

PCN Number:	20230605000.2		PCN Date:	June 05, 2023									
Title:	Qualification of a new Lead finish and wafer thickness for select devices												
Customer Contact:	PCN Manager	Dept:	Quality Services										
Proposed 1st Ship Date:	Dec 2, 2023	Sample requests accepted until:	Jul 5, 2023										
*Sample requests received after Jul 5, 2023 will not be supported.													
Change Type:													
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Material								
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Process								
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Fab Site								
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Material								
<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Process								
PCN Details													
Description of Change:													
This PCN is to inform of an alternate lead finish & wafer thickness qualification for the devices in the product affected section as follows:													
<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>What</th> <th>Current</th> <th>New</th> </tr> </thead> <tbody> <tr> <td>Lead finish</td> <td>NiPdAu</td> <td>Matte Sn</td> </tr> <tr> <td>Wafer Thickness</td> <td>7.5/8mils</td> <td>6 mils</td> </tr> </tbody> </table>					What	Current	New	Lead finish	NiPdAu	Matte Sn	Wafer Thickness	7.5/8mils	6 mils
What	Current	New											
Lead finish	NiPdAu	Matte Sn											
Wafer Thickness	7.5/8mils	6 mils											
<p>Upon expiry of this PCN, there will be a transition period where TI will combine lead free solutions in a single standard part number. For example; TLV73315PQDBVRQ1 – can ship with both Matte Sn and NiPdAu.</p> <p>Example:</p> <ul style="list-style-type: none"> – Customer order for 7500 units of TPS61377RYHR with 2500 units SPQ (Standard Pack Quantity per Reel). – TI can satisfy the above order in one of the following ways. <ul style="list-style-type: none"> I. 3 Reels of NiPdAu finish. II. 3 Reels of Matte Sn finish III. 2 Reels of Matte Sn and 1 reel of NiPdAu finish. IV. 2 Reels of NiPdAu and 1 reel of Matte Sn finish. 													
Reason for Change:													
Continuity of supply													
Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):													
None													
Impact on Environmental Ratings													
Checked boxes indicate the status of environmental ratings following implementation of this change. If below boxes are checked, there are no changes to the associated environmental ratings.													
<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>RoHS</th> <th>REACH</th> <th>Green Status</th> <th>IEC 62474</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> </tr> </tbody> </table>					RoHS	REACH	Green Status	IEC 62474	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	
RoHS	REACH	Green Status	IEC 62474										
<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change										

Changes to product identification resulting from this PCN:

Sample product shipping label (not actual product label)

G4 = NiPdAu
G3 = Matte Sn

TEXAS INSTRUMENTS
MADE IN: Malaysia
2DC: 2Q:
MSL 2 / 260C / 1 YEAR SEAL DT
MSL 1 / 235C / UNLIM 03/29/04
OPT:
ITEM: 39
LBL: 5A (L)T0:1750



(1P) **SN74LS07NSR**
(Q) **2000** (D) **0336**
(31T) **LOT: 3959047MLA**
(4W) **TKY(1T) 7523483SI2**
(P)
(2P) REV: (V) 0033317
(20L) CSO: SHE (21L) CCO:USA
(22L) ASO: MLA (23L) ACO: MYS

Product Affected:

INA180A1QDBVRQ1	TLV73312PQDBVRQ1	TPS3820-33QPDBVRQ1	TPS3840PL25DBVRQ1
INA180A2QDBVRQ1	TLV73315PQDBVRQ1	TPS3820-50QPDBVRQ1	TPS3840PL28DBVRQ1
INA180A3QDBVRQ1	TLV73318PQDBVRQ1	TPS3840DL16DBVRQ1	TPS3840PL29DBVRQ1
INA180A4QDBVRQ1	TLV73325PQDBVRQ1	TPS3840DL18DBVRQ1	TPS3840PL30DBVRQ1
INA180B1QDBVRQ1	TLV73328PQDBVRQ1	TPS3840DL20DBVRQ1	TPS3840PL31DBVRQ1
INA180B2QDBVRQ1	TLV73330PQDBVRQ1	TPS3840DL25DBVRQ1	TPS3840PL40DBVRQ1
INA180B3QDBVRQ1	TLV73333PQDBVRQ1	TPS3840DL28DBVRQ1	TPS3840PL43DBVRQ1
INA180B4QDBVRQ1	TLV840MADL12DBVRQ1	TPS3840DL29DBVRQ1	TPS560430YFQDBVRQ1
INA181A1QDBVRQ1	TLV840MADL22DBVRQ1	TPS3840DL30DBVRQ1	TPS560430YQDBVRQ1
INA181A2QDBVRQ1	TLV840MADL30DBVRQ1	TPS3840DL31DBVRQ1	TPS78401QDBVRQ1
INA181A3QDBVRQ1	TLV840MADL31DBVRQ1	TPS3840DL32DBVRQ1	TPS78408QDBVRQ1
INA181A4QDBVRQ1	TLV840MADL32DBVRQ1	TPS3840DL37DBVRQ1	TPS78412QDBVRQ1
LMR50410Y3FQDBVRQ1	TLV840MADL40DBVRQ1	TPS3840DL40DBVRQ1	TPS78415QDBVRQ1
LMR50410Y5FQDBVRQ1	TLV840MAPH29DBVRQ1	TPS3840DL41DBVRQ1	TPS78417QDBVRQ1
LMR50410YFQDBVRQ1	TLV840MAPL36DBVRQ1	TPS3840DL42DBVRDN	TPS78418QDBVRQ1
LMR50410YQDBVRQ1	TLV9061SQDBVRQ1	TPS3840DL42DBVRQ1	TPS78425QDBVRQ1
OPA607QDBVRQ1	TLV9151QDBVRQ1	TPS3840DL44DBVRQ1	TPS78428QDBVRQ1
OPA991QDBVRQ1	TLV9351QDBVRQ1	TPS3840DL45DBVRQ1	TPS78429QDBVRQ1
TL331BQDBVRQ1	TPS22810TDBVRQ1	TPS3840DL46DBVRQ1	TPS78430QDBVRQ1
TL391BQDBVRQ1	TPS3813150QDBVRQ1	TPS3840DL47DBVRQ1	TPS78433QDBVRQ1
TLV1805QDBVRQ1	TPS3813K33QDBVRAL	TPS3840PH27DBVRQ1	TPS78450QDBVRQ1
TLV2401QDBVRQ1	TPS3813K33QDBVRCT2	TPS3840PH30DBVRQ1	TPS92612QDBVRQ1
TLV73310PQDBVRQ1	TPS3813K33QDBVRQ1	TPS3840PL16DBVRQ1	UCC27517AQDBVRQ1
TLV73311PQDBVRQ1			

Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)

Hyde 5/6DBV SOT Package Leadframe conversion from PPF to CuAg Rough + Matte Sn (Automotive)
Approve Date 01-May-2023

Product Attributes

Attributes	Qual Device: TLV1805QDBVRQ1	Qual Device: TPS22810TDBVRQ1	Qual Device: TLV73330PQDBVRQ1	QBS Reference: TPS3840PH30DBVRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 105	-40 to 125	-40 to 125
Product Function	ASIC	ASIC	Power Management	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB
Assembly Site	PHI	PHI	PHI	CDAT
Package Group	SOT	SOT	SOT	SOT
Package Designator	DBV	DBV	DBV	DBV
Pin Count	6	6	5	5

- QBS: Qual By Similarity
- Qual Device TLV1805QDBVRQ1 is qualified at MSL1 260C
- Qual Device TPS22810TDBVRQ1 is qualified at MSL2 260C
- Qual Device TLV73330PQDBVRQ1 is qualified at MSL2 260C

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TLV1805QDBVRQ1	Qual Device: TPS22810IDBVRQ1	Qual Device: TLV73330PQDBVRQ1	QBS Reference: TPS3840PH30DBVRQ1
Test Group A - Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL1 260C	1 Step	3/231/0	-	-	3/0/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	1 Step	-	3/231/0	3/231/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	3/231/0	3/231/0	3/231/0	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	-
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	-	-	1/5/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	1/45/0	-
Test Group B - Accelerated Lifetime Simulation Tests											
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	-	-	3/231/0
Test Group C - Package Assembly Integrity Tests											
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	3/90/0	3/90/0	3/90/0

WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	3/90/0	3/90/0	3/90/0
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	-	1/15/0
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	1/15/0	-	1/15/0	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	3/30/0	3/30/0	3/30/0	3/30/0
Test Group D - Die Fabrication Reliability Tests											
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDDB	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests											
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	3/90/0	3/90/0	3/90/0	3/90/0
Additional Tests											
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device	Qual Device	Qual Device	QBS Reference

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Orderable Part Numbers

The following table contains a list of all TI Orderable Part Numbers (OPNs) released by this qualification per Product Qualification Family definition (AEC Q100 Appendix 1). Group E results shown above cover all part numbers listed here.

INA180A1QDBVRQ1	INA180A2QDBVRQ1
INA180A3QDBVRQ1	INA180A4QDBVRQ1
INA180B1QDBVRQ1	INA180B2QDBVRQ1
INA180B3QDBVRQ1	INA180B4QDBVRQ1
INA181A1QDBVRQ1	INA181A2QDBVRQ1
INA181A3QDBVRQ1	INA181A4QDBVRQ1
LMR50410Y3FQDBVRQ1	LMR50410Y5FQDBVRQ1
LMR50410YFQDBVRQ1	LMR50410YQDBVRQ1
OPA607QDBVRQ1	OPA991QDBVRQ1
TL331BQDBVRQ1	TL391BQDBVRQ1
TLV1805QDBVRQ1	TLV2401QDBVRQ1
TLV73310PQDBVRQ1	TLV73311PQDBVRQ1
TLV73312PQDBVRQ1	TLV73315PQDBVRQ1
TLV73318PQDBVRQ1	TLV73325PQDBVRQ1
TLV73328PQDBVRQ1	TLV73330PQDBVRQ1
TLV73333PQDBVRQ1	TLV840MADL12DBVRQ1
TLV840MADL22DBVRQ1	TLV840MADL30DBVRQ1
TLV840MADL31DBVRQ1	TLV840MADL32DBVRQ1
TLV840MADL40DBVRQ1	TLV840MAPH29DBVRQ1
TLV840MAPL36DBVRQ1	TLV9061SQDBVRQ1
TLV9151QDBVRQ1	TLV9351QDBVRQ1

TPS22810TDBVRQ1	TPS3813I50QDBVRQ1
TPS3813K33QDBVRAL	TPS3813K33QDBVRCT2
TPS3813K33QDBVRQ1	TPS3820-33QPDBVRQ1
TPS3820-50QPDBVRQ1	TPS3840DL16DBVRQ1
TPS3840DL18DBVRQ1	TPS3840DL25DBVRQ1
TPS3840DL28DBVRQ1	TPS3840DL29DBVRQ1
TPS3840DL30DBVRQ1	TPS3840DL31DBVRQ1
TPS3840DL32DBVRQ1	TPS3840DL37DBVRQ1
TPS3840DL41DBVRQ1	TPS3840DL42DBVRDN
TPS3840DL42DBVRQ1	TPS3840DL44DBVRQ1
TPS3840DL45DBVRQ1	TPS3840PH27DBVRQ1
TPS3840PH30DBVRQ1	TPS3840PL16DBVRQ1
TPS3840PL25DBVRQ1	TPS3840PL30DBVRQ1
TPS3840PL31DBVRQ1	TPS560430YFQDBVRQ1
TPS560430YQDBVRQ1	TPS78401QDBVRQ1
TPS78408QDBVRQ1	TPS78412QDBVRQ1
TPS78415QDBVRQ1	TPS78417QDBVRQ1
TPS78418QDBVRQ1	TPS78425QDBVRQ1
TPS78428QDBVRQ1	TPS78429QDBVRQ1
TPS78430QDBVRQ1	TPS78433QDBVRQ1
TPS78450QDBVRQ1	TPS92612QDBVRQ1
UCC27517AQDBVRQ1	

Ambient Operating Temperature by Automotive Grade Level:

- Grade 0 (or E): -40C to +150C
- Grade 1 (or Q): -40C to +125C
- Grade 2 (or T): -40C to +105C
- Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

- Room/Hot/Cold : HTOL, ED
- Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
- Room : AC/uhAST

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

TI Qualification ID: R-CHG-2208-032

Affected ZVEI ID's: SEM-BD-01, SEM-PA-05

For questions regarding this notice, e-mails can be sent to the contacts shown below or your local Field Sales Representative.

Location	E-Mail
WW Change Management Team	PCN_ww_admin_team@list.ti.com

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