

PCN Number:	20190130003.2C			PCN Date:	Jun 12, 2019																																		
Title:	Qualification of FFAB as an additional Fab site option for select BICMOS13 devices																																						
Customer Contact:	PCN Manager			Dept:	Quality Services																																		
Proposed 1st Ship Date:	Jul 31, 2019		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:																																							
Revision C is to remove FFAB-PR as an additional Probe Site. At this time, there are no plans to add FFAB-PR as an additional Probe Site. There is no change to the proposed 1 st ship date as a result of this revision.																																							
Texas Instruments is pleased to announce the qualification of its FFAB fabrication facility as an additional Wafer Fab source for the selected devices listed in the "Product Affected" section.																																							
<table border="1"> <thead> <tr> <th colspan="4">Current Site</th> <th colspan="4">Additional Site</th> </tr> <tr> <th>Current Fab Site</th> <th>Fab Process</th> <th>Probe Site</th> <th>Wafer Diameter</th> <th>Additional Fab Site</th> <th>Fab Process</th> <th>Probe Site</th> <th>Wafer Diameter</th> </tr> </thead> <tbody> <tr> <td>MAINEFAB</td> <td>BICMOS13</td> <td>MFAB-PR</td> <td>200 mm</td> <td>FFAB</td> <td>BICMOS13</td> <td>FFAB-PR</td> <td>200 mm</td> </tr> <tr> <td>MAINEFAB</td> <td>BICMOS13</td> <td>TIEM-PR</td> <td>200 mm</td> <td>FFAB</td> <td>BICMOS13</td> <td>TIEM-PR</td> <td>200 mm</td> </tr> </tbody> </table>								Current Site				Additional Site				Current Fab Site	Fab Process	Probe Site	Wafer Diameter	Additional Fab Site	Fab Process	Probe Site	Wafer Diameter	MAINEFAB	BICMOS13	MFAB-PR	200 mm	FFAB	BICMOS13	FFAB-PR	200 mm	MAINEFAB	BICMOS13	TIEM-PR	200 mm	FFAB	BICMOS13	TIEM-PR	200 mm
Current Site				Additional Site																																			
Current Fab Site	Fab Process	Probe Site	Wafer Diameter	Additional Fab Site	Fab Process	Probe Site	Wafer Diameter																																
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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																																							
Chip Site	Chip Site Origin (20L)	Chip Site Country Code (21L)	Chip Site City																																				
MAINEFAB	CUA	USA	South Portland																																				
Additional																																							
Chip Site	Chip Site Origin (20L)	Chip Site Country Code (21L)	Chip Site City																																				
FR-BIP-1	TID	DEU	Freising																																				
Sample product shipping label (not actual product label)																																							

 TEXAS INSTRUMENTS MADE IN: Malaysia 2DC: 2d: MSL '2 / 260C / 1 YEAR SEAL DT MSL 1 / 235C / UNLIM 03 / 29 / 04   (1P) SN74LS07NSR (Q) 2000 (D) 0336 (31T) LOT: 3959047MLA (4W) TKY (1T) 7523483S12 (P) (2P) REV: (V) 0033317 (20L) CS0: SHE (21L) CCO:USA (22L) AS0: MLA (23L) ACC: MYS			
OPT: ITEM: 39 LBL: 5A (L)T0:1750			
Product Affected:			
DS90UB921TRHSRQ1	DS90UB940TNKDTQ1	DS90UH940NTNKDRQ1	DS90UH940TNKDTQ1
DS90UB921TRHSTQ1	DS90UB948TNKDRQ1	DS90UH940NTNKDTQ1	DS90UH948TNKDRQ1
DS90UB940TNKDRQ1	DS90UB948TNKDTQ1	DS90UH940TNKDRQ1	DS90UH948TNKDTQ1

Qualification Report
(As per AEC-Q100 and JEDEC Guidelines)

Approved 24 May, 2019

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

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: DS90UH940NTNKDTQ1	Qual Device: DS90UH948TNKDTQ1	QBS Reference Data: DS90UH926QET65
Test Group A – Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	3	231	Automotive Preconditioning	Level 3-260C	-	-	0 Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	-	-	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	30	Post Temp. Cycle Bond Pull	Wires	-	-	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	-	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	-	-	1/45/0
Test Group B – Accelerated Lifetime Simulation Tests									
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	-	3/231/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	3/2400/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	-	-	3/231/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: DS90UH940NTNKDTQ1	Qual Device: DS90UH948TNKDTQ1	QBS Reference Data: DS90UH926QET65
Test Group C – Package Assembly Integrity Tests									
WBS	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.67)	Wires	-	-	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	-	-	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	Pb Free	-	-	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	-	-	3/30/0
Test Group D – Die Fabrication Reliability Tests									
EM	D1	JESD61	-	-	Electromigration	-	-	-	Completed Per Process Technology Requirements
TDD B	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	-	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	-	-	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	-	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	-	-	Completed Per Process Technology Requirements
Test Group E – Electrical Verification Tests									
HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	2500 V	1/3/0	-	1/3/0
						8000V	1/3/0		-
CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1000 V	1/3/0	-	1/3/0
						1500 V	1/3/0		-
LU	E4	AEC Q100-004	1	6	Latch-up	(Per AEC Q100-004)	1/6/0	-	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	3/90/0	3/90/0

A1 (PC): Preconditioning:

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

Junction 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

Green/Pb-free Status:

Qualified Pb-Free (SMT) and Green

For questions regarding this notice, e-mails can be sent to the regional contacts shown below, or you can contact 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