PCN Number:	20220721003.1	**PCN Date:**	
Title:	Qualification of alternate material set for select devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Oct 19, 2022	**Sample Requests accepted until:**	Aug 21, 2022*

***Sample requests received after July 21, 2022 will not be supported.**

Change Type:

☐	Assembly Site	☐	Design	☐	Wafer Bump Site
☐	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☐	Test Site	☐	Wafer Fab Site
☐	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

This PCN is to inform of the qualification of an alternate material set for the list of devices in the product affected section below as follows:

What	Current	Alternate
Mount Compound	**4042500**	**4147858**
Mold Compound	**4205694 or 4042503**	**4211880**

Reason for Change:

Standardization

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:

None

Product Affected:

CD4094BE-NG	CD74HC244E-NG	CD74HCT00E-NG	CD74HCT74E-NG
CD74HC02E-NG	CD74HC27E-NG	CD74HCT138E-NG	MPD23781D
CD74HC08E-NG	CD74HC32E-NG	CD74HCT20E-NG	SN74ALS232BN
CD74HC11E-NG	CD74HC390E-NG	CD74HCT245E-NG	SN74HCT541N-P
CD74HC139E-NG	CD74HC4075E-NG	CD74HCT373E-NG	SN74S225N
CD74HC161E-NG	CD74HC86E-NG	CD74HCT374E-NG	SN75161BN-NG

TI Information
Selective Disclosure

Qualification Report

Product Attributes

Attributes	Qual Device: SN74LS03N	Qual Device: TLC339IN	Qual Device: TPA3122D2N	Qual Device: TPS2041P	Qual Device: TS12A4514P	Qual Device: UCC37322P
Assembly Site	MLA	FMX	MLA	FMX	FMX	FMX
Package Family	PDIP	PDIP	PDIP	PDIP	PDIP	PDIP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	SFAB	DFAB	UMC FAB8AB	DFAB	DFAB	DFAB
Wafer Process	JI1	LINCMOS_5/5	LBC5X	LBC3S	LBC3S	LBC3S

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: SN74LS03N	Qual Device: TLC339IN	Qual Device: TPA3122D2N	Qual Device: TPS2041P	Qual Device: TS12A4514P	Qual Device: UCC37322P
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0	-	1/77/0	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	-	-
FLAM	Flammability (UL 94V-0)	-	-	-	-	-	-	3/15/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/231/0	3/231/0	3/231/0	-	1/77/0	3/231/0
LI	Lead Fatigue	Leads	3/45/0	3/45/0	3/45/0	-	-	3/45/0
LI	Lead Pull to Destruction	Leads	3/126/0	3/126/0	3/180/0	-	-	3/70/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	Pass	Pass
PKG	Lead Finish Adhesion	Leads	3/45/0	3/45/0	3/45/0	-	-	3/45/0
SD	Solderability	8 Hours Steam Age	3/66/0	3/66/0	3/66/0	-	-	3/66/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0	1/77/0	3/231/0

Product Attributes

Attributes	Qual Device: L293DNE	Qual Device: LT1013CP	Qual Device: MSP430F2013IN	Qual Device: NE5532P	Qual Device: SN74HC595N	Qual Device: SN74HCT540N
Assembly Site	FMX	FMX	MLA	FMX	MLA	MLA
Package Family	PDIP	PDIP	PDIP	PDIP	PDIP	PDIP
Flammability Rating	UL 94 V-0	UL 94 V0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	SFAB	SFAB	TSMC-10	SFAB	SFAB	SFAB
Wafer Process	JI1	JI1	TSMC EMB FLASH	JI1	74HC	74HC-NONEPI

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: L293DNE	Qual Device: LT1013CP	Qual Device: MSP430F2013IN	Qual Device: NE5532P	Qual Device: SN74HC595N	Qual Device: SN74HCT540N
AC	Autoclave 121C	96 Hours	3/231/0	-	3/231/0	-	3/225/0	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	Pass	-
FLAM	Flammability (UL 94V-0)	-	-	-	-	-	-	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	-	3/231/0	-	3/231/0	3/231/0
LI	Lead Fatigue	Leads	3/66/0	-	3/45/0	3/66/0	3/45/0	3/45/0
LI	Lead Pull to Destruction	Leads	3/144/0	-	3/126/0	3/72/0	3/144/0	3/180/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	Pass	Pass
PKG	Lead Finish Adhesion	Leads	3/45/0	-	3/45/0	3/45/0	3/45/0	2/30/0
SD	Solderability	8 Hours Steam Age	3/66/0	-	3/66/0	3/66/0	3/66/0	3/66/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/225/0	3/231/0	3/231/0	-	3/231/0	3/231/0

- 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: 20160628-118305

TI Information
Selective Disclosure

Product Attributes

Attributes	Qual Device: CAHCT244QDWRQ1	Qual Device: INA282AQDRQ1	Qual Device: K3A1040AQDRQ1	Qual Device: OPA2365AQDRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Logic	Signal Chain	Interface	Signal Chain
Wafer Fab Supplier	SFAB	DFAB	DFAB	DMOS5
Die Revision	B	G	B	C
Assembly Site	MLA	MLA	MLA	MLA
Package Type	SOIC	SOIC	SOIC	SOIC
Package Designator	DW	D	D	D
Ball/Lead Count	20	8	8	8

- QBS: Qual By Similarity
- Qual Devices qualified at LEVEL1-260CG: CAHCT244QDWRQ1, K3A1040AQDRQ1
- Qual Devices qualified at LEVEL2-260CG: INA282AQDRQ1
- Qual Devices qualified at LEVEL3-260CG: OPA2365AQDRQ1, P11804S1IDBRME, TLC6C598CQDRQ1

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: CAHCT244QDWRQ1	Qual Device: INA282AQDRQ1	Qual Device: K3A1040AQDRQ1	Qual Device: OPA2365AQDRQ1
Test Group A – Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 1-260C	No Fails	-	No Fails	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 2-260C	-	No Fails	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 3-260C	-	-	-	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-
HAST	A2	JEDEC JESD22-A110	3	12	Post Biased HAST, CSAM/TSAM	96 Hours	-	-	-	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	Post 96-hour CSAM/TSAM	-	-	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	10	Temperature Cycle, -65/150C	Post 500-cycle CSAM/TSAM	-	-	-	-
TC-BP	A4	MIL-STD883 Method 2011	1	30	Post TC Bond Pull	Wires	3/90/0	3/90/0	3/90/0	3/90/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	1000 Cycles	N/A	N/A	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	-	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	22	High Temp Storage Bake 150C	Post CSAM/TSAM	-	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	3/135/0	3/135/0	3/135/0	3/135/0
Test Group B – Accelerated Lifetime Simulation Tests										
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	N/A	N/A	N/A
Test Group C – Package Assembly Integrity Tests										
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	3/90/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free	3/45/0	3/45/0	3/45/0	3/45/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb	2/30/0	3/45/0	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/30/0	3/30/0	3/30/0	3/30/0
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	N/A	N/A	N/A	N/A
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-	-	-
Test Group D – Die Fabrication Reliability Tests										
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E – Electrical Verification Tests										
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	-	-	-
Additional Tests										
FLAM			-	-	Flammability (UL 94V-0)	-	-	-	-	-

Product Attributes

Attributes	Qual Device: P11804S1IDBRME	Qual Device: TLC6C598CQDRQ1	QBS Package Reference: MC33063AQDRQ1	QBS Package Reference: ULQ2003AQDRQ1
Automotive Grade Level	Grade 3	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +85 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Power Management	Power Management	-
Wafer Fab Supplier	TSMC-FAB3	DMOS5	SFAB	SFAB
Die Revision	C	B	A	C
Assembly Site	MLA	MLA	FMX	FMX
Package Type	SSOP	SOIC	SOIC	SOIC
Package Designator	DB	D	D	D
Ball/Lead Count	28	16	8	16

- QBS: Qual By Similarity
- Qual Devices qualified at LEVEL1-260CG: CAHCT244QDWRQ1, K3A1040AQDRQ1
- Qual Devices qualified at LEVEL2-260CG: INA282AQDRQ1
- Qual Devices qualified at LEVEL3-260CG: OPA2365AQDRQ1, P11804S1IDBRME, TLC6C598CQDRQ1

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: P11804S1IDBRME	Qual Device: TLC6C598CQDRQ1	QBS Package Reference: MC33063AQDRQ1	QBS Package Reference: ULQ2003AQDRQ1
Test Group A – Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 1-260C	-	-	No Fails	No Fails
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 2-260C	-	-	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 3-260C	No Fails	No Fails	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	3/231/0
HAST	A2	JEDEC JESD22-A110	3	12	Post Biased HAST, CSAM/TSAM	96 Hours	-	-	-	1/12/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	Post 96-hour CSAM/TSAM	-	-	-	3/36/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	10	Temperature Cycle, -65/150C	Post 500-cycle CSAM/TSAM	-	-	-	3/36/0
TC-BP	A4	MIL-STD883 Method 2011	1	30	Post TC Bond Pull	Wires	3/90/0	3/90/0	3/90/0	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	1000 Cycles	N/A	3/231/0	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	3/135/0	3/135/0	-	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	22	High Temp Storage Bake 150C	Post CSAM/TSAM	-	-	-	1/22/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	-	3/135/0	-
Test Group B – Accelerated Lifetime Simulation Tests										
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	N/A	N/A	N/A
Test Group C – Package Assembly Integrity Tests										
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	3/90/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free	3/45/0	3/45/0	-	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb	3/45/0	3/45/0	-	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/30/0	3/30/0	-	3/30/0
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	N/A	N/A	N/A	N/A
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-	-	-
Test Group D – Die Fabrication Reliability Tests										
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E – Electrical Verification Tests										
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	-	-	3/90/0
Additional Tests										
FLAM			-	-	Flammability (UL 94V-0)	-	-	3/15/0	-	-

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

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20161129-119964

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

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