

Qualification Report
For
PbFree Leadfinish for DCP products assembled at HANA

7/27/05

Approved by: Maria Sotomayor

Leadframes SA00544, SA00652 and SA00640 with NiPdAu leadfinish used in DCP devices assembled at Hana are fully qualified and meet the Texas Instruments quality and reliability standards for Analog & Mixed Signal Products per the testing described below.

Green/ Pbfree status: ☒ **Qualified PB-free (SMT)** ☒ **Qualified Pb-free (Through hole)**
☐ **Qualified Green**

Qualification Information

Affected Business:	HPA		
Affected Sites:	TUC-Tucson		
Qual Type:	Major Change Assembly		
Qual Description: Qualificaion vehicles used were DCP010505BP (SA00544), DCP012415DBP (SA00652) and DCP022405DU (SA00640).			

Device Attributes

Qualification Device:	DCP010505BP	Die Size(mils)	94 x 85
Die Rev:	C	Assembly Site:	HAN-Hana
Wafer Fab Site:	ST Micro	Package:	NVA
Technology:	Bi-CMOS	Pin Count:	14
Fab Process:	1.2µm BiCMOS / DMOS	Mold Compound:	EME6300H
Metal1:	(Al/Si/Cu) 0.7µm	Mount Compound:	ABL 84-1LMISR4
Metal2:	(Al/Si/Cu) 0.7µm	Bond:	1.2 mil Au TS
Metal3:	(Al/Si/Cu) 0.7µm	Leadframe:	SA00544
Passivation:	0.6µm LTO	L/F Finish:	NiPdAu
Composition:	Cu	Die Overcoat:	N/A
Metal4:	N/A	Metal5:	N/A
Metal6:	N/A	Metal7:	N/A
Resistor Tech:	N/A	Transistor Count:	2957
Moist Sens Level:	L3, 260C	Flammability Rating:	UL94-V0

Down Bonds:	N/A	Interchip Bonds:	N/A
BOAC/COA Site:	N/A	BOAC/COA Type:	N/A
Qualification Device:	DCP012415DBP	Die Size(mils)	94 x 85
Die Rev:	C	Assembly Site:	HAN-Hana
Wafer Fab Site:	ST Micro	Package:	NVA
Technology:	Bi-CMOS	Pin Count:	7
Fab Process:	BCD60III	Mold Compound:	EME6300H
Metal1:	Al/Si/Cu 0.7um	Mount Compound:	ABL 84-1LMISR4
Metal2:	(Al/Si/Cu) 0.7um	Bond:	1.2 mil Au TS
Metal3:	(Al/Si/Cu) 0.7um	Leadframe:	SA00652
Passivation:	0.6um LTO	L/F Finish:	NiPdAu
Composition:	Cu	Die Overcoat:	N/A
Metal4:	N/A	Metal5:	N/A
Metal6:	N/A	Metal7:	N/A
Resistor Tech:	NA	Transistor Count:	2957
Moist Sens Level:	3, 260C	Flammability Rating:	UL94-V0
Down Bonds:	N/A	Interchip Bonds:	N/A
BOAC/COA Site:	N/A	BOAC/COA Type:	N/A
Qualification Device:	DCP022405DU	Die Size(mils)	94 x 85
Die Rev:	C	Assembly Site:	HAN
Wafer Fab Site:	ST Micro	Package:	DU
Technology:	Bi-CMOS	Pin Count:	12
Fab Process:	1.2um BiCMOS / DMOS	Mold Compound:	EME6300H
Metal1:	(Al/Si/Cu) 0.7um	Mount Compound:	ABL 84-1LMISR4
Metal2:	(Al/Si/Cu) 0.7um	Bond:	1.25 mil Au TS
Metal3:	(Al/Si/Cu) 0.7um	Leadframe:	SA00640
Passivation:	0.6um LTO	L/F Finish:	NiPdAu
Composition:	Cu	Die Overcoat:	N/A
Metal4:	N/A	Metal5:	N/A
Metal6:	N/A	Metal7:	N/A
Resistor Tech:	N/A	Transistor Count:	2957
Moist Sens Level:	L3, 260°C	Flammability Rating:	UL94-V0
Down Bonds:	N/A	Interchip Bonds:	N/A
BOAC/COA Site:	N/A	BOAC/COA Type:	N/A

Lot Information

Reliability Job#	Qual Vehicle	Wafer Lot#	Assembly Lot#
TUCREL	DCP010505BP	n/a	4069826, 4069827
TUCREL	DCP012415DBP	n/a	5254336
TUCREL	DCP022405DU	n/a	5287199WCG

Reliability Results

		DCP010505BP	DCP012415DBP	DCP022405DU
Test Type	Conditions/Duration	SS/Fails	SS/Fails	SS/Fails
**Biased Temp. Humidity	85°C/85%RH, 1000 Hrs	77/0	-	-
**Autoclave	121°C, 240 Hrs	74/0	-	-
**Temp Cycle	-65/+150°C, 1000 Cycles	154/1*	77/0	77/0
Visual /Mechanical	Over Temp	-	45/0	-

Manufacturability Qualification (MQ)	Per assembly site requirements	Pass	Pass	Pass
X-ray	Top Side	25/0	-	125/0
Solderability		22/0	22/0	22/0
Lead Pull		22/0	-	-
Lead Finish Adhesion		15/0	15/0	15/0
Moisture Sensitivity	L3, 260°C	12/0	12/0	12/0

Preconditioning Information:

** Preconditioning sequence: JEDEC Level 3, 260°C

*The device failed parametrically and did not have core cracks.