

<b>PCN Number:</b>	20230906002.1		<b>PCN Date:</b>	September 06, 2023	
<b>Title:</b>	Qualification of RFAB using qualified Process Technology, Die Revision, Datasheet and additional Assembly site/BOM options for select devices				
<b>Customer Contact:</b>	Change Management team		<b>Dept:</b>	Quality Services	
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Dec 6, 2023		<b>Sample requests accepted until:</b>	Oct 6, 2023*	
<b>*Sample requests received after October 6, 2023 will not be supported.</b>					
<b>Change Type:</b>					
<input checked="" type="checkbox"/> Assembly Site	<input checked="" type="checkbox"/> Design	<input type="checkbox"/> Wafer Bump Material			
<input checked="" type="checkbox"/> Assembly Process	<input checked="" type="checkbox"/> Data Sheet	<input type="checkbox"/> Wafer Bump Process			
<input checked="" type="checkbox"/> Assembly Materials	<input type="checkbox"/> Part number change	<input checked="" type="checkbox"/> Wafer Fab Site			
<input type="checkbox"/> Mechanical Specification	<input type="checkbox"/> Test Site	<input checked="" type="checkbox"/> Wafer Fab Materials			
<input checked="" type="checkbox"/> Packing/Shipping/Labeling	<input type="checkbox"/> Test Process	<input checked="" type="checkbox"/> Wafer Fab Process			
<b>PCN Details</b>					
<b>Description of Change:</b>					
Texas Instruments is pleased to announce the addition of RFAB using qualified process technology (LBC8/LBC7/LBC9) and an additional Assembly site (MLA) for the devices listed below in the product affected section.					
<b>Current Fab Site</b>			<b>Additional Fab Site</b>		
<b>Current Fab Site</b>	<b>Process</b>	<b>Wafer Diameter</b>	<b>Additional Fab Site</b>	<b>Process</b>	<b>Wafer Diameter</b>
DL-LIN	LBC4	200 mm	RFAB	LBC8	300 mm
DP1DM5	HPA07	200 mm			
DL-LIN	LBC3	150 mm	RFAB	LBC7	300 mm
DL-LIN	LBC4	200 mm			
DL-LIN	LBC4	200 mm	RFAB	LBC9	300 mm
Construction differences are as follows:					
<b>Group 1 (RFAB/Process migration plus MLA as additional Assembly site) BOM Table:</b>					
	<b>TAI</b>	<b>MLA</b>			
Mold Compound	4209640	4221499			
Bond wire composition, diameter	Au, 0.96 mil	Cu, 0.8 mil			
<b>Group 2 BOM Table (RFAB/Process migration plus BOM update) BOM Table:</b>					
	<b>HNA</b>	<b>MLA Current</b>	<b>MLA New</b>		
Mold Compound	SID#450522	4221499	4221499		
Mount compound	SID#400180	4211470	4211470		
Bond wire composition, diameter	Au, 1.0 mil	Au, 0.96 mil	Cu, 0.8 mil		
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 links to the revised datasheets are available in the table below.					

<b>Changes from Revision E (June 2015) to Revision F (August 2023)</b>	<b>Page</b>
• Updated the numbering format for tables, figures, and cross-references throughout the document.....	1
• Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations.....	5
• Updated electrical and switching characteristics to match device performance.....	7

<b>Changes from Revision J (September 2019) to Revision K (August 2023)</b>	<b>Page</b>
• Changed VDE standard name to DIN EN IEC 60747-17 (VDE 0884-17), updated CSA standard to CSA 62368-1 and IEC 62368-1.....	1
• Updated the numbering format for tables, figures, and cross-references throughout the document.....	1
• Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations.....	7
• Updated electrical and switching characteristics to match device performance.....	10

<b>Changes from Revision G (March 2015) to Revision H (August 2023)</b>	<b>Page</b>
• Updated the CSA standard to CSA 62368-1, Updated VDE standard to DIN EN IEC 60747-17 (VDE 0884-17).....	1
• Updated the numbering format for tables, figures, and cross-references throughout the document.....	1
• Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations.....	7

<b>Changes from Revision G (October 2015) to Revision H (August 2023)</b>	<b>Page</b>
• VDE standard changed to DIN EN IEC 60747-17 (VDE 0884-17) .....	1
• Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations.....	7
• Updated electrical and switching characteristics to match device performance.....	8

<b>Changes from Revision D (October 2015) to Revision E (August 2023)</b>	<b>Page</b>
• Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations.....	6
• Updated electrical and switching characteristics to match device performance.....	8

**Changes from Revision I (April 2017) to Revision J (August 2023) Page**

- Updated the numbering format for tables, figures, and cross-references throughout the document..... 1
- Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations..... 6
- Updated electrical and switching characteristics to match device performance..... 8

**Changes from Revision D (October 2015) to Revision E (August 2023) Page**

- Updated the numbering format for tables, figures, and cross-references throughout the document..... 1
- Updated Thermal Characteristics, Safety Limiting Values, and Thermal Derating Curves to provide more accurate system-level thermal calculations..... 6
- Updated electrical and switching characteristics to match device performance..... 8

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
ISO1176	SLLS897E	SLLS897F	<a href="http://www.ti.com/product/ISO1176">http://www.ti.com/product/ISO1176</a>
ISO1050	SLLS983J	SLLS983K	<a href="http://www.ti.com/product/ISO1050">http://www.ti.com/product/ISO1050</a>
ISOx5	SLOS580G	SLOS580H	<a href="http://www.ti.com/product/ISO15">http://www.ti.com/product/ISO15</a>
ISO1176T	SLLSE28G	SLLSE28H	<a href="http://www.ti.com/product/ISO1176T">http://www.ti.com/product/ISO1176T</a>
ISO35T	SLLSE26D	SLLSE26E	<a href="http://www.ti.com/product/ISO35T">http://www.ti.com/product/ISO35T</a>
ISO308x	SLOS581I	SLOS581J	<a href="http://www.ti.com/product/ISO3080">http://www.ti.com/product/ISO3080</a>
ISO3086T	SLLSE27D	SLLSE27E	<a href="http://www.ti.com/product/ISO3086T">http://www.ti.com/product/ISO3086T</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 and 200-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.

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:**

**Fab Site Information:**

Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
DL-LIN	DLN	USA	Dallas
DP1DM5	DM5	USA	Dallas
<b>RFAB</b>	<b>RFB</b>	<b>USA</b>	<b>Richardson</b>

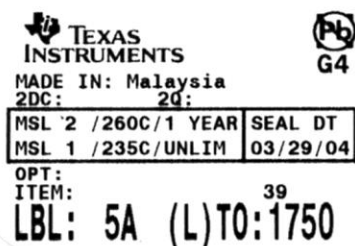
**Die Rev:****Current****New**

Die Rev [2P]	<b>Die Rev [2P]</b>
A, B, C	<b>A, -</b>

**Assembly Site Information:**

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
HNA	HNT	THA	Ayutthaya
TAI	TAI	TWN	Chung Ho, New Taipei 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) CS0: SHE (21L) CC0:USA  
(22L) AS0: MLA (23L) AC0: MYS

**Product Affected:****Group 1 Device list (RFAB/Process migration plus MLA as additional Assembly site):**

ISO1050DWR	ISO3080DWR	ISO3086DWR	ISO3088DWRG4
ISO1176DWR	ISO3082DWR	ISO3086TDWR	ISO35DWR
ISO1176TDWR	ISO3082DWRG4	ISO3088DWR	ISO35TDWR
ISO15DWR			

**Group 2 Device list (RFAB/Process migration plus BOM update):**

ISO1050DUBR
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For alternate parts with similar or improved performance, please visit the product page on [TI.com](http://TI.com)

## Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: ISO1050DUBR	QBS Reference: AMC1200STDUBRQ1	QBS Reference: ISO6763QDWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	3/231/0	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	3/231/0	1/45/0	3/135/0
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	3/228/0	-	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	3/228/0	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-
ESD	E2	ESD CDM	-	1500 Volts	1/3/0	-	-
ESD	E2	ESD HBM	-	4000 Volts	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: ISO1050DUBR	QBS Reference: AMC1200STDUBRQ1	QBS Reference: ISO6763QDWRQ1
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device ISO1050DUBR is qualified at MSL3 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-2202-050

## Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: ISO3082DWR	Qual Device: ISO1176DWR	QBS Reference: ISO1176TDWR	QBS Reference: ISO6763QDWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	1/77/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	1/77/0	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	1/77/0	3/135/0
ESD	E2	ESD CDM	-	1000 Volts	1/3/0	1/3/0	-	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	1/3/0	1/3/0	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0	1/3/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/90/0

- QBS: Qual By Similarity
- Qual Device ISO3082DWR is qualified at MSL2 260C
- Qual Device ISO1176DWR is qualified at MSL2 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-2303-070

#### Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: ISO15DWR	Qual Device: ISO35DWR	Qual Device: ISO3080DWR	Qual Device: ISO3086DWR	Qual Device: ISO3088DWR	QBS Reference: ISO1050DWR	QBS Reference: ISO1176TDWR	QBS Reference: ISO6763QDWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	3/231/0
UFAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	-	1/77/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	1/77/0	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	1/77/0	3/135/0
ESD	E2	ESD CDM	-	1000 Volts	-	1/3/0	1/3/0	-	1/3/0	-	-	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	-	1/3/0	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	-	1/3/0	1/3/0	-	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	1/3/0	1/3/0	-	1/3/0	1/3/0	1/3/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	-	-	3/90/0

- QBS: Qual By Similarity

- Qual Device ISO15DWR is qualified at MSL2 260C
- Qual Device ISO35DWR is qualified at MSL2 260C
- Qual Device ISO3080DWR is qualified at MSL2 260C
- Qual Device ISO3086DWR is qualified at MSL2 260C
- Qual Device ISO3088DWR is qualified at MSL2 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-2202-060



## Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: ISO1050DWR	QBS Reference: ISO1176TDWR	QBS Reference: ISO6763QDWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	1/77/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	1/77/0	3/135/0
ESD	E2	ESD CDM	-	1500 Volts	1/3/0	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	1/3/0	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0

- QBS: Qual By Similarity
- Qual Device ISO1050DWR is qualified at MSL2 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-2202-049

## Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: ISO3086TDWR	Qual Device: ISO35TDWR	Qual Device: ISO1176TDWR	QBS Reference: ISO6763QDWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	1/77/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	1/77/0	3/135/0
ESD	E2	ESD CDM	-	1500 Volts	-	-	1/3/0	-
ESD	E2	ESD HBM (Bus pins to GND2)	-	10000 Volts	-	-	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	1/3/0	-
ESD	E2	ESD HBM (Bus pins to GND1)	-	6000 Volts	-	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/3/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/90/0

- QBS: Qual By Similarity
- Qual Device ISO3086TDWR is qualified at MSL2 260C
- Qual Device ISO35TDWR is qualified at MSL2 260C
- Qual Device ISO1176TDWR is qualified at MSL2 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-2202-051

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

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