12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20210720000.1
Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet update and additional Assembly site/BOM options for select devices
Change Notification / Sample Request

Date: July 22, 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 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 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_ww_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

20210720000.1
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.

DEVICE	CUSTOMER PART NUMBER
MAX3221CPWR	null
MAX3221EIPWR	null
TRS3221EIPWR	null
MAX3221IPWRG4	null
MAX3221CDBR	null
MAX3221EIDBR	null
MAX3221IPWR	null
MAX3221ECDBR	null
TRS3221EIDBR	null
MAX3221IDBR	null
TRSF3221EIPWR	null
TRS3221ECPWR	null
MAX3221ECPWR	null
MAX3221EIPWRG4	null

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

PCN Number:	20210720000.1	PCN Date:	July 22, 2021
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet update and additional Assembly site/BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Oct 22, 2021	Estimated Sample Availability:	Date provided at sample request.

Change Type:					
☒	Assembly Site	☐	Assembly Process	☒	Assembly Materials
☒	Design	☒	Electrical Specification	☐	Mechanical Specification
☐	Test Site	☐	Packing/Shipping/Labeling	☐	Test Process
☐	Wafer Bump Site	☐	Wafer Bump Material	☐	Wafer Bump Process
☒	Wafer Fab Site	☒	Wafer Fab Materials	☒	Wafer Fab Process
		☐	Part number change		

PCN Details

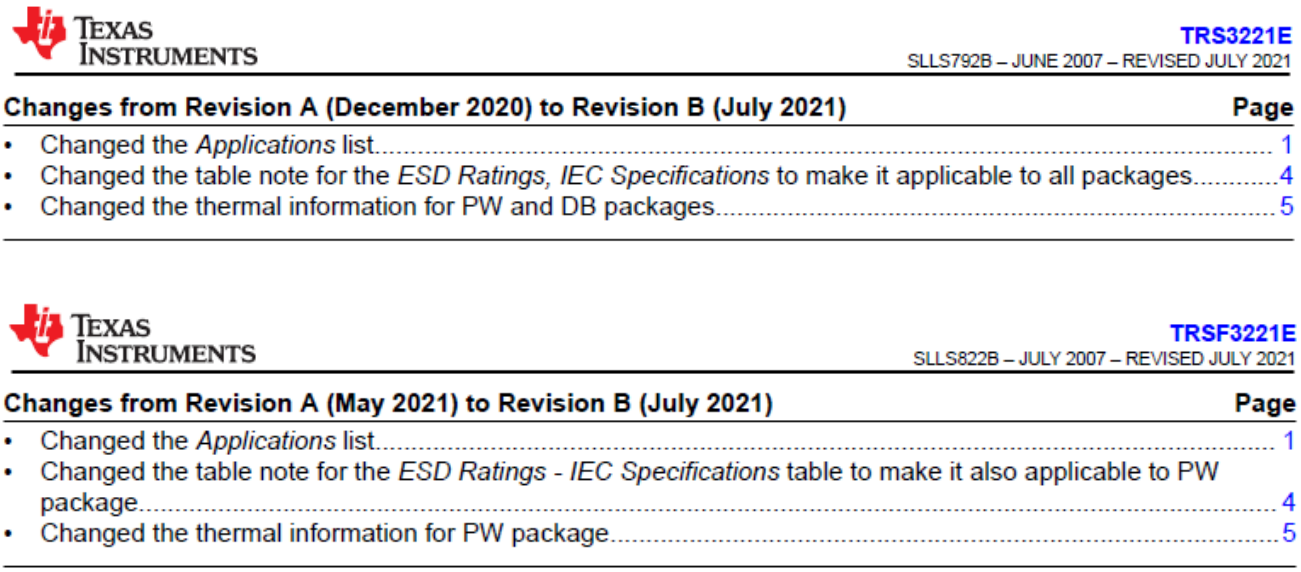
Description of Change:

Texas Instruments is pleased to announce the qualification of a new fab & process technology (RFAB, LBC7) and assembly (MLA) site/BOM options for selected devices as listed below in the product affected section.

Current Fab Site			New Fab Site		
Fab Site	Process	Wafer Diameter	Fab Site	Process	Wafer Diameter
DL-LIN	LBC3S	150 mm	RFAB	LBC7	300 mm
DL-LIN	LBC3S	200 mm			

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

The datasheets will be changing as a result of the above mentioned changes. The datasheet change details can be reviewed in the datasheet revision history. The link to the revised datasheet is available in the table below.



TEXAS INSTRUMENTS

TRS3221E

SLLS792B – JUNE 2007 – REVISED JULY 2021

Changes from Revision A (December 2020) to Revision B (July 2021) **Page**

- Changed the *Applications* list 1
- Changed the table note for the *ESD Ratings, IEC Specifications* to make it applicable to all packages 4
- Changed the thermal information for PW and DB packages 5

TEXAS INSTRUMENTS

TRSF3221E

SLLS822B – JULY 2007 – REVISED JULY 2021

Changes from Revision A (May 2021) to Revision B (July 2021) **Page**

- Changed the *Applications* list 1
- Changed the table note for the *ESD Ratings - IEC Specifications* table to make it also applicable to PW package 4
- Changed the thermal information for PW package 5

Changes from Revision B (March 2016) to Revision C (July 2021) **Page**

- Changed the *Applications* list... 1
- Added *ESD ratings IEC Specifications* table and added a table note for the minimum requirement to meet the IEC ESD level... 4
- Changed values in the *Thermal Information* table for DB and PW packages... 5

Changes from Revision O (June 2015) to Revision P (July 2021) **Page**

- Changed the *Applications* list... 1
- Changed the values in the *Thermal Information* table for DB and PW packages... 5

Changes from Revision E (October 2004) to Revision F (July 2021) **Page**

- Changed the *Applications* list... 1
- Deleted the Oderaing Information table... 1
- Added the *Device Information* table... 1
- Removed the thermal parameters from *Absolute Maximum Ratings* table and moved them to *Thermal Information* table... 4
- Added *ESD Ratings* table. Moved the driver and receiver ESD specifications to this table... 4
- Changed the thermal parameters for PW package of SN65C3221 and DB package of SN75C3221. Added additional thermal parameters for both the packages in the *Thermal Information* table... 5
- Added the *Detailed Description* section... 11

Changes from Revision B (April 2009) to Revision C (July 2021) **Page**

- Changed the *Applications* list... 1
- Deleted the Ordering Information table... 1
- Added the *Device Information* table... 1
- Added the *Pin Configuration and Functions* ... 4
- Removed the thermal information from *Absolute Maximum Ratings*table and moved the thermal information to its own table... 5
- Added a table note for PW package of SN65C3221E regarding the minimum capacitance in *ESD Ratings - IEC Specifications* table... 5
- Changed thermal information for PW package of SN65C3221E. Added additional thermal information for other packages... 6
- Added the *Detailed Desctipiton* section... 13

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
TRS3221E	SLLS792A	SLLS792B	http://www.ti.com/product/TRS3221E
TRSF3221E	SLLS822A	SLLS822B	http://www.ti.com/product/TRSF3221E
MAX3221E	SLLS686B	SLLS686C	http://www.ti.com/product/MAX3221E

MAX3221	SLLS348O	SLLS348P	http://www.ti.com/product/MAX3221
SN65C3221, SN75C3221	SLLS351E	SLLS351F	http://www.ti.com/product/SN65C3221
SN65C3221E	SLLS694B	SLLS694C	http://www.ti.com/product/SN65C3221E

Construction differences are noted below:

Group 1 MLA A/T site & BOM updates for PW Devices:

	ASESH	MLA
Lead finish	Matte Sn	NiPdAu
Mount Compound	EY1000063	4147858
Mold Compound	EN2000508	4211471

Tube versions of the devices are included in EOL notice PDN# 20210720002.3.

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-milimeter 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.

RoHS	REACH	Green Status	IEC 62474
☒ No Change	☒ No Change	☒ No Change	☒ 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
RFAB	**RFB**	**USA**	**Richardson**

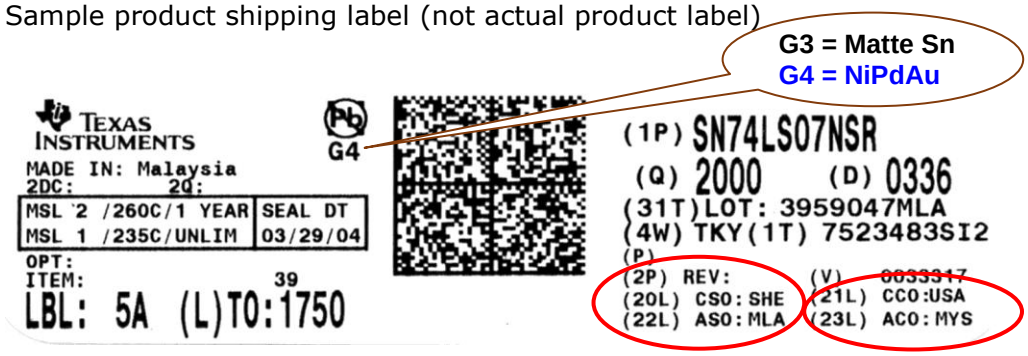
Die Rev:

Current	**New**
Die Rev [2P]	**Die Rev [2P]**
D, **-**	**A**

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
ASESH	ASH	CHN	Shanghai
TI Malaysia	**MLA**	**MYS**	**Kuala Lumpur**

Sample product shipping label (not actual product label)



Product Affected:

Group 1 - RFAB/Process migration, Die Rev, Datasheet, MLA A/T site & BOM updates:	
MAX3221EIPWR	MAX3221IPWR

Group 2 - RFAB/Process migration, Die Rev & Datasheet changes:			
MAX3221CDBR	MAX3221ECPWR	MAX3221IPWRG4	TRS3221ECPWR
MAX3221CDBRG4	MAX3221EIDBR	SN65C3221EPWR	TRS3221EIDBR
MAX3221CPWR	MAX3221EIDBRG4	SN65C3221EPWRE4	TRS3221EIPWR
MAX3221CPWRE4	MAX3221EIPWRG4	SN65C3221PWR	TRSF3221ECPWR
MAX3221CPWRG4	MAX3221IDBR	SN65C3221PWRE4	TRSF3221EIPWR
MAX3221ECDBR	MAX3221IDBRE4	SN75C3221DBR	TRSF3221EIPWRG4
MAX3221ECDBRG4	MAX3221IDBRG4	TRS3221ECDBR	

Qualification Report
Approve Date 23-Jun-2021

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

Type	Test Name / Condition	Duration	Qual Device: TRS3221EIPWR	QBS Process Reference: TPS51217DSC	QBS Process Reference: TPS53605DSQ	QBS Package Reference: TMUX1308QPWRQ1
AC	Autoclave 121C	96 Hours	-	3/231/0	-	3/231/0
CDM	ESD - CDM	2000 V	1/3/0	-	-	1/3/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	-	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	3/2999/0	-
HAST	Biased HAST 130C/85%RH	96 Hours	-	3/231/0	-	3/231/0
HAST	Biased HAST, 110C/85%RH	264 Hours	-	-	3/231/0	-
HBM	ESD - HBM (All Pins)	3500 V	1/3/0	-	-	-
HBM	ESD - HBM (Pins 8, 13 only)	16000 V	1/3/0	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	3/231/0	-
HTOL	Life Test, 135C	635 Hours	-	3/231/0	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	2/90/0	-

Type	Test Name / Condition	Duration	Qual Device: TRS3221EIPWR	QBS Process Reference: TPS51217DSC	QBS Process Reference: TPS53605DSQ	QBS Package Reference: TMUX1308QPWRQ1
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	-	3/135/0
LU	Latch-up	(Per JESD78)	1/6/0	-	-	-
TC	Temperature Cycle -65/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST 110C/85%RH	264 Hours	-	-	3/231/0	-
WBP	Bond Pull	Wires	1/76/0	-	3/228/0	3/90/0
WBS	Ball Bond Shear	Wires	1/76/0	-	3/228/0	3/90/0

- QBS: Qual By Similarity
- Qual Device TRS3221EIPWR 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

Qualification Report
Approve Date 23-Jun-2021

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

Type	Test Name / Condition	Duration	Qual Device: TRSF3221EIPWR	QBS Process Reference: TPS51217DSC	QBS Process Reference: TPS53605DSQ	QBS Package Reference: TMUX1308QPWRQ1
AC	Autoclave 121C	96 Hours	-	3/231/0	-	3/231/0
CDM	ESD - CDM	2000 V	1/3/0	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	-	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	3/2999/0	-
HAST	Biased HAST, 110C/85%RH	264 Hours	-	-	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	3/231/0
HBM	ESD - HBM (All Pins)	3500 V	1/3/0	-	-	-
HBM	ESD - HBM (Pin 8,13)	16000 V	1/3/0	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	3/231/0	-
HTOL	Life Test, 135C	635 Hours	-	3/231/0	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	2/90/0	-
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	-	3/135/0
LU	Latch-up	(Per JESD78)	1/6/0	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST	264 Hours	-	-	3/231/0	-

Type	Test Name / Condition	Duration	Qual Device: TRSF3221EIPWR	QBS Process Reference: TPS51217DSC	QBS Process Reference: TPS53605DSQ	QBS Package Reference: TMUX1308QPWRQ1
	110C/85%RH					
WBP	Bond Pull	Wires	1/76/0	-	3/228/0	3/90/0
WBS	Ball Bond Shear	Wires	1/76/0	-	3/228/0	3/90/0

- QBS: Qual By Similarity
- Qual Device TRSF3221EIPWR 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

Qualification Report

Approve Date 09-Jul-2021

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

Type	Test Name / Condition	Duration	Qual Device: TRS3221EIDBR	QBS Product Reference: TRS3221EIPWR	QBS Process Reference: TPS51217DSC	QBS Process Reference: TPS53605DSQ	QBS Package Reference: TL1454ACDBR	QBS Package Reference: TPD3S714QDBQRQ1
AC	Autoclave 121C	96 Hours	-	-	3/231/0	-	3/231/0	3/231/0
CDM	ESD - CDM	2000 V	1/3/0	-	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	-	-	-	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2999/0	-	-
HAST	Biased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-	-	3/231/0
HAST	Biased HAST, 110C/85%RH	264 Hours	-	-	-	3/231/0	-	-
HBM	ESD - HBM (All Pins)	3500 V	-	1/3/0	-	-	-	-
HBM	ESD - HBM (Pins 8, 13 only)	16000 V	-	1/3/0				
HTOL	Life Test, 125C	1000 Hours	-	-	-	3/231/0	-	-
HTOL	Life Test, 135C	635 Hours	-	-	3/231/0	-	-	-
HTOL	Life Test, 150C	408 hours	-	-	-	-	-	3/231/0
HTSL	High Temp Storage Bake 175C	500 hours	-	-	-	-	-	3/135/0
HTSL	High Temp Storage Bake, 170C	420 Hours	-	-	3/231/0	2/90/0	3/227/0	-
LU	Latch-up	(Per JESD78)	-	1/6/0	-	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST 110C/85%RH	264 Hours	-	-	-	3/231/0	-	-
WBP	Bond Pull	Wires	1/76/0	1/76/0	-	3/228/0	-	3/228/0
WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	-	3/228/0	-	3/90/0

- QBS: Qual By Similarity
- Qual Device TRS3221EIDBR 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

Qualification Report

Approve Date 09-Jul-2021

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

Type	Test Name / Condition	Duration	Qual Device: TRSF3221EIDBR	QBS Product Reference: TRSF3221EIPWR	QBS Process Reference: TPS51217DSC	QBS Process Reference: TPS53605DSQ	QBS Package Reference: TL1454ACDBR	QBS Package Reference: TPD3S714QDBQRQ1
AC	Autoclave 121C	96 Hours	-	-	3/231/0	-	3/231/0	3/231/0
CDM	ESD - CDM	2000 V	1/3/0	-	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	-	-	-	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2999/0	-	-
HAST	Biased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-	-	3/231/0
HAST	Biased HAST, 110C/85%RH	264 Hours	-	-	-	3/231/0	-	-
HBM	ESD - HBM (All Pins)	3500 V	-	1/3/0	-	-	-	-
-	ESD - HBM (Pin 8,13)	16000 V	-	1/3/0	-	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	3/231/0	-	-
HTOL	Life Test, 135C	635 Hours	-	-	3/231/0	-	-	-
HTOL	Life Test, 150C	408 hours	-	-	-	-	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	2/90/0	3/227/0	-
LU	Latch-up	(Per JESD78)	-	1/6/0	-	-	-	-
TC	Temperature Cycle - 65/150C	500 Cycles	-	-	3/231/0	3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST 110C/85%RH	264 Hours	-	-	-	3/231/0	-	-
WBP	Bond Pull	Wires	1/76/0	1/76/0	-	3/228/0	-	3/228/0
WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	-	3/228/0	-	3/90/0

- QBS: Qual By Similarity
- Qual Device TRSF3221EIDBR 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

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	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
WW PCN Team	PCN_ww_admin_team@list.ti.com

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.

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