PCN Number:	20180412000.2	PCN Date:	April 16 2018

Title: Qualification of a new Die Attach Film for selected Devices

Customer Contact:	[PCN Manager]	Dept:	Quality Services
Proposed 1st Ship Date:	Oct 16 2018	Estimated Sample Availability:	Provided upon 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 a new die attached film for the devices list below as follows:

	Current	New
Die Attach Film	8097221	**4223179**

Reason for Change:

Current die attach film is being discontinued

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

None

Anticipated impact on Material Declaration

☐	No Impact to the Material Declaration	☒	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained from the [TI ECO website].

Changes to product identification resulting from this PCN:

Not Applicable

Product Affected

DS90UB304TRHSRQ1	DS90UB928QSQE/NOPB	DS90UH928QSQ/S4	LMR16006YQ3DDCTQ1
DS90UB304TRHSTQ1	DS90UB928QSQ/NOPB	DS90UH928QSQ/NOPB	LMR16006YQ5DDCRQ1
DS90UB924TRHSRQ1	DS90UH928QSQE/NOPB	LMP8640QMKE-T/NOPB	LMR16006YQ5DDCTQ1
DS90UB924TRHSTQ1	DS90UH928QSQX/NOPB	LMP8640QMKX-T/NOPB	LMR16006YQDDCRQ1
DS90UB928QSQX/E7002980	DS90UH928QSQ/E7002398	LMR16006YQ3DDCRQ1	LMR16006YQDDCTQ1
DS90UB928QSQX/NOPB			

TI Information
Selective Disclosure

Automotive Product Qualification Summary

(As per AEC-Q100 and JEDEC Guidelines)

Qualify 4223179 to replace 8097221 DAF material

Approved 29-Mar-2018

Product Attributes

Attributes	Qual Device: DS90UB928QC8YM	Qual Device: LMR16006YQ3DDR	Qual Device: LP3971SQ78GNMY
Operating Temp Range	-40 to +105 C	-40 to +125 C	-40 to +125 C
Automotive Grade Level	Grade 2	Grade 1	-
Product Function	Signal Chain	Power Management	Power Management
Wafer Fab Supplier	MAINEFAB	DMO5S	MAINEFAB
Die Revision	B	B	-
Assembly Site	TIEM-MALACCA	TIEM-MALACCA	TIEM-MALACCA
Package Type	WQFN	SOT-23-THIN	WQFN
Package Designator	RHS	DDC	RSB
Ball/Lead Count	48	6	40

- Qual Device qualified at LEVEL1-260CG: LMR16006YQ3DDR, LP3971SQ78GNMY
- Qual Device DS90UB928QC8YM is qualified at LEVEL3-260CG.

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: DS90UB928QC8YM	Qual Device: LMR16006YQ3DDR	Qual Device: LP3971SQ78GNMY
Test Group A – Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	-	3/480/0	3/231/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	3/480/1 (1)	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0
UHAST	A2	JEDEC JESD22-A110	3	77	Unbiased 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	3/231/0	-
TC-BP	A4	MIL-STD883 Method 2011	1	60	Bond Pull Post T/C 500 Cycles	Wires	3/90/84 (2)	3/90/0	-
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	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
Test Group C – Package Assembly Integrity Tests									
WBS	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	3/228/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	3/228/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	8 Hours Steam Age	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	--	-	-	-
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Post HTSL/Bump	NA for this package	NA for this package	NA for this package
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	Leads	NA for this package	NA for this package	NA for this package
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 Dependent 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 Bin25 failure had same IJT functional tests which is related to the die level screening test per Test Engr. Discounted.
Note (2): Lifted ball fails were in qual and control lots resulted from using incorrect 4N wire first bond parameter setting instead of 2N wire first bond parameter setting. See 4 corner MRB lifted bond 2N wire issue attached to eQDB for corrective action.

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