

**Reliability Report
For
DAC5571IDBV**

12/15/2003

**Texas Instruments
High Performance Analog Products**

Approved by:

Mark Yampolsky
Supervisor/Reliability Engineering

The **DAC6571IDBV** is qualified and fully meets the Texas Instruments quality and reliability standards for High Performance Analog Products per the testing described below.

Packaging Information		Manufacturing Information	
Assembly Site:	Carsem (M)	Die Name:	ICC03606
Package Type:	SOT23 / DBV	Die Size:	19.5 x 72.71 mil
Lead Count:	6	Mask Revision:	A
Mold Compound:	Nitto MP8000C	Wafer Fab Site:	TSMC Fab 2B
Die Attach:	Ablebond 84-1 LMISR4	Process:	0.5µm DPTM
Bond Wire Material:	Au	Technology:	CMOS
Bond Wire Diameter:	1 mil	Metal 1:	Ti(0.4kÅ)/TiN(1kÅ)/AlCu(4kÅ)/TiN(1.2kÅ)
Lead Frame Material:	Silver Spot Copper	Metal 2:	TiN(1kÅ)/AlCu(4kÅ)/TiN(1.2kÅ)
Lead Frame Finish:	Solder Plate	Metal 3:	TiN(1kÅ)/AlCu(8kÅ)/TiN(0.25kÅ)
Flammability Rating	UL94-VO	Passivation:	SiO2(2kÅ)/Si3N4(7kÅ)
Moisture Sensitivity Level	L1	Transistor Count:	4303
Reflow Temperature	235°C		

Thermal Information

Absolute Max Junction Temp T_{J-MAX}	150°C
θ_{JC}	44 °C/W
Specification Operating Temperature T_A	-40°C to 105°C
Lead Soldering Temperature 1.6mm from case	Infrared = 220°C/15 sec; Vapor phase= 215°C/60 sec
Storage Temperature T_{STG}	-65°C to 150°C

Qualification Evaluation & Results:

Qualification Material			
HTOL wafer/assem/lot :	N/A	Latch Up wafer/assem/lot	N/A
HAST wafer/assem/lot:	N/A	ESD wafer/assem/lot	N/A
Autoclave wafer/assem/lot:	N/A	X-Ray wafer/assem/lot	N/A
Temp Cycle wafer/assem/lot:	N/A	MSL wafer/assem/lot	N/A

Qualification by Similarity (QBS):

Reliability data on similar packages and wafer fab processes may be used to support generic qualifications as approved by QRE.

Reliability Test Results

Test	Conditions	Lot 1 SS/F	Lot 2 SS/F	Lot 3 SS/F	QBS Reference
Life Test	155°C, 240 Hrs.	116/0			DAC7571IDBV
HAST	130°C, 85%RH, 33.5 psia, 96 Hrs.	79/0			DAC7571IDBV
Autoclave	121°C, 15 psia, 100%RH, 240 Hrs.	77/0			DAC7571IDBV
Temp Cycle	-65 C to 150 C, 1000 cycles	77/0			DAC7571IDBV
ESD	HBM/500 volts	3/0			DAC7571IDBV
	HBM/1000 volts	3/0			DAC7571IDBV
	HBM/1500 volts	3/0			DAC7571IDBV
	HBM/2000 volts	3/0			DAC7571IDBV
	HBM/3000 volts	3/0			DAC7571IDBV
	HBM/4000 volts	3/0			DAC7571IDBV
	CDM/100 volts	3/0			DAC7571IDBV
	CDM/200 volts	3/0			DAC7571IDBV
	CDM/500 volts	3/0			DAC7571IDBV
	CDM/1000 volts	3/0			DAC7571IDBV
	MM/100 volts	3/0			DAC7571IDBV
	MM/200 volts	3/0			DAC7571IDBV
Latch Up		6/0			DAC7571IDBV
Elec. Charac. over Temp	PDS	50/0			
X-Ray		125/0			DAC7571IDBV
Moisture Sensitivity Test	Level 1 @ 235°C	12/0			DAC7571IDBV

The FIT rate for this device is based upon qualification data from this qualification, process qualification data, and/or ongoing reliability monitoring. Current FIT information is available from the product quality web page.

Reliability Calculations				
OVEN TEMP C°	155	ACTIVATION ENERGY (eV)		
TEST DEVICES	116	0.7		
PROCESS	CMOS	(90% Confidence level)		
	READ POINTS (HOURS)	TOTAL FAILURES	PASS	DEVICE HOURS
	0	0	116	0
	240	0	116	27840
	Total Failures	0		27840
TEMP.		FAILRATE (FITS)	MTTF (HOURS)	MTTF (YEARS)
25		2.10E+01	4.77E+07	5443.3
30		3.29E+01	3.04E+07	3471.4
35		5.08E+01	1.97E+07	2246.4
40		7.74E+01	1.29E+07	1474.0
45		1.16E+02	8.59E+06	980.1
50		1.73E+02	5.78E+06	660.0
55		2.54E+02	3.94E+06	449.8
60		3.68E+02	2.72E+06	310.1
65		5.28E+02	1.89E+06	216.2
70		7.50E+02	1.33E+06	152.3
75		1.05E+03	9.49E+05	108.4
80		1.47E+03	6.82E+05	77.9
85		2.02E+03	4.95E+05	56.5
90		2.76E+03	3.62E+05	41.3
95		3.75E+03	2.67E+05	30.5
100		5.04E+03	1.99E+05	22.7
105		6.72E+03	1.49E+05	17.0
110		8.89E+03	1.12E+05	12.8
115		1.17E+04	8.56E+04	9.8
120		1.53E+04	6.55E+04	7.5
125		1.98E+04	5.06E+04	5.8

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

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

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

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI 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 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. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

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

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265

Copyright © 2003, Texas Instruments Incorporated