



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

**PCN#20230215000.1A**

**Qualification of additional Fab sites (CFAB & DL-LIN) using qualified Process Technology and additional Assembly sites options for select devices  
Change Notification / Sample Request**

**Date:** March 10, 2023

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

**Revision A** is to announce the retraction of the TLC2272ACPW.

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 this notification, 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 multiyear transition plan for our two remaining factories with 150-millimeter production (DFAB in Dallas, Texas, and SFAB in Sherman, Texas). DFAB will remain open, but will focus on 200-mm production, with a smaller set of technologies. SFAB will close no earlier than 2024 and no later than 2025. 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

**20230215000.1A**  
**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>
TLC2272ACPW	null

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

<b>PCN Number:</b>	20230215000.1A		<b>PCN Date:</b>	March 10, 2023																				
<b>Title:</b>	Qualification of additional Fab sites (CFAB & DL-LIN) using qualified Process Technology and additional Assembly sites options for select devices																							
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>		<b>Dept:</b>	Quality Services																				
Proposed 1st Ship Date:	May 17, 2023		<b>Sample requests accepted until:</b>	Mar 18, 2023*																				
<b>*Sample requests received after Mar 18, 2023 will not be supported.</b>																								
<b>Change Type:</b>																								
<input checked="" type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials																			
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification																			
<input type="checkbox"/>	Test Site	<input 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 checked="" type="checkbox"/>	Wafer Fab Site	<input checked="" type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	Wafer Fab Process																			
		<input type="checkbox"/>	Part number change																					
<b>PCN Details</b>																								
<b>Description of Change:</b>																								
<b>Revision B</b> is to announce the <u>retraction</u> of the TLC2272ACPW. This device will continue to be manufactured as prior and will not be subjected to the change described in this notification. Affected device is identified with a <b>strikethrough</b> and is highlighted in yellow in the Product Affected Section.																								
<p>Qualification of additional Fab sites (CFAB &amp; DL-LIN) using qualified Process Technology and additional Assembly sites options for the list of devices in the product affected section below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Current Fab Site</th> <th colspan="3">Additional Fab Site</th> </tr> <tr> <th>Current Fab Site</th> <th>Process</th> <th>Wafer Diameter</th> <th>Additional Fab Site</th> <th>Process</th> <th>Wafer Diameter</th> </tr> </thead> <tbody> <tr> <td rowspan="2">DL-LIN</td> <td rowspan="2">LBC3S</td> <td rowspan="2">150mm</td> <td>CFAB</td> <td rowspan="2">LBC3S</td> <td rowspan="2">200mm</td> </tr> <tr> <td>DL-LIN</td> </tr> </tbody> </table>						Current Fab Site			Additional Fab Site			Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter	DL-LIN	LBC3S	150mm	CFAB	LBC3S	200mm	DL-LIN
Current Fab Site			Additional Fab Site																					
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter																			
DL-LIN	LBC3S	150mm	CFAB	LBC3S	200mm																			
			DL-LIN																					
Construction difference are as follows:																								
<b>Group 3 Devices (CFAB &amp; DFAB8 as additional Fab sites &amp; TIPI as additional Assembly site):</b>																								
		<b>LEN</b>		<b>TIPI</b>																				
Mold Compound		SID#0011G60007		4222198																				
Bond wire composition, diameter		Au, 1.0 mil		Cu, 1.0 mil																				
Mount Compound		SID#0003C10332		4207123																				
<b>Group 5 Devices (CFAB as additional Fab site, TI Malaysia as additional Assembly site):</b>																								
		<b>TAI</b>		<b>MLA</b>																				
Bond wire composition, diameter		Au, 0.96 mil		Cu, 0.96 mil **																				
** - Applies to only TLC2274MDR																								
<b>Group 6 Devices (CFAB as additional Fab site, CDAT as additional Assembly site):</b>																								
		<b>TFME</b>		<b>CDAT</b>																				
Mold Compound		SID #R-13		4222198																				
Bond wire composition, diameter		Au, 1.0 mil		Cu, 1.0 mil																				

Mount Compound	SID # A-03	<a href="#">4207123</a>
----------------	------------	-------------------------

Qual details are provided in the Qual Data Section.

---

**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

---

**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.

<b>RoHS</b>	<b>REACH</b>	<b>Green Status</b>	<b>IEC 62474</b>
<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:**


**Fab Site Information:**

Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
DL-LIN	DLN	USA	Dallas
<b>CFAB</b>	<b>CU3</b>	<b>CHN</b>	<b>Chengdu</b>
<b>DL-LIN</b>	<b>DLN</b>	<b>USA</b>	<b>Dallas</b>


**Assembly Site Information:**


Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TAI	TAI	TWN	Chung Ho, New Taipei City
LEN	LIN	TWN	Taichung
TFME	NFM	CHN	Economic Development Zone
<b>CDAT</b>	<b>CDA</b>	<b>CHN</b>	<b>Chengdu</b>
<b>TI Malaysia</b>	<b>MLA</b>	<b>MYS</b>	<b>KUALA LUMPUR</b>
<b>TIPI</b>	<b>PHI</b>	<b>PHL</b>	<b>Baguio City</b>

Sample product shipping label (not actual product label)



**TEXAS INSTRUMENTS**  
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**





(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:****Group 1 Device list (DFAB8 & CFAB as additional Fab sites only)**

TLC074IN	TLC083IDGQ	TLV2475AIDR	TPS3705-50DGN
TLC082CP	TLV2475CDR	TPS3705-30DGN	TPS3705-33DGNR
TLC075AID	TLC083CDGQR	TPS3705-33DGN	TPS3705-50DGNR
TLV2370IP			

**Group 2 Device list (CFAB & DFAB8 as additional Fab sites & TI Malaysia as additional Assembly site)**

TLC074CPWP	TLC074CPWPR	TLV2474AIPWP	TLV2474IPWPR
TLC074IPWP	TLV2474CPWP	TLV2474CPWPR	TLV2474AIPWPR
TLC075IPWP			

**Group 3 Device list (CFAB & DFAB8 as additional Fab sites & TIPI as additional Assembly site)**

TLV2370IDBVR	TLV2370IDBVT
--------------	--------------

**Group 4 Device list (CFAB as additional Fab site)**

TLV271IP	TLC2272ACP	TLC2252CPWR	TLC2252AIPWR
TLC2252CP	TLC2272CPW	<b>TLC2272ACPW</b>	TLC2272ACPWR
TLC2272CP	TLC2272IPW	TLC2272CPSR	TRS3253EIRSMR
TLC2272IP	TLV2252AIP	TLC2272CPWR	
TLV2371IP	MAX3232EIDWR	TRS3232ECDWR	
MAX3232ECDWR	SN104800PSR	TLC2272IPWR	

**Group 5 Device list (CFAB as additional Fab site, TI Malaysia as additional Assembly site)**

TLC084IPWP	TLC084CPWPR	TLC084AIPWP	TLC084AIPWPR
TLC2274MDR	TLC084IPWPR	TLC085AIPWP	

**Group 6 Device list (CFAB as additional Fab site, CDAT as additional Assembly site)**

TLV271CDBVR	TLV271CDBVT
-------------	-------------

For alternate parts with similar or improved performance, please visit the product page on [TI.com](https://www.ti.com)

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV2401QDBVRQ1	QBS Process Reference: MAX3243IPWG4DL
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0
TC	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	3/231/0
HTSL	High Temp Storage Bake 175C	500 Hours	3/135/0	-
HTOL	Life Test, 150C	408 Hours	3/231/0	3/231/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	3/2400/0
HBM	ESD - HBM - Q100	500 V	1/3/0	-
CDM	ESD - CDM - Q100	1500 V	1/3/0	-
LU	Latch-up	(per JESD78)	1/6/0	-
ED	Electrical Characterization	Per Datasheet parameters	3/90/0	-

- QBS: Qual By Similarity

- Qual Device TLV2401QDBVRQ1 is qualified at LEVEL1-260C

**A1 (PC): Preconditioning:**

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

**Ambient Operating Temperature by Automotive Grade Level:**

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I): -40°C to +85°C

**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

## Qualification Report

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV3401DBVT	QBS Product Reference : TLV2241D	QBS Package Reference : TPS76933DBVR
AC	Autoclave 121C	96 Hours	-	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	1/Pass	-	-
HAST	Biased HAST, 110C/85%RH	96 Hours	-	-	3/231/0
HTOL	Life Test, 155C	240 Hours	-	1/77/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	3/231/0
HBM	ESD-HBM	2000 V	1/3/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	1/Pass	-	-
MQ	Test MQ	(per specification)	Pass	-	-
YLD	Yield Evaluation	(per mfg. Site specification)	Pass	-	-

- QBS: Qual By Similarity

- Qual Device TLV3401DBVT is qualified at LEVEL1-260C

- 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: 20181113-127568

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV9061DBVR	QBS Package Reference: TLV9061DBVR (Matte Sn)	QBS Package Reference: TPS76933DBVR (PHI)
ED	Electrical Characterization, side by side	Per Datasheet Parameters	Pass	-	-
FLAM	Flammability (UL 94V-0)	-	-	-	3/15/0
FLAM	Flammability (UL-1694)	-	3/15/0	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	-	-
LI	Lead Fatigue	Leads	3/54/0	-	-
LI	Lead Pull	Leads	3/54/0	-	-
MISC	Salt Atmosphere	-	3/66/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	-	-
PD	Physical Dimensions	(per mechanical drawing)	3/15/0	-	-
PKG	Lead Finish Adhesion	Leads	3/54/0	-	-
SD	Solderability	Pb Free	3/66/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	3/231/0	-	-
VM	Visual / Mechanical	(per mfg. Site specification)	3/984/0	-	-
WBP	Bond Pull	Wires	3/228/0	-	-
WBS	Ball Bond Shear	Wires	3/228/0	-	-

- QBS: Qual By Similarity

- Qual Device TLV9061DBVR is qualified at LEVEL1-260C

- 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: 20200211-132947

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

Type	Test Name / Condition	Duration	Qual Device: TLC2264AQPWRQ1	Qual Device: TLC2264AIDRCT	QBS Process Reference: CD3301RHHR	QBS Package Reference: TLV9064QPWRQ1
HTOL	Life Test, 150C	300 Hours	1/3/0	-	3/231/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	1/45/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	-
AC	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0
HBM	ESD - HBM	2000 V	1/3/0	-	1/3/0	-
CDM	ESD - CDM	750 V	1/3/0	-	1/3/0	-
LU	Latch-up	(per JESD78)	1/6/0	-	1/6/0	-
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	-	1/30/0	-
MQ	Assembly MQ	Per Site Specifications	Pass	Pass	Pass	Pass

- QBS: Qual By Similarity  
- Qual Device TLC2264AQPWRQ1 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

TI Qualification ID: 20200903-135990

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

Type	Test Name / Condition	Duration	Qual Device: TLV2464CPWR	QBS Process Reference: CD3301RHHR	QBS Package Reference: TPS2042BD	QBS Package Reference: TPS2419DR
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	3/231/0	3/231/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	3/231/0
AC	Autoclave 121C	96 Hours	-	3/231/0	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
HBM	ESD - HBM	4000 V	1/3/0	1/3/0	-	-
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	-	-
LU	Latch-up	(per JESD78)	1/6/0	1/6/0	-	-
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	1/30/0	-	-
MQ	Assembly MQ	Per Site Specifications	Pass	Pass	Pass	Pass

- QBS: Qual By Similarity  
- Qual Device TLV2464CPWR 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

TI Qualification ID: 20210308-139022



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

Type	Test Name / Condition	Duration	Qual Device: 1P8T245NSR	Qual Device: ADS900E	Qual Device: PCM1801U	Qual Device: SN65HVD1781DR	Qual Device: TCA9546ADR	Qual Device: TCA9546ADR_RLF	Qual Device: TL494IDR
AC	Autoclave 121C	96 Hours	3/231/0	-	3/231/0	-	3/231/0	3/231/0	-
FLAM	Flammability (UL 94V-0)	-	-	-	-	-	3/15/0	3/15/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	-	3/231/0	-	3/231/0	3/231/0	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	Pass	Pass	-
TC	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	3/222/0	3/231/0	3/231/0	3/231/0	3/231/0	-
TC- BP	Post TC Bond Pull	Wires	-	-	-	3/90/0	3/162/0	3/90/0	-

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

Type	Test Name / Condition	Duration	Qual Device: TLC320AD77CDBR	Qual Device: TPS2074DB	Qual Device: TPS2101D	Qual Device: TPS2214ADB	Qual Device: TSS721AD	Qual Device: UC27131D	QBS Package Reference: ULQ2003AQDRQ1_STDLF
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0	-	3/231/0	-	-	3/231/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0
HTOL	Life Test, 150C	408 Hours	-	-	-	-	-	-	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	-	-	1/45/0
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	3/231/0	-	3/231/0	-	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	Pass	Pass	-
MQ	Manufacturability (Auto Assembly)	(per automotive requirements)	-	-	-	-	-	-	Pass
TC	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	-	3/231/0
TC- BP	Post TC Bond Pull	Wires	-	-	-	-	-	-	1/30/0

- 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: 20141019-109101, 20140520-104903 (QBS)

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

Location	E-Mail
WW Change Management Team	<a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>

**IMPORTANT NOTICE AND DISCLAIMER**

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES,

EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disdains responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale ([www.ti.com/legal/termsofsale.html](http://www.ti.com/legal/termsofsale.html)) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.