



**12500 TI Boulevard, MS 8640, Dallas, Texas 75243**

**PCN#20210212001.1**

**Qualification of new Fab site (CFAB) using qualified Process Technology, Die Revision, updated BOMs, and additional Assembly options for select devices  
Change Notification / Sample Request**

**Date:** February 15, 2021

**To:** TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments (TI). The details of this change are on the following pages, and are in alignment with our standard product change notification (PCN) [process](#).

TI requires acknowledgement of receipt of this notification within 30 days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. If samples or additional data are required, requests must be received within 30 days of acknowledgement, given that samples are not built ahead of the change.

The Proposed First Ship date in this PCN letter is the earliest possible date that customers could receive the changed material. It is our commitment that the changed device will not ship before that date. If samples are requested within the 30 day sample request window, customers will still have 30-days to complete their evaluation regardless of the proposed 1st ship date.

This particular PCN is related to TI's previous announcement to close our two remaining factories with 150-millimeter production (DFAB in Dallas, Texas, and SFAB in Sherman, Texas). As referenced in the "reason for change" below, these changes are part of our multiyear plan to transition these products to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

For questions regarding this notice or to provide acknowledgement of this PCN, you may contact your local Field Sales Representative or the PCN Team ([PCN\\_admin\\_team@list.ti.com](mailto:PCN_admin_team@list.ti.com)). For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

PCN Team  
SC Business Services

**20210212001.1**  
**Attachment: 1**

**Products Affected:**

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

<b>DEVICE</b>	<b>CUSTOMER PART NUMBER</b>
LM2904DR-JF	null
LM2904DR	null
LM358DR	null
LM358DR-JF	null
LM358ADR	null
LM258DR	null
LM2904DRG4	null
LM358BIDR	null
LM358DRG4	null
LM258ADR	null
LM358ADRG4	null
LM2904BIDR	null

Technical details of this Product Change follow on the next page(s).

<b>PCN Number:</b>	20210212001.1		<b>PCN Date:</b>	Feb 15, 2021
<b>Title:</b>	Qualification of new Fab site (CFAB) using qualified Process Technology, Die Revision, updated BOMs, and additional Assembly options for select devices			
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>		<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	May 16, 2021	<b>Estimated Sample Availability:</b>	Date provided at sample request.	
<b>Change Type:</b>				
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>
<input type="checkbox"/>	Test Site	<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Wafer Fab Site	<input checked="" type="checkbox"/>	Wafer Fab Materials	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Part number change	

### PCN Details

#### Description of Change:

Texas Instruments is pleased to announce the qualification of a new fab using a qualified process technology (CFAB, JI3), updated BOMs, and assembly (MLA) site options for selected devices as listed below in the product affected section.

Current Fab Site			New Fab Site		
Current Fab Site	Process	Wafer Diameter	New Fab Site	Process	Wafer Diameter
SFAB	JI1	150 mm	CFAB	JI3	200 mm

The die was also changed as a result of the process change.

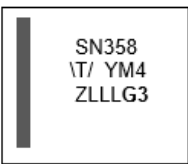



#### Construction differences are noted below:

	MLA	FMX	AP1	FMX New	MLA New
Mount Compound	4147858	4147858	SID#101375281	4147858	4147858
Mold Compound	4211880	4211880	SID#101380756	4211880	4211880
Lead finish, Prep	NiPdAu, non RLF	NiPdAu, non RLF	Matte Sn, non RLF	NiPdAu, RLF	NiPdAu, RLF
Bond wire, diameter	Cu 0.96mil	Cu 0.96mil	Cu, 1.0 mils	Cu, 0.8 mils	Cu, 0.8 mils
MSL	G4	G4	G3	G4	G4

Upon expiry of this PCN TI will combine lead free solutions in a single [standard part number](#), for the devices in groups 1 & 2. For example; [SN358DR](#) – can ship with both Matte Sn and NiPdAu. Example:

- Customer order for 7500 units of SN358DR with 2500 units SPQ (Standard Pack Quantity per Reel).
- TI can satisfy the above order in one of the following ways.
  - 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.

## Group 4 Device Marking:

Current	Proposed
 <p>           \T/ = TI LOGO            YM = YEAR MONTH DATE CODE            4 = PRIMARY SITE CODE            LLLL = ASSEMBLY LOT CODE            Z = SECONDARY SITE CODE   = PIN 1 STRIPE         </p>	 <p>           \T/ = TI LOGO            YM = YEAR MONTH DATE CODE            4 = PRIMARY SITE CODE            LLLL = ASSEMBLY LOT CODE            Z = SECONDARY SITE CODE   = PIN 1 STRIPE         </p>

## Reason for Change:

These changes are part of our multiyear plan to transition products from our 150-millimeter factories to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

## Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

## Anticipated impact on Material Declaration

<input type="checkbox"/>	No Impact to the Material Declaration	<input checked="" type="checkbox"/>	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained from the <a href="#">TI ECO website</a> .
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## Changes to product identification resulting from this PCN:

### Fab Site Information:

Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
SH-BIP-1	SHE	USA	Sherman
<b>CFAB</b>	<b>CU3</b>	<b>CHN</b>	<b>Chengdu</b>

### Die Rev:

Current	New
Die Rev [2P]	<b>Die Rev [2P]</b>
E, F, H	<b>B</b>

### Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
FMX	MEX	MEX	Aguascalientes
AP1	AKR	PHL	Cupang, Muntinlupa City
<b>MLA</b>	<b>MLA</b>	<b>MYS</b>	<b>Kuala Lumpur</b>

Sample product shipping label (not actual product label)



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

G3 = Matte Sn  
 G4 = NiPdAu

**Product Affected:****Group 1 Device list (CFAB/Process migration & BOM Update at FMX/MLA):**

LM258ADR	LM258DRG4	LM2904DR-JF	LM358DR
LM258ADRG4	LM2904DR	LM358ADR	LM358DRG4
LM258DR	LM2904DRG4	LM358ADRG4	LM358DR-JF

**Group 2 Device list (CFAB/Process migration & BOM Update at FMX):**

LM2904DR-P	LM358DR-P
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**Group 3 Device list (AT Site FMX to MLA):**

LM2904BAIDR	LM2904BIDR	LM358BAIDR	LM358BIDR
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**Group 4 Device list (CFAB/Process migration & AT Site AP1 to FMX/MLA):**

SN358DR
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**Group 5 Device list (CFAB/Process migration & AT Site MLA to FMX):**

SN2904DR
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**Qualification Report**

Approve Date 20-Oct-2020

**Qualification Results**

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

Type	Test Name / Condition	Duration	Qual Device: <u>LM358BIDR</u>	QBS Product Reference: <u>LM358BIDR</u>	QBS Process Reference: <u>LM2904BQDRQ1</u>	QBS Package Reference: <u>LM358DR</u>	QBS Package Reference: <u>TL494IDR</u>
PC	PreCon Level 1	Level 1-260C	1/170/0	-	-	-	-
PC	PreCon Level 2	Level 2-260C	-	3/1499/10 (1)	3/1499/10 (1)	-	-
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	Pass	Pass	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	1/77/0	3/229/0
TS	Thermal Shock -65/150C	500 Cycles	-	-	-	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	1/77/0	-	-	1/77/0	3/231/0
UHA	Unbiased HAST 130C/85%RH	96 Hours	-	3/231/0	3/231/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	1/77/0	3/231/0
HTSL	High Temp Storage Bake 175C	500 Hours	-	3/231/0	3/135/0	-	-
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-	1/77/0	3/231/0
HTOL	Life Test, Grade-1, 150C	408 Hours	-	-	3/231/0	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	8/3600/4 (1)	-	-
HBM	ESD - HBM - Q100	2000 V	-	2/6/0	3/9/0	-	-
HBM	ESD - HBM - Q100	2500 V	-	1/3/0	-	-	-

Type	Test Name / Condition	Duration	Qual Device: LM358BIDR	QBS Product Reference: LM358BIDR	QBS Process Reference: LM2904BQDRQ1	QBS Package Reference: LM358DR	QBS Package Reference: TL494IDR
CDM	ESD - CDM - Q100	1500 V	-	3/9/0	3/9/0	-	-
LU	Latch-up	Per AEC-Q100-004	-	-	3/18/0	-	-
LU	Latch-up	Per JESD78	-	3/18/0	-	-	-
PD	Auto Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-
SD	Surface Mount Solderability	Pb	-	-	1/30/0	-	-
SD	Surface Mount Solderability	Pb Free	-	-	1/30/0	-	-
FLAM	Flammability (IEC 695-2-2)	--	-	-	-	-	3/15/0
FLAM	Flammability (UL 94V-0)	--	-	-	-	-	3/15/0
FLAM	Flammability (UL-1694)	--	-	-	-	-	3/15/0
MSL	Moisture Sensitivity, JEDEC	Level 1-260C	1/12/0	-	-	3/36/0	3/36/0
MSL	Automotive Moist Sens. L2	Level 2-260C	-	-	3/36/0	-	-
WBP	Bond Strength	Wires	-	3/228/0	3/90/0	1/76/0	3/228/0
WBS	Ball Bond Shear	Wires	-	3/228/0	3/90/0	-	-

- QBS: Qual By Similarity  
- Qual Device LM358BIDR is qualified at LEVEL 1-260C  
- 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

Note (1): Precon and ELFR fails due to a defect screenable at production test. See 8D attached to eQDB.

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

Location	E-Mail
USA	<a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a>
Europe	<a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>
Asia Pacific	<a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>
WW PCN Team	<a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>

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