PCN Number:	PCN#20240418000.1	**PCN Date:**	April 18, 2024
Title:	Qualification of TI Malaysia as an additional Assembly site for select devices		
Customer Contact:	Change Management Team	**Dept:**	Quality Services
Proposed 1st Ship Date:	July 17, 2024	**Sample requests accepted until:**	May 18, 2024*

***Sample requests received after May 18, 2024 will not be supported.**

Change Type:

☒	Assembly Site	☐	Design	☐	Wafer Bump Material
☒	Assembly Process	☐	Data Sheet	☐	Wafer Bump Process
☒	Assembly Materials	☐	Part number change	☐	Wafer Fab Site
☐	Mechanical Specification	☐	Test Site	☐	Wafer Fab Material
☒	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments Incorporated is announcing the qualification of TI Malaysia as an additional Assembly site for the devices listed below. Construction differences are as follows:

BOM differences between the current sits and TI Malaysia are as follows:

	ASESH, HFTF, HANA, UTL2, TIEM	**MLA**
Bond wire Composition, diameter	Au, Cu, (0.8 mil, 1.0mil, 1.3 mils, 2.0 mils	
Mold Compound	SID#450179	4226323
	SID#EN2000507	
	SID#EN2000631	
	SID#EN2000763	
	SID#R-30	
	SID#R-31	
	SID#R-32	
	8096859	
Mount Compound	SID#400180	4147858
	SID#400194	
	SID#A-18	
	SID#EY1000063	
	SID#PZ0031	
	8075531	

Additionally, the mold cavity id will be included in the top marking for these devices as follows:

	Current	New
Visual		

Reason for Change:

Supply continuity

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.

RoHS	REACH	Green Status	IEC 62474
☒ No Change	☒ No Change	☒ No Change	☒ No Change

Changes to product identification resulting from this PCN:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
ASESH	ASH	CHN	Shanghai
HFTF	HFT	CHN	Hefei
HANA	HNT	THA	Ayutthaya
UTL2	NS2	THA	Bangpakong, Chachoengsao
TIEM	CU6	MYS	Melaka
TI Malaysia	**MLA**	**MYS**	**Kuala Lumpur**

Sample product shipping label (not actual product label)

Product Affected:

LM258ADGKR	LM293DGKR	TMP75AIDGKR	TPS2001DDGKR

LM2903DGKR	LM393DGKR

TI Information
Selective Disclosure

Qualification Report

Approve Date 25-Mar-2021

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

Type	Test Name / Condition	Duration	Qual Device: OPA2205ADGK	QBS Package Reference: OPA2145IDGK	QBS Package Reference: OPA2206ADGK
CDM	ESD - CDM	1000V	1/3/0	1/3/0	2/6/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass
ELFR	Early Life Failure Rate, 150C	24 Hours	1/800/0	-	2/2400/0
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	-	2/154/0
HBM	ESD - HBM	2000V	1/3/0	-	2/6/0
HTOL	Life Test, 150C	300 Hours	1/77/0	-	2/154/0
HTSL	High Temp Storage Bake 170C	420 Hours	1/77/0	-	2/154/0
LI	Lead Pull	To Destruct	1/6/0	-	2/12/0
LU	Latch-up	Per JESD78	1/6/0	-	1/6/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	1/77/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	1/77/0	1/77/0	1/77/0
WBP	Bond Pull	76 Wires, 3 units min	1/76/0	1/76/0	2/152/0
WBS	Ball Bond Shear	76 balls, 3 units min	1/76/0	1/76/0	2/152/0
XRAY	X-ray	Top	1/5/0	1/5/0	2/10/0
YLD	FTY and Bin Summary	-	Pass	Pass	Pass
YLD	MPY and Bin Summary	-	Pass	-	Pass

- QBS: Qual By Similarity
- Qual Device OPA2205ADGK is qualified at LEVEL2-260C

- 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

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

TI Qualification ID: 20210205-138486

Qualification Report

Approve Date 22-Jul-2022

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

Type	Test Name / Condition	Duration	Qual Device: LMH5485DGKSEP	QBS Product Reference: THS4541RGT	QBS Process Reference: THS4541QRGTRQ1	QBS Package Reference: OPA2205ADGK	QBS Package Reference: OPA2206ADGK
-	Outgassing Characterization	TML (Total Mass Lost), CVCM (Collected Volatile Condensable material), WVR (Water vapor recorded)	1/Pass	-	-	-	-
SD	Pb Surface Mount Solderability	Pb/Solder	3/45/0	-	-	-	-
AC	Autoclave 121C	96 Hours	-	-	3/231/0	-	-
CDM	ESD - CDM	1000 V	1/3/0	-	1/3/0	1/3/0	2/6/0
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	-	3/90/0	1/30/0	1/30/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	3/2400/0	-	-
HAST	Biased HAST, 130C/85%RH	250 Hours	2/154/0	-	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	-	3/229/0	1/77/0	2/154/0
HBM	ESD - HBM	1000 V	1/3/0	-	-	-	-
HBM	ESD - HBM	1000V	-	-	-	1/3/0	1/3/0
HBM	ESD - HBM	1500 V	1/3/0	-	-	-	-
HBM	ESD - HBM	1500V	-	-	-	1/3/0	1/3/0
HBM	ESD - HBM	2000 V	1/3/0	-	1/3/0	1/3/0	1/3/0
HTOL	Life Test, 125C	1000 Hours	3/231/0	-	3/231/0	-	-
HTOL	Life Test, 125C	4000 Hours	-	1/45/0	-	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	1/77/0	2/154/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	1/77/0	2/154/0
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	1/45/0	-	-
HTSL	High Temp Storage Bake 175C	840 Hours	3/231/0	-	-	-	-
LI	Lead Fatigue	Lead/Fatigue	3/12/0	-	-	-	-
LI	Lead Pull	LeadPull/24 lds	3/18/0	-	-	1/6/0	2/12/0
LU	Latch-up	Per JESD78, Class 2	1/6/0	-	1/6/0	1/6/0	1/6/0
PD	Physical Dimensions	(per mechanical drawing)	1/30/0	-	-	-	-
PKG	Lead Finish Adhesion	Lead/Finish	3/12/0	-	-	-	-
SD	Pb Free Surface Mount Solderability	Pb Free/Solder-	3/45/0	-	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	3/231/0	1/77/0	2/154/0
TC	Temperature Cycle, -65/150C	CSAM/100%	3/66/0	-	-	-	-
TC	Temperature Cycle, -65/150C	TSAM/100%	3/66/0	-	-	-	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	3/231/0	-	-	1/77/0	2/154/0
UHAST	Unbiased HAST 130C/85%RH	CSAM/100%	3/45/0	-	-	-	-
UHAST	Unbiased HAST 130C/85%RH	TSAM/100%	3/45/0	-	-	-	-
XRAY	X-RAY	Top/Side	3/15/0	-	-	-	-

- QBS: Qual By Similarity
- Qual Device LMH5485DGKSEP is qualified at LEVEL2-260C

- 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

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

TI Qualification ID: 20210112-137802

Qualification Report

MLA qualification for commercial VSSOP devices (Groups 2 / 3)
Approve Date 11-March-2024

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: REF5050AIDGKR	Qual Device: SN65LVDS179DGKR	Qual Device: TLV8802DGKR	Qual Device: THVD2410DGKR	QBS Reference: OPA2205ADGKR	QBS Reference: OPA2206ADGKR	QBS Reference: LMH5485DGKSEP
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	2/154/0	-
HAST	A2	Biased HAST	130C/85%RH	250 Hours	-	-	-	-	-	-	2/154/0
AC	A3	Autoclave	121C/15psig	96 Hours	-	1/77/0	-	-	-	-	-
UHAST	A3	Unbiased HAST	130C	96 Hours	-	-	-	-	1/77/0	2/154/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	2/154/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	1/77/0	-	3/231/0	1/77/0	2/154/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	1/77/0	2/154/0	3/231/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	1/77/0	2/154/0	-
ELFR	B2	Early Life Failure Rate	150C	24 Hours	-	-	-	-	1/800/0	2/2400/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	-	-	-	3/66/0

Type	#	Test Name	Condition	Duration	Qual Device: REF5050AIDGKR	Qual Device: SN65LVDS179DGKR	Qual Device: TLV8802DGKR	Qual Device: THVD2410DGKR	QBS Reference: OPA2205ADGKR	QBS Reference: OPA2206ADGKR	QBS Reference: LMH5485DGKSEP
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	1/30/0	-	-	-	-

- QBS: Qual By Similarity
- Qual Device REF5050AIDGKR is qualified at MSL2 260C
- Qual Device SN65LVDS179DGKR is qualified at MSL1 260C
- Qual Device TLV8802DGKR is qualified at MSL1 260C
- Qual Device THVD2410DGKR is qualified at MSL1 260C

- 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

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

TI Qualification ID: R-CHG-2201-015

Qualification Report

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

Type	Test Name / Condition	Duration	Qual Device: OPA2145IDGK	QBS Product Reference: OPA2145ID	QBS Process Reference: INA826AIDGK	QBS Process Reference: OPA1612AID	QBS Process Reference: OPA209AID	QBS Process Reference: OPA827AIDGK	QBS Package Reference: OPA2205ADGK	QBS Package Reference: OPA2206ADGK
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	2/6/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	-	1/77/0	-	-	-	-	1/77/0	2/154/0
HBM	ESD - HBM	2000 V	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	2/6/0
HTOL	Life Test, 150C	300 Hours	-	-	1/77/0	3/231/0	1/77/0	1/74/0	1/77/0	2/154/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	1/45/0	3/135/0	1/45/0	1/45/0	1/77/0	2/154/0
LI	Lead Pull	To Destruct	-	-	-	-	-	-	1/6/0	2/12/0
LU	Latch-up	Per JESD78	-	1/6/0	1/12/0	2/12/0	1/12/0	1/6/0	1/6/0	1/6/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	1/77/0	3/231/0	1/77/0	1/77/0	1/77/0	1/77/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	1/77/0	1/77/0	-	-	-	-	1/77/0	1/77/0
WBP	Bond Pull	76 Wires, 3 units min	1/76/0	-	-	-	-	-	1/76/0	2/152/0
WBS	Ball Bond Shear	76 balls, 3 units min	1/76/0	-	-	-	-	-	1/76/0	2/152/0
XRAY	X-ray	Top	1/5/0	-	-	-	-	-	1/5/0	1/5/0
YLD	FTY and Bin Summary	-	Pass	-	-	-	-	-	Pass	Pass
YLD	MPY and Bin Summary	-	-	-	-	-	-	-	Pass	Pass

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- QBS: Qual By Similarity
- Qual Device OPA2145IDGK is qualified at LEVEL2-260C
- 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

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

TI Qualification ID: 20200602-134509

For questions regarding this notice, e-mails can be sent to Change Management team or your local Field Sales Representative.

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