

<b>PCN Number:</b>	20211212000.1	<b>PCN Date:</b>	December 16, 2021
<b>Title:</b>	Qualify additional Assembly sites for select VSSOP devices		
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Mar 16, 2022	<b>Estimated Sample Availability:</b>	Provided upon Request
<b>Change Type:</b>			
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site
<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
		<input type="checkbox"/>	Wafer Bump Site
		<input type="checkbox"/>	Wafer Bump Material
		<input type="checkbox"/>	Wafer Bump Process
		<input type="checkbox"/>	Wafer Fab Site
		<input type="checkbox"/>	Wafer Fab Materials
		<input type="checkbox"/>	Wafer Fab Process

### PCN Details

#### Description of Change:

Texas Instruments Incorporated is announcing the qualification of additional Assembly sites for devices listed below in the product affected section. Construction information and all assembly sites are as follows:

VSSOP (MSOP) build sites	
Assembly Sites	ASESHAT, HFTFAT, HNA, TIEM, TIM, UTAC
Lead Finish	NiPdAu; NiPdAuAg; MatteSn
Mold Compound	SID #450179 SID #EN2000631 SID #EN2000763 SID #R-30 4226323 8096859
Mount Compound	SID #A-18 SID #EY1000063 SID #PZ0031 SID #400180 4147858 8075531
Bond wire	Au, Cu

Upon expiration of this PCN, TI will combine lead free solutions in a single [standard part number](#), for example; [INA821IDGKT](#) – can ship with both Matte Sn and NiPdAu. When available customers may specify NiPdAu finish by ordering the part with the G4 suffix, e.g. **INA821IDGKT.G4**

**Reason for Change:**

Continuity of Supply

**Anticipated impact on Fit, Form, 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.

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:**

Assembly Site		
ASESH	Assembly Site Origin (22L)	ASO: PHI
HFTF	Assembly Site Origin (22L)	ASO: HFT
HNA	Assembly Site Origin (22L)	ASO: HNT
UTAC	Assembly Site Origin (22L)	ASO: NS2
TI Melaka (TIEM)	Assembly Site Origin (22L)	ASO: CU6
<b>TIM (Malaysia)</b>	Assembly Site Origin (22L)	<b>ASO: MLA</b>


Sample product shipping label (not actual product label)



MADE IN: Malaysia  
2DC: 20:

MSL 2 /260C/1 YEAR	SEAL DT
MSL 1 /235C/UNLIM	03/29/04

OPT:  
ITEM: 39  
**LBL: 5A (L)T0:1750**



E4/G4: NiPdAu  
E3/G3: Matte Sn

(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:**

ADS7816E/250	INA819IDGKT	OPA2313IDGK	OPA827AIDGKR
ADS7816E/2K5	INA821IDGKR	OPA2313IDGKR	OPA827AIDGKT
ADS7816EB/250	INA821IDGKT	OPA2314AIDGK	REG711EA-2.5/250
ADS7816EB/2K5	INA826AIDGK	OPA2314AIDGKR	REG711EA-2.5/2K5
ADS7816EC/250	INA826AIDGKR	OPA2316IDGK	REG711EA-3.3/250
ADS7816EC/2K5	INA827AIDGK	OPA2316IDGKR	REG711EA-3/250
ADS7822E/250	INA827AIDGKR	OPA2320AIDGKR	REG711EA-3/2K5
ADS7822E/2K5	LM2904LVIDGKR	OPA2320AIDGKT	REG711EA-5/250
ADS7822EB/250	LM358LVIDGKR	OPA2322AIDGKR	REG711EA-5/2K5
ADS7822EB/2K5	LMV358AIDGKR	OPA2322AIDGKT	SN1605025IDGKR
ADS7822EC/250	LMV358AIDGKT	OPA2325IDGKR	SN1711004DGKR
ADS7822EC/2K5	MCP6292IDGKR	OPA2325IDGKT	SN1812003DGKR

BQ771803DGKR	MCP6292IDGKT	OPA2335AIDGKT	THP210DGKR
BQ771803DGKT	OPA140AIDGKR	OPA2336E/250	THP210DGKT
BQ771818DGKR	OPA140AIDGKT	OPA2336E/2K5	THS4521IDGKT
BQ771818DGKT	OPA141AIDGKR	OPA2336EA/250	THS4531AIDGK
DAC7512E/250	OPA141AIDGKT	OPA2336EA/2K5	THS4531AIDGKR
DAC7512E/2K5	OPA145IDGKR	OPA2340EA/250	THS4531IDGK
DAC7513E/250	OPA145IDGKT	OPA2340EA/2K5	THS4531IDGKR
DAC7513E/2K5	OPA1602AIDGK	OPA2342EA/250	THS4551IDGKR
DAC8501E/250	OPA1602AIDGKR	OPA2342EA/2K5	THS4551IDGKT
DAC8501E/2K5	OPA1637DGKR	OPA2343EA/250	THS4561IDGKR
DAC8531E/250	OPA1637DGKT	OPA2343EA/2K5	THS4561IDGKT
DAC8531E/2K5	OPA1641AIDGKR	OPA2344EA/250	TLV2170IDGKR
DAC8550IBDGKR	OPA1641AIDGKT	OPA2344EA/2K5	TLV2170IDGKT
DAC8550IBDGKT	OPA1642AIDGKR	OPA2345EA/250	TLV2171IDGKR
DAC8550IDGKR	OPA1642AIDGKT	OPA2348AIDGK	TLV2171IDGKT
DAC8550IDGKT	OPA1678IDGKR	OPA2348AIDGKR	TLV2172IDGKR
DAC8801IDGKR	OPA1678IDGKT	OPA2350EA/250	TLV2172IDGKT
DAC8801IDGKT	OPA1692IDGKR	OPA2353EA/250	TLV2313IDGKR
DAC8811IBDGKR	OPA1692IDGKT	OPA2353EA/2K5	TLV2313IDGKT
DAC8811IBDGKT	OPA180IDGKR	OPA2354AIDGKR	TLV2314IDGKR
DAC8811ICDGKR	OPA180IDGKT	OPA2354AIDGKT	TLV2314IDGKT
DAC8811ICDGKT	OPA187IDGKR	OPA2356AIDGKR	TLV2316IDGKT
INA2180A1IDGKR	OPA187IDGKT	OPA2356AIDGKT	TLV2369IDGKR
INA2180A1IDGKT	OPA188AIDGKR	OPA2364AIDGKR	TLV2369IDGKT
INA2180A2IDGKR	OPA188AIDGKT	OPA2364AIDGKT	TLV2376IDGKR
INA2180A2IDGKT	OPA189IDGKR	OPA2364IDGKR	TLV2376IDGKT
INA2180A3IDGKR	OPA189IDGKT	OPA2364IDGKT	TLV3542IDGKR
INA2180A3IDGKT	OPA191IDGKR	OPA2369AIDGKR	TLV3542IDGKT
INA2180A4IDGKR	OPA191IDGKT	OPA2369AIDGKT	TLV6002IDGKR
INA2180A4IDGKT	OPA192IDGKR	OPA2376AIDGKR	TLV6002IDGKT
INA2290A1IDGKR	OPA192IDGKT	OPA2376AIDGKT	TLV9002IDGKR
INA2290A1IDGKT	OPA196IDGKR	OPA2377AIDGKR	TLV9002IDGKT
INA2290A2IDGKR	OPA196IDGKT	OPA2377AIDGKT	TLV9052IDGKR
INA2290A2IDGKT	OPA197IDGKR	OPA2626IDGKR	TLV9062IDGKR
INA2290A3IDGKR	OPA197IDGKT	OPA2626IDGKT	TLV9062IDGKT
INA2290A3IDGKT	OPA202IDGKR	OPA2703EA/250	TMP1075DGKR
INA2290A4IDGKR	OPA202IDGKT	OPA2703EA/2K5	TMP1075DGKT
INA2290A4IDGKT	OPA207IDGKR	OPA2704EA/250	TMP141AIDGKR
INA2290A5IDGKR	OPA207IDGKT	OPA2705EA/250	TMP141AIDGKT
INA2290A5IDGKT	OPA209AIDGKR	OPA2735AIDGKR	TMP175AIDGKR
INA301A1IDGKR	OPA209AIDGKT	OPA2735AIDGKT	TMP175AIDGKT
INA301A1IDGKT	OPA211AIDGKR	OPA2743EA/250	TMP275AIDGKR
INA301A2IDGKT	OPA211AIDGKT	OPA2743EA/2K5	TMP275AIDGKT
INA301A3IDGKR	OPA211IDGKR	OPA2810IDGKT	TMP75BIDGKR
INA301A3IDGKT	OPA211IDGKT	OPA2834IDGKR	TMP75BIDGKT

INA317IDGKR	OPA2141AIDGKR	OPA2834IDGKT	TMP75CIDGKR
INA317IDGKT	OPA2141AIDGKT	OPA2837IDGKR	TMP75CIDGKT
INA321E/250	OPA2170AIDGK	OPA2837IDGKT	TPS2000CDGK
INA321E/2K5	OPA2170AIDGKR	OPA2863IDGKR	TPS2000CDGKR
INA321EA/250	OPA2171AIDGK	OPA337EA/250	TPS2001CDGK
INA321EA/2K5	OPA2171AIDGKR	OPA350EA/250	TPS2001CDGKR
INA322EA/250	OPA2172IDGK	OPA350EA/2K5	TPS386596L33DGKT
INA322EA/2K5	OPA2172IDGKR	OPA380AIDGKR	TPS60240DGKR
INA331AIDGKR	OPA2202IDGKR	OPA380AIDGKT	TPS60240DGKT
INA331AIDGKT	OPA2202IDGKT	OPA381AIDGKR	TPS60241DGKR
INA331IDGKT	OPA2209AIDGKR	OPA381AIDGKT	TPS60241DGKT
INA332AIDGKR	OPA2209AIDGKT	OPA388IDGKT	TPS60242DGKT
INA332AIDGKT	OPA2210IDGKR	OPA726AIDGKT	TPS60243DGKR
INA333AIDGKR	OPA2210IDGKT	OPA727AIDGKR	TPS60243DGKT
INA333AIDGKT	OPA2301AIDGKR	OPA727AIDGKT	TSV912AIDGKR
INA819IDGKR	OPA2301AIDGKT	OPA728AIDGKT	TSV912AIDGKT

## VSSOP Qualification Report

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

	Stress Test	Duration	HFTF LM5008MM/NOPB	ASESH THS4304DGK
TC	Temperature Cycling -65/150C	500 Cycles	3/231/0	3/231/0
HAST	Biased HAST 130C/85%RH	96 hours	3/231/0	3/231/0
THB	Temperature Humidity Bias, 85C/85%RH	1000 hours	-	-
HTSL	High Temp. Storage Bake 150C	1000 hours	-	-
HTSL	High Temp. Storage Bake 170C	420 hours	3/231/0	3/231/0
UHAST	Unbiased HAST, 130C/85%RH	96 hours	3/231/0	-
AC	Autoclave 121C	96 hours	-	3/231/0
SD	Solderability	8 Hour Steam age or 155C Dry Bake	3/66/0 (PGA308AIDGSR)	3/66/0 (THS4304DGK)
MQ	Manufacturability	-	Pass	Pass

	Stress Test	Duration	HNA TPS77301DGK	TIEM LM3489QMM
TC	Temperature Cycling -65/150C	500 Cycles	3/231/0	3/231/0
HAST	Biased HAST 130C/85%RH	96 hours	3/231/0	-
THB	Temperature Humidity Bias, 85C/85%RH	1000 hours	-	3/231/0
HTSL	High Temp. Storage Bake 150C	1000 hours	3/231/0	1/77/0
HTSL	High Temp. Storage Bake 170C	420 hours	-	-
UHAST	Unbiased HAST, 130C/85%RH	96 hours	-	-
AC	Autoclave 121C	96 hours	3/231/0	3/231/0
SD	Solderability	8 Hour Steam age or 155C Dry Bake	3/66/0 (TS5A23160DGSR)	3/66/0 (LM2660MM/NOPB)
MQ	Manufacturability	-	Pass	Pass

	Stress Test	Duration	TIM OPA2206ADGK OPA2205ADGK OPA2145IDGK	UTAC TPS22958DGK
TC	Temperature Cycling -65/150C	500 Cycles	3/231/0	3/231/0
HAST	Biased HAST 130C/85%RH	96 hours	3/231/0	3/231/0 (Note a)
THB	Temperature Humidity Bias, 85C/85%RH	1000 hours	-	-
HTSL	High Temp. Storage Bake 150C	1000 hours	-	-
HTSL	High Temp. Storage Bake 170C	420 hours	3/231/0	3/231/0
UHAST	Unbiased HAST, 130C/85%RH	96 hours	3/231/0	-
AC	Autoclave 121C	96 hours	-	3/231/0
SD	Solderability	8 Hour Steam age or 155C Dry Bake	3/66/0 (LMH5485DGKSEP)	3/66/0 (TPS61085TDGKRQ1)
MQ	Manufacturability	-	Pass	Pass

LM5008MM/NOPB, THS4304DGK, TPS77301DGK, LM3489QMM, TPS22958DGK, INA159AIDGK are qualified at L1-260C MSL rating.  
OPA2206ADGK, OPA2205ADGK, OPA2145IDGK are qualified at L2-260C MSL rating.

Note a – 2 lots of Biased HAST were collected on INA159AIDGK

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, and HTSL, as applicable
- The following are equivalent HTSL options based on activation energy of 0.7eV: 150C/1k Hours, and 170C/420 Hours

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

**Green/Pb-free Status:** Qualified Pb-Free (SMT) and Green

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