

PCN Number:	20130321001		PCN Date:	03/27/2013	
Title:	OPA356AQDBVRQ1 add PI - CMS C1302037				
Customer Contact:	PCN_ww_admin_team@list.ti.com	Phone:	+1(214)480-6037	Dept:	Quality Services
Proposed 1st Ship Date:	09/27/2013	Estimated Sample Availability:	Not Applicable		
Change Type:					
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Assembly Materials
<input checked="" type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Design
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Site
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	Wafer Fab Site
PCN Details					
Description of Change:					
Add polyimide (PI) to existing die.					
Reason for Change:					
Add layer of die protection.					
Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):					
Positive reliability impact.					
Changes to product identification resulting from this PCN:					
None.					
Product Affected:					
OPA356AQDBVRQ1					

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

Supplier Name:	Texas Instruments Inc.	Wafer Fabrication Site / Process:	TSMC-WF2 / 0.6-DPDM
Supplier Code:		Supplier Die Rev:	-
Supplier Part Number:	OPA356AQDBVRQ1	Supplier Assembly/Test Site:	NFME China/ TIM Malaysia
Customer Name:	Catalog	Supplier Package/Pin:	DBV (SOT) / 5
Customer Part Number:	OPA356AQDBVRQ1	Pb Free Lead Frame (Y/N):	Y
Device Description:	2.5V, 200MHz GBW, CMOS Single Op Amp	"Green" Mold Compound (Y/N):	Y
MSL Rating:	2	Operating Temp Range:	-40°C to +125°C
Peak Solder Reflow Temp:	260°C	Automotive Grade Level (1):	Level 1
Prepared by Signature:	ItHong Tan	Date:	2/12/2013

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass/fail	Comments: (N/A =Not Applicable)	Exceptions to AEC -Q100
TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS (3)									
PC	A1	JESD22 A113 J-STD-020	Preconditioning; SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL	Performed on <u>ALL</u> SMD devices, Prior to THB, AC, TC, PTC, HTSL					
THB or HAST	A2	JESD22 A101 JESD22 A110	Temperature Humidity Bias: 85°C/85% 1000 hours Highly Accelerated Stress Test: 130°C/85% 96 hours	3	77	231	3/231/0	MSPREL.12. OPA356.110 01 MSPREL.12. OPA356.110 02 MSPREL.12. OPA356.110 03	
AC or UHST	A3	JESD22 A102 or JESD22 A118	Autoclave: 121C / 15 PSIG, 96 hours Unbiased Highly Accelerated Stress Test:	3	77	231	3/231/0	MSPREL.12. OPA356.110 01 MSPREL.12. OPA356.110 02 MSPREL.12. OPA356.110 03	
TC	A4	JESD22 A104	Temperature Cycle: -65°C/+150°C/ 1000 cycles Post Temp Cycle Bond Pull 3 grams minimum (30 bonds Total)	3	77	231	3/231/ 0	MSPREL.12. OPA356.110 01 MSPREL.12. OPA356.110 02 MSPREL.12. OPA356.110 03 MSPREL.12. OPA356.110 01	
PTC	A5	JESD22-A105	Power Temperature Cycle: -40°C to +125°C for 1000 cycles	1	45	45	N/A	Only applies to devices over 1 W	
HTSL	A6	JESD22 A103	High Temperature Storage Life: 175°C/500 hours	1	45	45	1/45/0	QBS to AEC-Q100 DBV data MSPREL.10. TPS73201.0 9001	

TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS (3)

HTOL	B1	JESD22 A108	High Temp Operating Life: 150°C/408 hours	3	77	231	3/231/0	QBS 0.6DPDM TSMC data MSPREL.08.TS C2003.08002 MSPREL.08.TS C2003.08003 MSPREL.08.TS C2003.08004	
ELFR	B2	AEC-Q100-008	Early Life Failure Rate: 150°C/ 24hours	3	800	2400	3/2400/0	QBS to Fab process 0.6u DPDM TSMC data	
NVM Endurance, Data Retention, and Operational Life	B3	AEC Q100-005	NVM Endurance, Data Retention, and Operational Life	3	77	231		N/A	

TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS (3)

WBS	C1	AEC-Q100-001	Wire Bond Shear Test: (Ppk > 1.67 and Cpk > 1.33)	30 bonds	5 parts Min.	30 bonds	1/30/0	Assembly MQ	
WBP	C2	Mil-Std-883 Method 2011	Wire Bond Pull: Each bonder used (Ppk > 1.67 and Cpk > 1.33)	30 bonds	5 parts Min.	30 bonds	1/30/0	Assembly MQ	
SD	C3	JESD22 B102	Solderability: (>95% coverage) 8 hr steam age	1	15	15	1/22/0	MSPREL.09.OP A356.02002 MSPREL.09.OP A356.02001	
PD	C4	JESD22 B100, JESD22 B108	Physical Dimensions: (Ppk > 1.67 and Cpk > 1.33)	3	10	30	3/30/0	NFME PD	
SBS	C5	AEC-Q100-010	Solder Ball Shear: (Ppk > 1.67 and Cpk > 1.33)	50 balls	3	50		N/A to non-solder ball surface mount devices	
LI	C6	JESD22 B105 Not Required for SMT parts	Lead Integrity: (No lead cracking or breaking)	50 leads	1	50		N/A to non-solder ball surface mount devices	

TEST GROUP D – DIE FABRICATION RELIABILITY TESTS

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass/fail	Comments: (N/A =Not Applicable)	Exceptions to AEC -Q100
EM	D1	JESD61	Electromigration: (Only if de-rating required beyond design rules)	-	-	-	Passed		
TDDB	D2	JESD35	Time Dependant Dielectric Breakdown:	-	-	-		N/A	
HCI	D3	JESD60 & 28	Hot Injection Carrier	-	-	-		N/A	

TEST GROUP E- ELECTRICAL VERIFICATION

TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test.	All	All	All		100% of qualification devices	
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model	1	3	3	2000V – 3/0	MSPREL.09.OPA356.02.001	
CDM	E3	AEC-Q100-011	Electrostatic Discharge, Charged Device Model; (750V corner leads, 500V for all other leads)	1	3	3	1000V – 3/0	MSPREL.09.OPA356.02.001	Per JEDEC
LU	E4	AEC-Q100-004	Latch-Up:	1	6	6	1/6/0	MSPREL.09.OPA356.02.002	
ED	E5	AEC-Q100-009	Electrical Distributions: (Test across recommended operating temperature range) (Cpk > 1.67 , Ppk > 1.67)	3	30	90	3/90/0 25°C, 125°C, -40°C	Data available	

- (1) Grade 0 (or A): -40°C to +150°C ambient operating temperature range
 Grade 1 (or Q): -40°C to +125°C ambient operating temperature range
 Grade 2 (or T): -40°C to +105°C ambient operating temperature range
 Grade 3 (or I): -40°C to +85°C ambient operating temperature range
 Grade 4 (or C): -0°C to +150°C ambient operating temperature range
- (2) These are recommended minimum lot/sample sizes. Lot/sample size may be reduced depending on available data.
 (3) Generic data may be used.

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Reliability data shows characteristic failure mechanisms of the specific environmental stress as documented in the industry standards for each stress condition.

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