	NiPdAu	CEL9220	MICREL	NA	SiGe
SY89851U	16L MLF	NiPdAu	CEL9220	MICREL	GL	SiGe
SY58016	16L MLF	NiPdAu	CEL9220	MICREL	GL	SiGe
MIC3001	24L MLF	NiPdAu	CEL9220	TSMC	.35u	CMOS
MIC2590	48L TQFP	NiPdAu	G700	MICREL	1.2	BCD
MICRF506	32 MLF	NiPdAu	G700	TSMC	.25U	CMOS
SY100EP111	32L TQFP	NiPdAu	G700	MICREL	SA	ASSET2
Location:	Amkor Philippines					

QUALIFICATION RESULTS

TEST DESCRIPTION	CONDITIONS	PART NO.	MOLD COMPOUND	168H	500H	1000H	COMMENTS
HTOL High Temperature Operating Life Test	JESD22-A108	SY100ELT22	G600	0/116	0/116	0/116	
	Tj=+150 °C	SY10EL16	G600	0/116	0/116	0/116	
		SY69952	G600	0/116	0/116	0/116	



QUALIFICATION RESULTS CONTINUE:

TEST DESCRIPTION	CONDITIONS	PART NO.	MOLD COMPOUND	168H	500H	1000H	COMMENTS
HTOL High Temperature Operating Life Test	JESD22-A108	MIC2590	G700	0/116	0/116	0/116	
	Tj=+150 °C	MICRF506	G700	0/116	0/116	0/116	
		SY100EP111	G700	0/116	0/116	0/116	
		SY58016	CEL9220	0/116	0/116	0/116	
		SY88843	CEL9220	0/116	0/116	0/116	
		MIC3001	CEL9220	0/120	0/120	0/120	
TEST DESCRIPTION	CONDITIONS	PART NO.	MOLD COMPOUND	500H	1000H	COMMENTS	
HTSL High Temperature Storage Life Test	JESD22-103	SY100ELT22	G600	0/76	0/76		
	TA=+150°C	SY10EL16	G600	0/76	0/76		
		SY100EL16	G600	0/76	0/76		
		MIC2590	G700	0/76	0/76		
		MICRF506	G700	0/76	0/76		
		SY100EP14	G700	0/75	0/75		
		SY88993	G700	0/76	0/76		
		SY58016	CEL9220	0/76	0/76		
		MIC3001	CEL9220	0/75	0/75		
		SY58040	CEL9220	0/76	0/76		
		SY89856	CEL9220	0/75	0/75		
		SY89851U	CEL9220	0/76	0/76		
TEST DESCRIPTION	CONDITIONS	MSL SOAK	PACKAGE	M/C	ATE RESULTS	CSAM PASS CRITERIA (DIE/PADDLE/LF)	
MSL Classification Post Pre-conditioning	JEDEC-STD 20C	LEVEL 1	8L SOIC	G600	0/100	No delam	
	JEDEC A113	LEVEL 1	8L SOIC	G600	0/95	No delam	
	Reflow Tpeak=+260C	LEVEL 1	8L SOIC	G600	0/100	No delam	



QUALIFICATION RESULTS CONTINUE:

TEST DESCRIPTION	CONDITIONS	MSL SOAK	PACKAGE	M/C	ATE RESULTS	CSAM PASS CRITERIA (DIE/PADDLE/LF)
MSL	JEDEC-STD 20C	LEVEL 1	20LTSSOP	G700	0/95	No delam
Classification	JEDEC A113	LEVEL 1	10L MSOP	G700	0/100	No delam
Post Pre-conditioning	Reflow	LEVEL 2	44L MLF	CEL9220	0/95	D=0%, P=15%, L=0%
	Tpeak=+260C	LEVEL 2	32L MLF	CEL9220	0/95	No delam
		LEVEL 2	16L MLF	CEL9220	0/95	No delam

TEST DESCRIPTION	CONDITIONS	PART NO.	PACKAGE	168H	COMMENTS
PRESSURE POT With Pre-conditioning	JESD22-102 Ta = +121°C/ 100%RH 15 PSIG	SY100ELT22	8L SOIC	1/45	(a)
		SY10EL16	8L SOIC	0/45	
		SY100EL16	8L SOIC	0/45	
		SY100EP14	20LTSSOP	0/43	
		SY88993	10L MSOP	0/45	
		SY58040	44L MLF	0/45	
		SY89856	32L MLF	0/45	
		SY89851U	16L MLF	0/45	
		SY58016	16 MLF	0/45	
		MIC3001	24L MLF	0/45	
		MICRF506	32 MLF	0/45	
MIC2590	48L TQFP	0/45			

(a) 1 reject caused by a silicon dislocation along the emitter-base junction MFA2005-033.

TEST DESCRIPTION	CONDITIONS	PART NO.	PACKAGE	RESULTS	COMMENTS
SOLDERABILITY	MIL-STD-883TM.2003 T = +245°C Aging 8 hrs	SY100ELT22	8L SOIC	0/5	
		SY10EL16	8L SOIC	0/5	
		SY100EL16	8L SOIC	0/5	
		SY100EP14	20LTSSOP	0/5	



QUALIFICATION RESULTS CONTINUE:

TEST DESCRIPTION	CONDITIONS	PART NO.	PACKAGE	RESULTS	COMMENTS	
SOLDERABILITY	MIL-STD-883TM.2003 T = +245°C Aging 8 hrs	SY58040	44L MLF	0/5		
		SY89856	32L MLF	0/5		
		SY89851U	16L MLF	0/5		
TEST DESCRIPTION	CONDITIONS	PART NO.	PACAGE	500 cyc	1000 cyc	
TEMP CYCLE With Pre-conditioning	JESD22-A104 Ta = -65°C/ +150°C	SY100ELT22	8L SOIC	0/45	0/45	
		SY10EL16	8L SOIC	0/45	0/45	
		SY100EL16	8L SOIC	0/45	0/45	
		SY100EP14	20LTSSOP	0/45	0/45	
		SY88993	10L MSOP	0/44	0/43	
		SY58040	44L MLF	0/45	0/45	
		SY89856	32L MLF	0/45	0/45	
		SY89851U	16L MLF	0/45	0/45	
		SY58016	16L MLF	0/45	0/45	
		MIC3001	24L MLF	0/45	0/45	
		MICRF506	32L MLF	0/45	0/45	
		MIC2590	48L TQFP	0/45	0/45	
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.				
CONCLUSION	<p>NiPdAu Lead frames using CEL9920, G700, and G600 mold compounds passed all reliability testing required for full release.</p> <p>The packages are classified as "Green" Lead-free and RohS compliant.</p> <p>1 Reject generated in the test proceeding is not related to package materials or assembly process.</p>					