

PCN Number:	20211001000.2	PCN Date:	December 17, 2021									
Title:	Qualify New Assembly Material set for Selected Device(s)											
Customer Contact:	PCN Manager	Dept:	Quality Services									
Proposed 1st Ship Date:	June 17, 2022	Estimated Sample Availability:	Date provided at sample request									
Change Type:												
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design									
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet									
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change									
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site									
<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Site									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Material									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Process									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Site									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Materials									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process									
PCN Details												
Description of Change:												
Texas Instruments is pleased to announce the qualification of new assembly material set for devices listed in "Product affected" section below. Devices will remain in current assembly facility and piece part changes as follows:												
<table border="1"> <thead> <tr> <th>Material</th> <th>Current</th> <th>Proposed</th> </tr> </thead> <tbody> <tr> <td>Leadframe type</td> <td>Non-rough</td> <td>Rough</td> </tr> <tr> <td>Mold compound</td> <td>4205694</td> <td>4211880</td> </tr> </tbody> </table>				Material	Current	Proposed	Leadframe type	Non-rough	Rough	Mold compound	4205694	4211880
Material	Current	Proposed										
Leadframe type	Non-rough	Rough										
Mold compound	4205694	4211880										
Reason for Change:												
Continuity of supply.												
Anticipated impact on Fit, Form, 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.												
<table border="1"> <thead> <tr> <th>RoHS</th> <th>REACH</th> <th>Green Status</th> <th>IEC 62474</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> </tr> </tbody> </table>				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	
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:												
None.												
Product Affected:												
CD74HC4051MM96EP	TLC2274AMDREP	UCC2818MDREP	V62/05611-01YE									
LM239AMDREP	TLC2274MDREP	V62/03606-01XE	V62/06607-03YE									
LM239AQDREP	TLV2254AQDREP	V62/03618-02YE	V62/06607-04YE									
SN65HVD33MDREP	TLV2374MDREP	V62/03618-04YE	V62/06634-04YE									
SN65LVDS31MDREP	TLV2464AMDREP	V62/03619-07YE	V62/07609-01XE									
SN74LV4051ATDREP	TLV2464AMDREPG4	V62/03664-01YE	V62/07627-01XE									
TL074MDEP	TLV2774AMDREP	V62/03672-01XE	V62/09617-01XE									
TL074MDREP	TLV2774MDREP	V62/03672-02XE	V62/11621-01XE									
TL074QDREP	UC2901MDREP	V62/04651-04XE	V62/11621-02XE									
TLC2254AQDREP	UC2901MDREPG4	V62/04682-04YE	V62/11621-02XE-T									

Qualification Report

Automotive New Product Qualification Summary (As per AEC-Q100 and JEDEC Guidelines)

Approved 13-Sep-2021

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: <u>CD4093BQ</u> <u>M96Q1</u>	Qual Device: <u>K3HVD1781Q</u> <u>DRQ1</u>	Qual Device: <u>SE555DR</u>	Qual Device: <u>SN103592</u> <u>DR</u>	Qual Device: <u>SN74HCS08Q</u> <u>DRQ1</u>	Qual Device: <u>TCAN1043G</u> <u>DRQ1</u>	Qual Device: <u>TCAN1044V</u> <u>DRQ1</u>	Qual Device: <u>TLC5916Q</u> <u>DRQ1</u>	Qual Device: <u>TMS3705D</u> <u>DRQ1</u>
Test Group A – Accelerated Environment Stress Tests															
AC	A3	JEDEC JESD 22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
TC	A4	JEDEC JESD 22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
PTC	A5	JEDEC JESD 22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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	N/A	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)	-	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0
WBP	C2	MIL-STD883 Method	1	30	Wire Bond Pull (Cpk>1.67)	-	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: CD4093BQM96Q1	Qual Device: K3HVD1781QDRQ1	Qual Device: SE555DR	Qual Device: SN103592DR	Qual Device: SN74HCS08QDRQ1	Qual Device: TCAN1043GDRQ1	Qual Device: TCAN1044VDRQ1	Qual Device: TLC5916QDRQ1	Qual Device: TMS3705QDRQ1
			1												
SD	C3	JEDEC JESD 22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	PB-Free Solder	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0
PD	C4	JEDEC JESD 22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0
SB	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LI	C6	JEDEC JESD 22-B105	1	50	Lead Fatigue	Leads	3/66/0	3/66/0	3/66/0	3/66/0	3/66/0	3/66/0	3/66/0	3/66/0	3/66/0
LI	C6	JEDEC JESD 22-B105	1	50	Lead Pull	Leads	3/72/0	3/72/0	3/72/0	3/72/0	3/72/0	3/72/0	3/72/0	3/72/0	3/72/0
Test Group D – Die Fabrication Reliability Tests															
EM	D1	JESD 61	-	-	Electromigration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TD	DB2	JESD 35	-	-	Time Dependent Dielectric Breakdown	-	Completed Per Process Technology	Completed Per Process Technology Requirements	Completed Per Process Technology	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology	Completed Per Process Technology	Completed Per Process Technology	Completed Per Process Technology

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: CD4093BQM96Q1	Qual Device: K3HVD1781QDRQ1	Qual Device: SE555DR	Qual Device: SN103592DR	Qual Device: SN74HCS08QDRQ1	Qual Device: TCAN1043GDRQ1	Qual Device: TCAN1044VDRQ1	Qual Device: TLC5916QDRQ1	Qual Device: TMS3705QDRQ1
							Requirements		Requirements	Requirements		Requirements	Requirements	Requirements	Requirements
HCI	D3	JESD 60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	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	Completed Per Process Technology Requirements	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	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements

- QBS: Qual By Similarity
- Qual Devices CD4093BQM96Q1, K3HVD1781QDRQ1, SE555DR, SN103592DR, SN74HCS08QDRQ1, TCAN1043GDRQ1, TCAN1044VDRQ1, TLC5916QDRQ1 are qualified at LEVEL1-260CG
- Qual Device TMS3705QDRQ1 is qualified at LEVEL3-260CG

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

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