



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

**PCN 20181217000.2
Qualify New Assembly Material set for Selected Devices
Final Change Notification**

The purpose of this re-issue is to remove NDA Restrictions banner at the bottom of each page. Please ignore the previous PCN.

Date: March 15, 2019
To: TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

This is an announcement of change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

Texas Instruments requires acknowledgement of receipt of this notification within **30** days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. The proposed first ship date is indicated on page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

If samples or additional data are required, requests must be received within 30 days of notification as samples are not built ahead of the change. You may contact the PCN Manager or your local Field Sales Representative to acknowledge this PCN and request samples or additional data.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

For questions regarding this notice, contact your local Field Sales Representative or the PCN Manager (PCN_ww_admin_team@list.ti.com).

Sincerely,

PCN Team
SC Business Services

20181217000.2
Final Change Notification
Attachments

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
CD4093BQNSRG4HT	CD4093BQNSRG4HT
CD4093BQNSRG4HT	GE224775 1
UCC2805QDRHT	GE408125 1
UCC2805QDRHT	GE408125 2
TLC555QDRHT	GE408245 1
TLE2142QDRG4HT	GE408418 2
TLC072QDRHT	GE408790 1
TLC072QDRHT	TLC072QDRHT
TLC555QDRHT	TLC555QDRHT
TLC555QDRNS	TLC555QDRNS
TLE2142QDRG4HT	TLE2142QDRG4HT
UCC2805QDRHT	UCC2805QDRHT
ADS7841EIDBQRQ1	null
OPA2365AQDRQ1	null
TPIC6595DWG4	null
TPIC6595DWRG4	null
TLC555QDRQ1	null
TPIC1021AQDRQ1	TPIC1021AQDRQ1
AM26C31QDG4	null
SE555DR	null
SN65HVD230QDRG4Q1	null
SN65HVD231QD	null
SN65HVD232QDRQ1	null
SN74HC02QDRQ1	null
SN74HC253QDRG4Q1	null
TL084QDG4	null
TLV2374QDRG4Q1	null
PCM1794AQDBRQ1	null
SN65LBC176QDRG4Q1	null
SN65LBC180IDRG4Q1	null
TL3472QDRQ1	null
TLE2022AQDRG4Q1	null
UCC2895QDWRQ1	null
CD4053BQM96G4Q1	null
HVDA553QDRQ1	null
TLV2371QDRG4Q1	null
TLC555QDR	null
LM193DR	null
TLE2024QDWRG4Q1	null
TLV2422QDRG4Q1	null
TLV3702QDRG4Q1	null
PCM1754TDBQRQ1	null
TPIC6B596DWRG4	null
TPS2051BQDRQ1	null
SN65HVD251QDRQ1	null
TPS2032QDRQ1	null
UCC27424QDRQ1	null
INA270AQDRQ1	null
UCC2808AQDR-2Q1	null
ADS7841ESQDBQRQ1	null
TPIC1021DRG4	null
INA283AQDRQ1	null
SN74HC4851QDRQ1	null
UCC27524AQDRQ1	null
UCC2813QDR-1Q1	null
TL5001AQDRG4Q1	null
LP2951-50QDRQ1	null

TL972QDRQ1	null
TLC2272AQDRG4	null
TLC5916QDRQ1	null
TPS54233QDRQ1	null
UCC28061QDRQ1	null
OPA2333AQDRQ1	null
SN74HC573AQDWRQ1	null
TLE2141QDRQ1	null
SN65HVDA100QDRQ1	null

Technical details of this Product Change follow on the next page(s).

PCN Number:	20181217000.2		PCN Date:	March 15, 2019																
Title:	Qualify New Assembly Material set for Selected Devices																			
Customer Contact:	PCN Manager		Dept:	Quality Services																
Proposed 1st Ship Date:	August 6, 2019		Estimated Sample Availability:	Date provided at sample request																
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:																				
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:																				
Group 1 Devices:																				
<table border="1"> <thead> <tr> <th>Material</th> <th>Current</th> <th>New Material</th> </tr> </thead> <tbody> <tr> <td>Leadframe</td> <td>non-Roughened</td> <td>Roughened</td> </tr> <tr> <td>Wire</td> <td>Au</td> <td>No change</td> </tr> <tr> <td>Mount compound</td> <td>4147858</td> <td>No change</td> </tr> <tr> <td>Mold compound</td> <td>4205694</td> <td>4211880</td> </tr> </tbody> </table>						Material	Current	New Material	Leadframe	non-Roughened	Roughened	Wire	Au	No change	Mount compound	4147858	No change	Mold compound	4205694	4211880
Material	Current	New Material																		
Leadframe	non-Roughened	Roughened																		
Wire	Au	No change																		
Mount compound	4147858	No change																		
Mold compound	4205694	4211880																		
Group 2 Devices:																				
<table border="1"> <thead> <tr> <th>Material</th> <th>Current</th> <th>New Material</th> </tr> </thead> <tbody> <tr> <td>Leadframe</td> <td>non-Roughened</td> <td>Roughened</td> </tr> <tr> <td>Wire</td> <td>Au</td> <td>No change</td> </tr> <tr> <td>Mount compound</td> <td>4042500</td> <td>4147858</td> </tr> <tr> <td>Mold compound</td> <td>4205694</td> <td>4211880</td> </tr> </tbody> </table>						Material	Current	New Material	Leadframe	non-Roughened	Roughened	Wire	Au	No change	Mount compound	4042500	4147858	Mold compound	4205694	4211880
Material	Current	New Material																		
Leadframe	non-Roughened	Roughened																		
Wire	Au	No change																		
Mount compound	4042500	4147858																		
Mold compound	4205694	4211880																		
Reason for Change:																				
Better delamination performance and align with universal BOM (UBOM) material strategy.																				
Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):																				
None.																				
Changes to product identification resulting from this PCN:																				
None.																				
Product Affected:																				
Group 1 Devices (Qual data on page 12)	Group 2 Devices (Qual data on page 15)	Group 2 Devices (Qual data on page 18)																		
AM26C31QDRG4	ADS7841EIDBQRQ1	AM26C31QD																		
CD4010BQDRQ1	ADS7841ESQDBQRQ1	AM26C31QDG4																		
CD4021BQDRQ1	ADS7843IDBQRQ1	AM26C31QDR																		
CD4053BQM96G4Q1	AMC6821SQDBQRQ1	AM26C31QDRG4																		
CD4053BQM96Q1	CAHCT244QDWRG4Q1	AM26C32QD																		

CD4066BQDRQ1	CAHCT573QDWRG4Q1	AM26C32QDG4
CD4093BQM96G4Q1	CD40109BQNSRQ1	AM26C32QDR
CD4093BQM96Q1	CD74HCT574QM96G4Q1	CD74HCT4067QM96Q1
CD74ACT74QM96G4Q1	CDC2351QDB	CDCVF2505IDRQ1
CD74HC08QM96Q1	CDC2351QDBG4	CLV4051ATDWRG4Q1
CD74HC125QM96G4Q1	CDC2351QDBR	D24067IM96G4Q1
CD74HC138QM96Q1	CDC2351QDBRG4	INA270AQDRQ1
CD74HC366QDRQ1	CLVC244AQDWRG4Q1	INA271AQDRQ1
CD74HC4051QM96G4Q1	CLVC373AQDWRG4Q1	LM124D
CD74HC4051QM96Q1	CLVC374AQDWRG4Q1	LM124DG4
CD74HC4538QM96G4Q1	CLVC540AQDWRG4Q1	LM124DR
CD74HCT4051QM96Q1	CLVC541AQDWRG4Q1	LM139AD
CD74HCT4066QM96Q1	CLVC573AQDWRG4Q1	LM139ADG4
D24051QM96G4Q1	CLVC574AQDWRG4Q1	LM139ADR
D24066QM96G4Q1	HVDA551QDRQ1	LM139ADRG4
LMV393QDRQ1	HVDA553QDRQ1	LM139D
LP2951-50QDRQ1	INA282AQDRQ1	LM139DG4
OPA1662AIDRQ1	INA283AQDRQ1	LM139DR
SN65HVD230QD	INA284AQDRQ1	LM139DRG4
SN65HVD230QDG4	INA285AQDRQ1	LM193DR
SN65HVD230QDG4Q1	INA286AQDRQ1	LM193DRG4
SN65HVD230QDR	LM139D	LM2903QD
SN65HVD230QDRG4	LM139DG4	LM2903QDG4
SN65HVD230QDRG4Q1	LM139DR	LM2903QDRG4
SN65HVD231QD	LM139DRG4	LM2904QDR
SN65HVD231QDG4	LM193DR	LM2904QDRG4
SN65HVD231QDR	LM193DRG4	LT1013DMD
SN65HVD231QDRG4	LM2903QD	LT1013DMDG4
SN65HVD231QDRG4Q1	LM2903QDG4	LT1014DMDW
SN65HVD231QDRQ1	LM2903QDRG4	LT1014DMDWG4
SN65HVD232QD	LM2904QDR	SE555D
SN65HVD232QDG4	LM2904QDRG4	SE555DG4
SN65HVD232QDR	MAX3238IDBG4Q1	SE555DR
SN65HVD232QDRG4	MAX3238IDBRG4Q1	SE555DRG4
SN65HVD232QDRG4Q1	OPA2333AQDRQ1	SN65HVDA195QDRQ1
SN65HVD232QDRQ1	OPA2348AQDRQ1	SN65HVDA540QDR
SN65HVD251QDRQ1	OPA2365AQDRQ1	SN65LBC031D
SN65LBC176AQDR	OPA4364AQDRQ1	SN65LBC031DG4
SN65LBC176QDRG4Q1	PCM1753TDBQRME	SN65LBC031DR
SN65LBC179QD	PCM1753TDBQRQ1	SN65LBC031DRG4
SN65LBC179QDG4	PCM1754TDBQRQ1	SN65LBC031QD
SN65LBC179QDR	PCM1794AQDBRQ1	SN65LBC031QDG4
SN65LBC179QDRG4	PCM1804S1IDBRME	SN65LBC031QDR
SN65LVDS051DRG4Q1	PCM1804S1IDBRQ1	SN65LBC031QDRG4
SN74ABT125QDRG4Q1	PLL1707IDBQRQ1	SN65LBC176AQD

SN74ABT125QDRQ1	SN65HVD1781QDRQ1	SN65LBC176AQDG4
SN74AC08QDRG4Q1	SN65HVDA100QDRQ1	SN65LBC176AQDR
SN74AC111IDRG4Q1	SN65HVDA195QDRQ1	SN65LBC176AQDRG4
SN74ACT00TDRQ1	SN74AHC244QDWRG4	SN65LBC176QD
SN74AHC00QDRG4Q1	SN74AHC244QDWRG4Q1	SN65LBC176QDG4
SN74AHC00QDRQ1	SN74AHC244QDWRQ1	SN65LBC176QDR
SN74AHC04QDR	SN74AHC245QDWRG4Q1	SN65LBC176QDRG4
SN74AHC04QDRG4Q1	SN74AHCT244QDWR	SN65LBC176QDRG4Q1
SN74AHC04QDRQ1	SN74AHCT244QDWRG4	SN65LBC176QDRQ1
SN74AHC08QDRG4Q1	SN74AHCT244QDWRQ1	SN65LBC180IDRG4Q1
SN74AHC08QDRQ1	SN74HC244QDWRG4Q1	SN65LBC180IDRQ1
SN74AHC125QDRG4Q1	SN74HC244QDWRQ1	SN65LVDM050QDG4Q1
SN74AHC14QDRQ1	SN74HC273QDWRG4Q1	SN65LVDM050QDQ1
SN74AHC32QDRG4Q1	SN74HC4060QDRQ1	SN65LVDM050QDRG4Q1
SN74AHC32QDRQ1	SN74HC573AQDWRQ1	SN65LVDM050QDRQ1
SN74AHC74QDRG4Q1	SN74LVC541AQDWRQ1	SN65LVDM051QDQ1
SN74AHC74QDRQ1	SN74LVC573AQDWRQ1	SN65LVDM051QDRG4Q1
SN74AHCT00QDRG4Q1	SN74LVC574AQDWRQ1	SN65LVDM051QDRQ1
SN74AHCT00QDRQ1	TL5001AQD	SN74LV4051ATDWRQ1
SN74AHCT08QDRG4Q1	TL5001AQDG4	SN75LBC031D
SN74AHCT08QDRQ1	TL5001AQDR	SN75LBC031DR
SN74AHCT125QDRG4Q1	TL5001AQDRG4	THS4041IDRG4Q1
SN74AHCT125QDRQ1	TL5001AQDRG4Q1	THS4041IDRQ1
SN74AHCT126QDRG4Q1	TL5001AQDRQ1	TL084QD
SN74AHCT126QDRQ1	TL5001QD	TL084QDG4
SN74AHCT138QDRQ1	TL5001QDG4	TL084QDR
SN74AHCT14QDRG4Q1	TL5001QDR	TL084QDRG4
SN74AHCT14QDRQ1	TL5001QDRG4	TL1431QD
SN74AHCT32QDRG4Q1	TLC1543QDB	TL1431QDG4
SN74AHCT32QDRQ1	TLC1543QDBG4	TL1431QDRG4
SN74AHCT74QDRG4Q1	TLC1543QDBR	TL1451AQD
SN74AHCT74QDRQ1	TLC1543QDBRG4	TL1451AQDR
SN74HC00QDRG4Q1	TLC2543IDBRG4Q1	TL5001AQD
SN74HC00QDRQ1	TLC2543IDBRQ1	TL5001AQDG4
SN74HC02QDRQ1	TLC555QDR	TL5001AQDR
SN74HC08QDRG4Q1	TLC555QDRG4	TL5001AQDRG4
SN74HC08QDRQ1	TLC6C5912QDWRQ1	TL5001QD
SN74HC132QDRG4Q1	TLC6C598CQDRQ1	TL5001QDG4
SN74HC132QDRQ1	TLV1548QDBRG4Q1	TL5001QDR
SN74HC138QDRG4Q1	TLV1548QDBRQ1	TL5001QDRG4
SN74HC139QDRG4Q1	TPIC1021AQDRQ1	TL7705BQD
SN74HC139QDRQ1	TPIC1021D	TL7705BQDG4
SN74HC14QDRG4Q1	TPIC1021DG4	TL7705BQDR
SN74HC14QDRQ1	TPIC1021DR	TL7705BQDRG4
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SN74HC166AIDRQ1	TPIC44L02DB	TL7726QDR
SN74HC21QDRQ1	TPIC44L02DBG4	TL7726QDRG4
SN74HC253QDRG4Q1	TPIC44L02DBR	TLC072QDRQ1
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SN74HC4851QDRQ1	TPIC46L01DB	TLC1543QDW
SN74HC4852QDRQ1	TPIC46L01DBG4	TLC1543QDWG4
SN74HC74QDRG4Q1	TPIC46L01DBR	TLC1543QDWR
SN74HC74QDRQ1	TPIC46L01DBRG4	TLC1543QDWRG4
SN74HC86IDRG4Q1	TPIC46L02DB	TLC2201AMD
SN74HC86QDRG4Q1	TPIC46L02DBG4	TLC2201AMDG4
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SN74LV4052ATDRQ1	TPIC46L02DBRG4	TLC2254AQDR
SN74LV4053ATDRQ1	TPS5420QDRQ1	TLC2254AQDRG4
SN74LV74AQDRG4Q1	UC2825AQDWRQ1	TLC2264AQD
SN74LV74AQDRQ1	UC2842AQD8	TLC2264AQDRG4
SN74LVC02AQDRG4Q1	UC2842AQD8R	TLC2272AMD
SN74LVC02AQDRQ1	UC2842AQDR	TLC2272AMDG4
SN74LVC04AQDRQ1	UC2843AQD8	TLC2272AMDR
SN74LVC06AQDRG4Q1	UC2843AQD8R	TLC2272AMDRG4
SN74LVC06AQDRQ1	UC2843AQD8RQ1	TLC2272MD
SN74LVC125AQDRQ1	UC2843AQDR	TLC2272MDG4
SN74LVC126AQDRG4Q1	UC2844AQD8	TLC2272MDR
SN74LVC126AQDRQ1	UC2844AQD8R	TLC2272MDRG4
SN74LVC138AQDRG4Q1	UC2844AQDR	TLC2274AMD
SN74LVC138AQDRQ1	UC2845AQD8	TLC2274AMDG4
SN74LVC14AQDRG4Q1	UC2845AQD8R	TLC2274AMDRG4
SN74LVC14AQDRQ1	UC2845AQDR	TLC2274AQD
SN74LVC157AQDRG4Q1	UC2856QDWR	TLC2274AQDG4
SN74LVC257AQDRG4Q1	UC2856QDWRQ1	TLC2274AQDR
SN74LVC32AQDRQ1	UCC27524AQDRQ1	TLC2274AQDRG4
SN74LVC74AQDRG4Q1	UCC2800QDRQ1	TLC2274MD
SN74LVC86AQDRG4Q1	UCC2801QDRQ1	TLC2274MDG4
SN74LVT125QDRG4Q1	UCC2802QDRQ1	TLC2274MDR
SN74LVT125QDRQ1	UCC2803QDRQ1	TLC2274MDRG4
TL082IDRQ1	UCC2804QDRQ1	TLC2274QD
TL082QDRQ1	UCC2805QDRQ1	TLC2274QDG4
TL2843BQDRQ1	UCC2808AQDR-1G4Q1	TLC2274QDRG4
TL3472QDRQ1	UCC2808AQDR-1Q1	TLC2652M-8DG4
TL5001AQDRG4Q1	UCC2808AQDR-2G4Q1	TLC2652Q-8D
TL5001AQDRQ1	UCC2808AQDR-2Q1	TLC2652Q-8DG4
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TL972QDRQ1	UCC2813QDR-1Q1	TLC271MDRG4
TLC2252AQDR	UCC2813QDR-2Q1	TLC274MD
TLC2252AQDRG4	UCC2813QDR-3Q1	TLC274MDG4

TLC2252AQDRG4Q1	UCC2813QDR-4Q1	TLC274MDRG4
TLC2252AQDRQ1	UCC2813QDR-5Q1	TLC27L2MD
TLC2262AQD		TLC27L2MDG4
TLC2262QD		TLC27L2MDRG4
TLC2262QDR		TLC27M2MD
TLC2262QDRG4		TLC27M2MDG4
TLC2272AQD		TLC339MD
TLC2272AQDG4		TLC339MDG4
TLC2272AQDR		TLC339MDR
TLC2272AQDRG4		TLC339MDRG4
TLC2272AQDRG4Q1		TLC3702MD
TLC2272AQDRQ1		TLC3702MDG4
TLC2272MDRG4		TLC3702MDR
TLC2272QDG4		TLC3702MDRG4
TLC2272QDR		TLC3704MD
TLC2272QDRG4Q1		TLC3704MDG4
TLC2272QDRQ1		TLC3704MDR
TLC2274AMDRG4		TLC372MD
TLC2274AQDRG4Q1		TLC372MDG4
TLC2274AQDRQ1		TLC372MDR
TLC2274QDRG4Q1		TLC372MDRG4
TLC2274QDRQ1		TLC372QD
TLC3702QDRG4Q1		TLC372QDG4
TLC3702QDRQ1		TLC372QDR
TLC3704QDRG4Q1		TLC372QDRG4
TLC3704QDRQ1		TLC374MD
TLC372QDRG4		TLC374MDG4
TLC393QDRG4Q1		TLC393QDR
TLC393QDRQ1		TLC393QDRG4
TLC4502QD		TLC4502AMD
TLC4502QDG4		TLC4502MDG4
TLC555QDRQ1		TLC555QDR
TLC556MDR		TLC555QDRG4
TLC556MDRG4		TLC556MD
TLC5916QDRQ1		TLC556MDG4
TLC5917QDRQ1		TLC5618AQD
TLE2021AQDRG4Q1		TLC5618AQDG4
TLE2021AQDRQ1		TLC5618AQDRG4
TLE2021QDRG4Q1		TLE2021MD
TLE2021QDRQ1		TLE2021MDG4
TLE2022AMDRG4		TLE2022AMD
TLE2022AQDRG4Q1		TLE2022AMDG4
TLE2022QDRG4Q1		TLE2022AMDR
TLE2022QDRQ1		TLE2022AMDRG4
TLE2037AQDRG4Q1		TLE2022MD

TLE2037AQDRQ1		TLE2022MDG4	
TLE2071AQDRG4Q1		TLE2022MDR	
TLE2071AQDRQ1		TLE2022MDRG4	
TLE2072AQDRG4Q1		TLE2024AQDWRG4Q1	
TLE2141QDRQ1		TLE2024BMDW	
TLE2142QDRQ1		TLE2024BMDWG4	
TLV2252AQDRG4		TLE2024BMDWR	
TLV2252AQDRG4Q1		TLE2024MDW	
TLV2252AQDRQ1		TLE2024MDWG4	
TLV2252QDRG4Q1		TLE2024QDWRG4Q1	
TLV2252QDRQ1		TLE2027AMD	
TLV2254AQDRG4Q1		TLE2027AMDG4	
TLV2254AQDRQ1		TLE2027MD	
TLV2371QDRG4Q1		TLE2037AMD	
TLV2372QDRG4Q1		TLE2037AMDG4	
TLV2372QDRQ1		TLE2037MD	
TLV2374QDRG4Q1		TLE2061MD	
TLV2374QDRQ1		TLE2061MDG4	
TLV2422QDRG4Q1		TLE2062AMD	
TLV2432AQD		TLE2062AMDG4	
TLV2432AQDG4		TLE2062AMDR	
TLV2432AQDRG4		TLE2062MD	
TLV2432AQDRG4Q1		TLE2062MDG4	
TLV2432AQDRQ1		TLE2064AMD	
TLV2432QD		TLE2064AMDG4	
TLV2432QDG4		TLE2064AMDR	
TLV2432QDRG4Q1		TLE2064AMDRG4	
TLV2434AQDRQ1		TLE2064MD	
TLV2442AQD		TLE2064MDG4	
TLV2442AQDG4		TLE2064MDR	
TLV2442AQDRG4Q1		TLE2064MDRG4	
TLV2442AQDRQ1		TLE2141MD	
TLV2462AQD		TLE2141MDG4	
TLV2462AQDG4		TLE2141MDR	
TLV2462AQDRG4		TLE2141MDRG4	
TLV2462AQDRG4Q1		TLE2142AMD	
TLV2462AQDRQ1		TLE2142AMDG4	
TLV2462QDRG4Q1		TLE2142AMDR	
TLV2462QDRQ1		TLE2142AMDRG4	
TLV2471AQDRG4Q1		TLE2142MD	
TLV2472AQDRG4Q1		TLE2142MDG4	
TLV2472QDRG4Q1		TLE2142MDR	
TLV2472QDRQ1		TLE2142MDRG4	
TLV2474AQDRG4Q1		TLE2144MDW	
TLV2474QDRG4Q1		TLE2144MDWG4	

TLV2474QDRQ1		TLE2425MD	
TLV271QDRG4Q1		TLE2425MDG4	
TLV271QDRQ1		TLE2425MDRG4	
TLV272QDRG4Q1		TLE2426MD	
TLV272QDRQ1		TLE2426MDG4	
TLV274QDRG4Q1		TLE2426QDRG4Q1	
TLV274QDRQ1		TLV2254AQD	
TLV2772AQDRG4Q1		TLV2264AQD	
TLV2772AQDRQ1		TLV2264AQDG4	
TLV2772QD		TLV2264QD	
TLV2772QDRG4Q1		TLV2544QD	
TLV27L2QDRQ1		TLV2544QDG4	
TLV3702QDRG4Q1		TLV2544QDR	
TLV3702QDRQ1		TLV2548QDW	
TPS2020IDRQ1		TLV2548QDWG4	
TPS2021IDRQ1		TLV2548QDWR	
TPS2022DRG4Q1		TLV2548QDWRG4	
TPS2022DRQ1		TLV2553IDWRQ1	
TPS2024IDRG4Q1		TLV2772AMD	
TPS2024IDRQ1		TLV2772AMDG4	
TPS2030IDRG4Q1		TLV2772MD	
TPS2032QDRQ1		TLV2772MDR	
TPS2042BQDRQ1		TLV5618AQD	
TPS2051BQDRQ1		TLV5618AQDG4	
TPS28225TDRQ1		TLV5618AQDR	
TPS40200QDRQ1		TLV5618AQDRG4	
TPS5410QDRQ1		TLV5619QDWG4	
TPS54233QDRQ1		TLV5638QD	
TPS54331QDRQ1		TLV5638QDG4	
UCC25706QDRQ1		TLV5638QDR	
UCC27321QDRQ1		TLV5638QDRG4	
UCC27322QDRQ1		TPIC1021AQDRQ1	
UCC27324QDRQ1		TPIC1021D	
UCC27423QDRQ1		TPIC1021DG4	
UCC27424QDRQ1		TPIC1021DR	
UCC27425QDRQ1		TPIC1021DRG4	
UCC28061QDRQ1		TPIC2603DW	
UCC2818AQDRQ1		TPIC2603DWG4	
UCC28220QDRQ1		TPIC2603DWR	
UCC28600TDRQ1		TPIC2603DWRG4	
UCC28C41QDRQ1		TPIC2810D	
		TPIC2810DG4	
		TPIC2810DR	
		TPIC2810DRG4	
		TPIC6259DW	

	TPIC6259DWG4	
	TPIC6259DWR	
	TPIC6259DWRG4	
	TPIC6273DW	
	TPIC6273DWG4	
	TPIC6273DWR	
	TPIC6273DWRG4	
	TPIC6595DW	
	TPIC6595DWG4	
	TPIC6595DWR	
	TPIC6595DWRG4	
	TPIC6596DWG4	
	TPIC6596DWRG4	
	TPIC6A259DW	
	TPIC6A259DWG4	
	TPIC6A259DWRG4	
	TPIC6A595DW	
	TPIC6A595DWG4	
	TPIC6A595DWR	
	TPIC6A595DWRG4	
	TPIC6A596DW	
	TPIC6A596DWG4	
	TPIC6A596DWRG4	
	TPIC6B259DW	
	TPIC6B259DWG4	
	TPIC6B259DWR	
	TPIC6B259DWRG4	
	TPIC6B273DW	
	TPIC6B273DWG4	
	TPIC6B273DWR	
	TPIC6B273DWRG4	
	TPIC6B595DW	
	TPIC6B595DWG4	
	TPIC6B595DWR	
	TPIC6B595DWRG4	
	TPIC6B596DW	
	TPIC6B596DWG4	
	TPIC6B596DWR	
	TPIC6B596DWRG4	
	TPIC8101DW	
	TPIC8101DWR	
	TPS3306-15QDRG4Q1	
	TPS3306-15QDRQ1	
	TPS3306-18QDRG4Q1	
	TPS3306-18QDRQ1	

	TPS3306-20QDRG4Q1	
	TPS3306-25QDRG4Q1	
	TPS3306-33QDRG4Q1	
	TPS3306-33QDRQ1	
	TPS3307-18QDRG4Q1	
	TPS3307-18QDRQ1	
	TPS76501QDRQ1	
	UC2825AQDWRQ1	
	UC2856QDWR	
	UC2856QDWRQ1	
	UCC2305TDWRQ1	
	UCC2895QDWRQ1	



TI Confidential
NDA Restrictions

Automotive New Product Qualification Summary

(As per AEC-Q100 and JEDEC Guidelines)

Group 1 Devices

Product Attributes

Attributes	Qual Device: <u>CHC4851QDR</u> <u>Q1</u>	Qual Device: <u>LMV393QDR</u> <u>Q1</u>	Qual Device: <u>MC33063AQD</u> <u>RQ1</u>	Qual Device: <u>SN65HVD232</u> <u>QDR</u>	Qual Device: <u>TLC5917QDR</u> <u>CT</u>	Qual Device: <u>TPS5410QDR</u> <u>Q1</u>	Qual Device: <u>TPS54331QDR</u> <u>Q1</u>	Qual Device: <u>UCC28220QD</u> <u>RQ1</u>	QBS Product Reference: <u>ULO2003AQD</u> <u>RQ1</u>
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Product Function	Logic	Signal Chain	Power Management	Interface	Power Management	Signal Chain	Signal Chain	Power Management	Interface
Wafer Fab Supplier	SFAB	FFAB	SFAB	DFAB	MIHO8	DFAB	DMOS5	DFAB	SFAB
Die Revision	-	-	A	B	-	A	A	A	C
Assembly Site	FMX	FMX	FMX	FMX	FMX	FMX	FMX	FMX	FMX
Package Type	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	D	D	D	D	D	D	D	D	D
Ball/Lead Count	16	8	8	8	16	8	8	16	16

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL1-260CG: CHC4851QDRQ1, SN65HVD232QDR, UCC28220QDRQ1, TPS5410QDRQ1, TPS54331QDRQ1, TLC5917QDRCT, LMV393QDRQ1, MC33063AQDRQ1

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>CHC4851QDRQ1</u>	Qual Device: <u>LMV393QDRQ1</u>	Qual Device: <u>MC33063AQDRQ1</u>	Qual Device: <u>SN65HVD232QDR</u>	Qual Device: <u>TLC5917QDRCT</u>	Qual Device: <u>TPS5410QDRQ1</u>	Qual Device: <u>TPS54331QDRQ1</u>	Qual Device: <u>UCC28220QDRQ1</u>	QBS Product Reference: <u>ULO2003AQDRQ1</u>
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	No Fails	No Fails	No Fails	No Fails	No Fails	No Fails	No Fails
HAS T	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	-	-	-	-	-	3/231/0
HAS T	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	2/154/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Post Autoclave 121C, CSAM/TSAM	96 Hours	-	-	-	-	-	-	-	-	3/36/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	2/154/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	12	Post Temp. Cycle, CSAM/TSAM	500 Cycles	-	-	-	-	-	-	-	-	3/36/0
TC-BP	A4	MIL-STD883	1	30	Post Temp. Cycle, Bond	Wires	3/90/0	2/60/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	2/60/0

		Method 2011			Pull										
PTC	A5	JEDEC JESD22-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
HTS L	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours									1/45/0
HTS L	A6	JEDEC JESD22-A103	1	22	High Temp Storage Bake 150C	Post CSAM/TSAM									1/22/0
HTS L	A6	JEDEC JESD22-A103	1	45	High Temp. Storage Bake, 175C	500 Hours	3/135/0	2/90/0	3/135/0	3/135/0	3/135/0	3/135/0	3/135/0	3/135/0	-
Test Group B – Accelerated Lifetime Simulation Tests															
HTO L	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	-	-	-	-	-	-	-	-	3/231/0
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															
WB S	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.67)	Wires	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
WB P	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	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
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)	-	1/30/0	1/30/0	-	-	-	-	-	-	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	N/A	N/A	N/A	N/A	N/A
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	Leads	-	-	-	-	-	-	-	-	-
Test Group D – Die Fabrication Reliability Tests															
EM	D1	JESD61	-	-	Electromigration	--	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	-
TDD B	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	--	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	--	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	-
NBT I	D4	-	-	-	Negative Bias Temperature Instability	--	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	Complete d Per Process Technology Requirements	-
SM	D5	-	-	-	Stress	--	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	-

					Migration		d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	d Per Process Technolog y Requirem ents	
Test Group E – Electrical Verification Tests															
ED	E5	AEC Q100-009	3	30	Electrical Distributi ons	Cpk>1.6 7 Room, Hot, & Cold	-	-	-	-	-	-	-	-	3/90/0

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



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

Group 2 Devices

Product Attributes

Attributes	Qual Device: <u>CAHCT244QDW</u> <u>RQ1</u>	Qual Device: <u>INA282AQDRQ1</u>	Qual Device: <u>K3A1040AQDRQ</u> <u>1</u>	Qual Device: <u>OPA2365AQDRQ</u> <u>1</u>	Qual Device: <u>P11804S1IDBRM</u> <u>E</u>	Qual Device: <u>TLC6C598CQDR</u> <u>Q1</u>	QBS Package Reference: <u>MC33063AQDRQ</u> <u>1</u>	QBS Package Reference: <u>ULQ2003AQDRQ</u> <u>1</u>
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 3	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	-40 to +85 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Logic	Signal Chain	Interface	Signal Chain	Signal Chain	Power Management	Power Management	-
Wafer Fab Supplier	SFAB	DFAB	DFAB	DMOS5	TSMC-FAB3	DMOS5	SFAB	SFAB
Die Revision	B	G	B	C	C	B	A	C
Assembly Site	MLA	MLA	MLA	MLA	MLA	MLA	FMX	FMX
Package Type	SOIC	SOIC	SOIC	SOIC	SSOP	SOIC	SOIC	SOIC
Package Designator	DW	D	D	D	DB	D	D	D
Ball/Lead Count	20	8	8	8	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: <u>CAHCT244QDWRQ1</u>	Qual Device: <u>INA282AQDRQ1</u>	Qual Device: <u>K3A1040AQDRQ1</u>	Qual Device: <u>OPA2365AQDRQ1</u>	Qual Device: <u>P11804S1IDBRME</u>	Qual Device: <u>TLC6C598CQDRQ1</u>	QBS Package Reference: <u>MC33063AQDRQ1</u>	QBS Package Reference: <u>ULQ2003AQDRQ1</u>
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	-	-	-	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	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	3/231/0	3/231/0	3/231/0	3/231/0
AC	A	JEDEC	3	77	Autoclave	Post 96-	-	-	-	-	-	-	-	3/36/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: CAHCT24 4QDWRQ1	Qual Device: INA282AQ DRQ1	Qual Device: K3A1040A QDRQ1	Qual Device: OPA2365A QDRQ1	Qual Device: P11804S11 DBRME	Qual Device: TLC6C598 CQDRQ1	QBS Package Reference: MC33063A QDRQ1	QBS Package Reference: ULQ2003A QDRQ1
	3	JESD22-A102			e 121C	hour CSAM/TSAM								
TC	A 4	JEDEC JESD22-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
TC	A 4	JEDEC JESD22-A104 and Appendix 3	3	10	Temperature Cycle, -65/150C	Post 500-cycle CSAM/TSAM	-	-	-	-	-	-	-	3/36/0
TC-BP	A 4	MIL-STD883 Method 2011	1	30	Post TC Bond Pull	Wires	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	1/30/0
PTC	A 5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	1000 Cycles	N/A	N/A	N/A	N/A	N/A	3/231/0	N/A	N/A
HTS L	A 6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	3/135/0	3/135/0	-	1/45/0
HTS L	A 6	JEDEC JESD22-A103	1	22	High Temp Storage Bake 150C	Post CSAM/TSAM	-	-	-	-	-	-	-	1/22/0
HTS L	A 6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	3/135/0	3/135/0	3/135/0	3/135/0	-	-	3/135/0	-
Test Group B – Accelerated Lifetime Simulation Tests														
EDR	B 3	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
Test Group C – Package Assembly Integrity Tests														
WBS	C 1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	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	C 2	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	3/90/0	3/90/0	3/90/0	3/90/0
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	Pb Free	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0	3/45/0	-	1/15/0
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	Pb	2/30/0	3/45/0	-	-	3/45/0	3/45/0	-	1/15/0
PD	C 4	JEDEC JESD22-B100 and	3	10	Physical Dimensions	-	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0	-	3/30/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>CAHCT244QDWRQ1</u>	Qual Device: <u>INA282AQDRQ1</u>	Qual Device: <u>K3A1040AQDRQ1</u>	Qual Device: <u>OPA2365AQDRQ1</u>	Qual Device: <u>P11804S11DWRME</u>	Qual Device: <u>TLC6C598CQDRQ1</u>	QBS Package Reference: <u>MC33063AQDRQ1</u>	QBS Package Reference: <u>ULQ2003AQDRQ1</u>
		B108			(Cpk>1.67)									
SBS	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
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	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDD B	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	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
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	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
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
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 Gre

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

Group 2 Devices

Product Attributes

Attributes	Qual Device: <u>LT1014DMDW</u>	Qual Device: <u>SN0302035DWRG4</u>	Qual Device: <u>TPIC6A595DWR</u>
Automotive Grade Level	-	Grade 1	Grade 1
Operating Temp Range	-55 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Signal Chain	Power Management
Wafer Fab Supplier	SFAB	DFAB	DFAB
Die Revision	J	C	C
Assembly Site	TAI	TAI	TAI
Package Type	SOIC	SOIC	SOIC
Package Designator	DW	DW	DW
Ball/Lead Count	16	20	24

- QBS: Qual By Similarity
- Qual Devices qualified at LEVEL1-260CG: LT1014DMDW and TPIC6A595DWR
- Qual Device qualified at LEVEL3-260CG: SN0302035DWRG4
- Device LT1014DMDW contains multiple dies.

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>LT1014DMDW</u>	Qual Device: <u>SN0302035DWRG4</u>	Qual Device: <u>TPIC6A595DWR</u>
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 3-260C	-	No Fails	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	2/154/0	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -55/125C	1000 Cycles	2/153/0 (1)	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>LT1014DMDW</u>	Qual Device: <u>SN0302035DWRG4</u>	Qual Device: <u>TPIC6A595DWR</u>
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -55/150C	1000 Cycles	-	3/228/0 (2)	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	30	Post TC Bond Pull	Wires	2/60/0	3/90/0	3/90/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	2/90/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	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
Test Group C – Package Assembly Integrity Tests									
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	2/60/0	3/90/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	2/60/0	3/90/0	3/90/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free	2/30/0	3/45/0	3/45/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	2/20/0	3/30/0	3/30/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>LT1014DMDW</u>	Qual Device: <u>SN0302035DWRG4</u>	Qual Device: <u>TPIC6A595DWR</u>
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	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
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	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
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	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

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

Note (1): 1 unit was missing/lost before test.

Note (2): 3 units were missing/lost before test.

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

Location	E-Mail
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com