



Post Office Box 84
 Sherman, Texas 75090
 6412 Highway 75 South
 Sherman, Texas 75090

(903) 868-7111

Texas Instruments High Rel Products Reliability Report

Device Type/Device Family: OPA2333HKJ
 Package Type: HKJ (8 pin Ceramic Flat Pack)
 Wafer Fabrication Facility: Ti DMOS5
 Assembly/Test Facility: Millennium Microtech
 Reporting Period: 04/12

Biased Life Test

Test Method: JESD22-A108
 Test Condition: 210°C / 1000 hours
 Sample Size: 45
 Rejects: 0
 Activation Energy (eV): .5
 Equivalent Device Hours: 45000
 Failure Rate (FIT)*: 20491

* 60% confidence level of random failure rate during nominal 1000 hour life based on test sample size. This not based on wear out failure mechanisms which will begin to affect above the 1000 hr test limit.

Group B Tests (Weekly by Package Family)			
Description	Condition	Referenced Method	Sample Size/Rejects
B1 Resistance to Solvents		Mil Std 883 Method 2015	3/0
B2 Bond strength	Test condition F (FC)	Mil Std 883 Method 2011/2019/2027	22/0-3/0
B3 Solderability	Soldering temperature of 245C±5	Mil Std 883 Method 2003	22/0
Group C Test (Per 3 Month Period by Family)			
Description	Condition	Referenced Method	Sample Size/Rejects
C1 Steady-state life test	125C/1000Hrs 4.6V	Mil Std 883 Method 1005	45/0
End point electrical			45/0

Texas Instruments High Rel Products Reliability Report

Group D Tests (Annually by Package Family)				
Description	Condition	Referenced Method	Sample Size/Rejects	
D1 Physical Dimensions		Mil Std 883 Method 2016	15/0	*
D2 Lead Integrity		Mil Std 883 Method 2004 & 2028	45/0	*
Seal(Fine and Gross)		Mil Std 883 Method 1014	45/0	*
D3 Thermal Shock	-65°C to +150°C 15 cycles	Mil Std 883 Method 1011		
Temperature Cycle	-65°C to +150°C 100 cycles	Mil Std 883 Method 1010		*
Moisture Resistance		Mil Std 883 Method 1004		
Seal(Fine and Gross)		Mil Std 883 Method 1014		*
Visual examination		Mil Std 883 Method 1004 & 1010		
End point electrical D4			15/0	*
Mechanical Shock		Mil Std 883 Method 2002		
Variable Freq Vibration		Mil Std 883 Method 2007		*
Constant acceleration		Mil Std 883 Method 2001		
Seal		Mil Std 883 Method 1014		*
Visual Examination		Mil Std 883 Method 2009		
End point electrical D5			15/0	*
Salt Atmosphere		Mil Std 883 Method 1009		
Seal		Mil Std 883 Method 1014		*
Visual Examination		Mil Std 883 Method 1009	15/0	
D6 Internal Water Vapor		Mil Std 883 Method 1018	3/0	
D7 Adhesion of Lead Finish		Mil Std 883 Method 2025	15/0	

Supplemental Device Characteristics

Die Revision:	C	Assembly Site:	MMT
Master Die:	COPA2333CANH	Package Type:	HKJ
Wafer Fab:	DMOS5	Pin Count:	8
Fab Technology:	HPA07	Mold Compound:	Ceramic
Fab Process:	HPA07	Mount Compound:	JM7000
Process Code:	N/A	Bond:	Al
Passivation:	Nitride	Lead Composition:	Kovar
Lead Finish:	Au		

TI may provide technical, applications or design advice, quality characterization, and reliability data or service providing these items shall not expand or otherwise affect TI's warranties as set forth in the Texas Instruments Incorporated Standard Terms and Conditions of Sale for Semiconductor Products and no obligation or liability shall arise from TI's provision of such items.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46C and to discontinue any product or service per JESD48B. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components which meet ISO/TS16949 requirements, mainly for automotive use. Components which have not been so designated are neither designed nor intended for automotive use; and TI will not be responsible for any failure of such components to meet such requirements.

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Mobile Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community e2e.ti.com