

<b>PCN Number:</b>	20190917001.1A		<b>PCN Date:</b>	Jan. 9, 2020																					
<b>Title:</b>	Die Coating material change for Select Devices																								
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>		<b>Dept:</b>	Quality Services																					
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Dec 18, 2019	<b>Estimated Sample Availability:</b>	Date provided at sample request.																						
<b>Change Type:</b>																									
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Assembly Materials																				
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification																				
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process																				
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input checked="" type="checkbox"/>	Wafer Bump Process																				
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	Wafer Fab Process																				
	<input type="checkbox"/>	Part number change																							
<b>PCN Details</b>																									
<b>Description of Change:</b>																									
<p><b>Revision A</b> is to announce the addition of new devices that were not included on the original PCN notification. These new devices are included below as the Group 2 device list and in the device list on page 2 above. The expected first shipment date for these new devices will be 90 days from this notice for these newly added devices only.</p> <p>This notification is to announce the change to the Die Coating material for the selected devices listed in "Product Affected" section.</p> <p>Die coating material differences (on top of top thick copper metal layer) are noted below:</p> <p><b>Group 1 Devices:</b></p> <table border="1"> <thead> <tr> <th>Change From</th> <th>Change To</th> </tr> </thead> <tbody> <tr> <td>NONE</td> <td><b>POLYIMIDE</b></td> </tr> <tr> <td>Die Revision: A</td> <td><b>Die Revision: D*</b></td> </tr> </tbody> </table> <p><b>Group 2 Devices:</b></p> <table border="1"> <thead> <tr> <th>Change From</th> <th>Change To</th> </tr> </thead> <tbody> <tr> <td>NONE</td> <td><b>POLYIMIDE</b></td> </tr> <tr> <td>Die Revision: A</td> <td><b>Die Revision: B*</b></td> </tr> </tbody> </table> <p>*No design change. Addition of Polyimide die coating only.</p> <p>Qual details are provided in the Qual Data Section.</p> <p><b>Reason for Change:</b></p> <p>Quality Improvement</p> <p><b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b></p> <p>None</p> <p><b>Changes to product identification resulting from this PCN:</b></p> <p>The Die Rev designator will change as shown in the table and sample label below:</p> <table border="1"> <thead> <tr> <th>Device Group</th> <th>Current Die Rev [2P]</th> <th>New Die Rev [2P]</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>A</td> <td><b>D</b></td> </tr> <tr> <td>2</td> <td>A</td> <td><b>B</b></td> </tr> </tbody> </table> <p>Sample product shipping label (not actual product label)</p>					Change From	Change To	NONE	<b>POLYIMIDE</b>	Die Revision: A	<b>Die Revision: D*</b>	Change From	Change To	NONE	<b>POLYIMIDE</b>	Die Revision: A	<b>Die Revision: B*</b>	Device Group	Current Die Rev [2P]	New Die Rev [2P]	1	A	<b>D</b>	2	A	<b>B</b>
Change From	Change To																								
NONE	<b>POLYIMIDE</b>																								
Die Revision: A	<b>Die Revision: D*</b>																								
Change From	Change To																								
NONE	<b>POLYIMIDE</b>																								
Die Revision: A	<b>Die Revision: B*</b>																								
Device Group	Current Die Rev [2P]	New Die Rev [2P]																							
1	A	<b>D</b>																							
2	A	<b>B</b>																							

TEXAS INSTRUMENTS  
MADE IN: Malaysia  
2DC: 20:



(1P) SN74LS07NSR  
(Q) 2000 (D) 0336  
(31T) LOT: 3959047MLA  
(4W) TKY (1T) 7523483S12  
(2P) REV: (V) 0033317  
(20L) 830: SHE (21L) CCO:USA  
(22L) ASO: MLA (23L) ACO: MYS

MSL 2 /260C/1 YEAR SEAL DT  
MSL 1 /235C/UNLIM 03/29/04

OPT:  
ITEM: 39  
LBL: 5A (L) TO:1750

**Product Affected Group:**

**Group 1 Devices:**

UCC27201ADPRR	UCC27201ADPRT	UCC27201ADRRCR	UCC27201ADRCT
---------------	---------------	----------------	---------------

**Group 2 Devices:**

UCC27517ADBVR	UCC27517ADBVT	UCC27517DBVR	UCC27517DBVT
---------------	---------------	--------------	--------------

**Group 1 Device Qual memo:**

**Qualification Report**

**UCC27201A die with Polyimide coating (PI)  
Approve Date 12-Jun-2019**

**Qualification Results**

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

Type	Test Name / Condition	Duration	Qual Device: UCC27201ADP R	Qual Device: UCC27201ADR C	QBS Product Reference: UCC27201ADP R	QBS Product Reference: UCC27201ADR CT	QBS Process Reference: UCC27201AQD DARQ1	QBS Process & Package Reference: UCC27201AQD MKRQ1	QBS Package Reference: TPA5050R SA	QBS Package Reference: TP561020DRC CU WIRE
AC	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0	3/231/0	3/231/0	-	3/231/0
CDM	ESD - CDM - Q100	1500 Volts	-	-	-	-	1/3/0	1/3/0	-	-
CDM	ESD CDM	+/- 250, 500V	-	-	1/3/0	1/3/0	-	-	-	-
DS	Die Shear	-	1/Pass	1/Pass	1/Pass	1/Pass	1/Pass	1/Pass	1/10/0	3/30/0
ED	Electrical Characterization	Per Datasheet Parameters	-	-	1/Pass	1/Pass	3/90/0	3/90/0	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	3/2400/0	-	-	-
HAS T	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	3/231/0	3/231/0	1/80/0	-
HBM	ESD - HBM - Q100	1000 Volts	-	-	-	-	1/3/0	1/3/0	-	-
HTO L	Life Test, 125C	1000 Hours	-	-	-	-	3/231/0	1/77/0	-	-
HTO L	Life Test, 140C	480 Hours	-	-	-	-	-	-	1/116/0	-
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	1/45/0	1/77/0	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	-	-	-	-	3/231/0
LU	Latch-up	(per AEC-Q100-004)	-	-	-	-	1/6/0	1/6/0	-	-

Type	Test Name / Condition	Duration	Qual Device: UCC27201ADP R	Qual Device: UCC27201ADR C	QBS Product Reference: UCC27201ADP R	QBS Product Reference: UCC27201ADR CT	QBS Process Reference: UCC27201AQD DARQ1	QBS Process & Package Reference: UCC27201AQD MKRQ1	QBS Package Reference: TPA5050RSA	QBS Package Reference: TP S61020DRC CU WIRE
PD	Physical Dimensions	--	-	-	-	-	-	3/30/0	1/5/0	3/15/0
PTC	Power Temperature Cycle, -40/125C	1000 Cycles	-	-	-	-	1/45/0	-	-	-
TC	Temperature Cycle, -65/150C	1000 Cycles	-	-	-	-	-	-	-	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0	3/231/0	3/231/0	-	3/261/0
TC-BP	Post TC Bond Pull	Wires	-	-	-	-	1/30/0	3/15/0	-	-
TS	Thermal Shock - 65/150C	1000 Cycles	-	-	-	-	-	-	-	3/231/0
TS	Thermal Shock - 65/150C	500 Cycles	-	-	-	-	-	-	-	3/231/0
WBP	Bond Pull	Wires	1/Pass	1/Pass	1/Pass	1/Pass	1/40/0	3/90/0	1/76/0	3/228/0
WBS	Bond Shear	Wires	1/Pass	1/Pass	1/Pass	1/Pass	1/40/0	3/90/0	1/76/0	3/228/0
YLD	Yield Evaluation	(per mfg. Site specification)	1/Pass	1/Pass	-	-	-	-	1/Pass	3/Pass

- 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/700Cycles 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

**Group 2 Device Qual memo:**



TI Information  
Selective Disclosure

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

**UCC27517AQDBVRQ1 with PI**

**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: UCC27517AQDBVRQ1	QBS Product Reference: UCC27519AQDBVRQ1	QBS Process Reference: TPS2543QRTE	QBS Package Reference: OPA356AQDBVRQ1	QBS Package Reference: TP S61085ATDGGKRQ1
<b>Test Group A – Accelerated Environment Stress Tests</b>											
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST 130C/85%RH	96 Hours	-	1/77/0	3/231/0	3/231/0	-
UHAST			-	-	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	1/77/0	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	-	1/80/0	3/237/0	3/231/0	1/77/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	3/231/0	3/231/0	1/77/0
TC-BP	A4	MIL-STD883 Method 2011	1	60	Post Temp. Cycle Bond Pull	500 Cycles	1/5/0	1/5/0	1/5/0	1/5/0	-
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	1000 Cycles	N/A	-	1/50/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	1/45/0	3/145/0	1/45/0	-
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>											
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	1/80/0	-	3/231/0	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	-	-	3/231/0	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: UCC27517AQDBVRQ1	QBS Product Reference: UCC27519AQDBVRQ1	QBS Process Reference: TP52543QRTE	QBS Package Reference: OPA356AQDBVRQ1	QBS Package Reference: TP561085ATDGKRQ1
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2400/0	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	-	3/2400/0	-	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-	-	-
<b>Test Group C – Package Assembly Integrity Tests</b>											
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	-	1/30/0	-	1/30/0	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull	76 Wires, 3 units min	1/76/0	-	-	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	-	-	-	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free and SnPb	-	1/30/0	1/30/0	-	1/30/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	1/30/0	-	3/90/0	-	-
<b>Test Group D – Die Fabrication Reliability Tests</b>											
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-	-	-
TDDb	D2	JESD35	-	-	Time Dependant 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	-	-	-	-
<b>Test Group E – Electrical Verification Tests</b>											
HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	4000 V	1/3/0	-	1/3/0	-	-
CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1500 V	1/3/0	1/3/0	1/3/0	-	-
LU	E4	AEC Q100-004	1	6	Auto Latch-up	(Per AEC	-	-	1/6/0	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: UCC27517AQDBVRQ1	QBS Product Reference: UCC27519AQDBVRQ1	QBS Process Reference: TP52543QRTE	QBS Package Reference: OPA356AQDBVRQ1	QBS Package Reference: TP561085ATDGKRQ1
		004				Q100-004					
LU	E4	AEC Q100-004	1	6	Auto Latch-up	Ta(max)	1/6/0	-	-	-	-
LU	E4	AEC Q100-004	1	6	Latch-up	(per JESD78)	-	1/6/0	-	1/6/0	-
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	3/90/0	3/90/0	1/90/0	1/30/0

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

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	<a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a>
Europe	<a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>
Asia Pacific	<a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>
WW PCN Team	<a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>

### IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale ([www.ti.com/legal/termsofsale.html](http://www.ti.com/legal/termsofsale.html)) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.