PCN Number:	20201111001.1**A**	PCN Date:	Dec 18, 2020
Title:	Qualification of UMC-F12 as an additional Fab site option for select devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Feb 11, 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 UMC-F12 fabrication facility as an additional Wafer Fab source for the selected devices listed in the "Product Affected" section.

Revision A is to announce the addition of new devices that were not included on the original PCN notification. These new devices are highlighted in yellow and **bolded** in the product affected section below. The expected first shipment date for these new devices will be 90 days from this notice for these newly added devices only. The proposed 1st ship date of February 11, 2021 still applies for the original set of devices.

Current Fab Site			Additional Fab Site		
Current Fab Site	**Process**	**Wafer Diameter**	**Additional Fab Site**	**Process**	**Wafer Diameter**
RFAB	LBC9	300 mm	UMC-F12	LBC9	300 mm

Qual details are provided in the Qual Data Section.

Reason for Change:

Continuity of Supply

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

None

Changes to product identification resulting from this PCN:

Current:

Current Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
RFAB	RFB	USA	Richardson

New Fab Site:

New Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
UMC-F12	**F12**	**TWN**	**Tainan**

Sample product shipping label (not actual product label)

Product Affected:

SN1810003YBGR	SN1908005YBGR	SN51395RJER	TPS65993ADYBGR
SN1810004YBGR	SN2001021YBGR	TPS51393PRJER	TPS65994ACYBGR
SN1905001YBGR	SN2001022YBGR	TPS51393PRJET	TPS65994ADYBGR
SN1905002YBGR	SN2001023YBGR	TPS51393RJER	TPS65994ADYBGT
SN1905003YBGR	SN2001024YBGR	TPS51393RJET	**TPS66020YBGR**
SN1905004YBGR	SN2001026YBGR	TPS51395PRJER	**TPS66021YBGR**
SN1905005YBGR	SN2001027YBGR	TPS51395PRJET	**TPS66120YBGR**
SN1905006YBGR	SN2001028YBGR	TPS51395RJER	**TPS66121YBGR**
SN1905007YBGR	SN2001029YBGR	TPS51395RJET	
SN1905008YBGR	SN51395P-1RJER	TPS65993ACYBGR	

Qualification Report

Approved Date 27-Oct-2020

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS65994ACYBGR - CLARK	QBS Product Reference: TPS65994ACYBGR -CDAT	QBS Product Reference: TPS65994ACYBGR	QBS Product Reference: TPS65994ABYBGR	QBS Process Reference: TPS51486RJER	QBS Package Reference: BQ25970YFFR
AC	Autoclave	96 hours	-	-	-	-	3/231/0	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	3/2400/0	-
ED	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	1/30/0	3/90/0	-
CDM	ESD - CDM	1000 V	-	1/3/0	-	-	1/3/0	-
CDM	ESD - CDM	1500 V	1/3/0	-	1/3/0	1/3/0	-	1/3/0
HBM	ESD - HBM	2000 V	1/3/0	1/3/0	1/3/0	1/3/0	3/9/0	1/3/0
HBM	ESD - HBM	2500 V	1/3/0	1/3/0	1/3/0	-	3/9/0	1/3/0
HBM	ESD - HBM	4000 V	-	-	-	-	-	1/3/0
HAST	Biased HAST, 130C/85%RH	96 hours	1/77/0	2/154/0	-	3/231/0	3/231/0	3/231/0
HTOL	Life Test, 125C	1000 hours	1/77/0	2/154/0	-	1/77/0	3/231/0	-
HTOL	Life Test, 140C	480 hours	-	-	-	-	-	3/231/0
HTSL	High Temp Bake 175C	420 hours	1/77/0	2/154/0	-	3/231/0	3/231/0	3/231/0
LU	Latch-up	(Per JESD78, Class I)	-	-	1/6/0	1/6/0	1/6/0	1/6/0
LU	Latch-up	(Per JESD78, Class II)	-	1/6/0	1/6/0	-	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	1/Pass	-	-	3/Pass	-	-
MQ	Manufacturability (Bump)	(Approved by Bump Site)	1/Pass	-	-	3/Pass	-	-
PCL	NVM Power Cycling	10K Cycles at 25C	1/77/0	1/77/0	-	-	-	-

Type	Test Name / Condition	Duration	Qual Device: TPS65994ACYBGR -CLARK	QBS Product Reference: TPS65994ACYBGR -CDAT	QBS Product Reference: TPS65994ACYBGR	QBS Product Reference: TPS65994ABYBGR	QBS Process Reference: TPS51486RJER	QBS Package Reference: BQ25970YFFR
PD	Physical Dimensions	(per mechanical drawing)	-	-	-	3/15/0	-	-
SBS	Bump-Shear	-	-	-	-	-	-	3/150/0
TC	Temperature Cycle, -55/125C	700 cycles	1/77/0	2/154/0	-	3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 hours	1/77/0	2/154/0	-	3/231/0	-	3/231/0

- QBS: Qual By Similarity
- Qual Device TPS65994ACYBGR is qualified at LEVEL1-260C
- One parent chip, $N65994PA1C -> 2 child chips: $N65994A1C and $N65993A1C (OTP spin) are concurrently qualified.
  UMC Die: $N65994A1C:
  End product: TPS65994ACYBGR (Qual Device). Part number spins: SN1810003YBGR, SN1905002YBGR, SN1905004YBGR, SN1905006YBGR, SN1905008YBGR
  End product: TPS65993ACYBGR (OTP Spin). Part number spins: SN1810004YBGR, SN1905001YBGR, SN1905003YBGR, SN1905005YBGR, SN1905007YBGR

- 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 8-Oct-2020

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS51393PRJER	QBS Device: TPS51486RJER
AC	Autoclave, 121C, 2 atm	96 Hours	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	3/2400/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0
HBM	ESD - HBM	2500 V	1/3/0	3/9/0
CDM	ESD - CDM	1000 V	1/3/0	3/9/0
HTOL	Life Test, 125C	1000 Hours	1/77/0	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	3/231/0
LU	Latch-up	(per JESD78)	1/6/0	3/18/0
TC	Temperature Cycle, -55/125C	700 Cycles	-	3/231/0

- Qual Device TPS51393PRJER 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

PCN Rev A Qual Memo:

Qualification Report

Approved Date 24-Nov-2020

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS66020YBG - CLARK	QBS Product Reference: TPS66020YBG - CDAT	QBS Product Reference: TPS66020YBG - CLARK	QBS Product Reference: TPS66021YBG - CDAT	QBS Process Reference: TPS51486RJER	QBS Package Reference: BQ25970YFFR
AC	Autoclave	96 hours	-	-	-	-	3/231/0	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	3/2400/0	-
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	1/30/0	2/60/0	1/30/0	3/90/0	-
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	-	-	1/3/0	-
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	-	2/6/0	-	1/3/0
HBM	ESD - HBM	2000 V	1/3/0	1/3/0	-	2/6/0	3/9/0	1/3/0
HBM	ESD - HBM	2500 V	1/3/0	1/3/0	-	2/6/0	3/9/0	1/3/0
HBM	ESD - HBM	4000 V	-	-	-	2/6/0	-	1/3/0
HAST	Biased HAST, 130C/85%RH	96 hours	2/154/0	1/77/0	-		3/231/0	3/231/0
HTOL	Life Test, 125C	1000 hours	2/154/0	1/77/0	-	1/77/0	3/231/0	-
HTOL	Life Test, 140C	480 hours	-	-	-	-	-	3/231/0
HTSL	High Temp Bake 170C	420 hours	2/154/0	1/77/0	-	-	3/231/0	3/231/0
LU	Latch-up	(Per JESD78, Class I)	1/6/0	1/6/0	-	3/18/0	1/6/0	1/6/0
LU	Latch-up	(Per JESD78, Class II)	1/6/0	1/6/0	-	-	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	2/Pass	-	-	-	-	-
MQ	Manufacturability (Bump)	(Approved by Bump Site)	2/Pass	-	-	-	-	-
PD	Physical Dimensions	(per mechanical drawing)	-	-	-	1/5/0	-	-
SBS	Bump-Shear	-	-	-	-	1/50/0	-	3/150/0
TC	Temperature Cycle, -55/125C	700 cycles	2/154/0	1/77/0	-	-	3/231/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 hours	2/154/0	1/77/0	-	-	-	3/231/0

- QBS: Qual By Similarity
- Qual Device TPS66020YBG is qualified at LEVEL1-260
- Concurrently qualifies TPS66020 - 3.3V LDO, Source/SinkTPS66021 - 5V LDO, Source/Sink, TPS66120 - 3.3V LDO Sink-only, TPS66121 - 5V LDO, Sink-only

- 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

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