



Tucson Corporation

High Performance Analog Products

Analytical Services

Reliability Report
For
OPA2846ID
CIC03206 Revision B

11/10/2003

Texas Instruments
High Performance Analog Products

Approved by:

Mark Yampolsky
Supervisor/Reliability Engineering

The **OPA2846ID** 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:	Carsen (S)	Die Name:	CIC03206
Package Type:	SOIC /D	Die Size:	47 x 53 mils
Lead Count:	8	Mask Revision:	B
Mold Compound:	EME6300H	Wafer Fab Site:	TI-Tucson
Die Attach:	84-1 LMISR4	Process:	A13X
Bond Wire Material:	Au	Technology:	Bipolar
Bond Wire Diameter:	1.3 mils	Metal 1:	TiW (0.25kÅ)/TiW (1kÅ)/TiW (0.3kÅ)/AlCu 0.5% (7.5kÅ)/TiW (0.5kÅ)
Lead Frame Material:	Silver Spot Copper	Metal 2:	TiW (1kÅ)/AlCu 0.5% (9.5kÅ)/TiW (0.5kÅ)
Lead Frame Finish:	Solder Plate	Metal 3:	N/A
Flammability Rating	UL94 Class V-0 IEC695-2-2 Class FV0	Passivation:	10KA SiON
Moisture Sensitivity Level	3	Transistor Count:	128
Reflow Temperature	260°C		

Thermal Information

Absolute Max Junction Temp T_{J-MAX}	150°C
θ_{JC}	4.3 °C/W
Specification Operating Temperature T_A	-40°C to 85°C
Lead Soldering Temperature 1.6mm from case	300°C
Storage Temperature T_{STG}	-40°C to 125°C

Qualification Evaluation & Results:

Qualification Material			
HTOL assem/wafer/lot :	N/A	Latch Up assem/wafer/lot	3134041/3061759
HAST assem/wafer/lot :	N/A	ESD assem/wafer/lot	3134041/3061759
Autoclave assem/wafer/lot :	N/A	X-Ray assem/wafer/lot	3134041/3061759
Temp Cycle assem/wafer/lot :	N/A	MSL assem/wafer/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	125°C, 1008 Hrs.	1039/0			CBC10 Qualification
HAST	130°C, 85%RH, 33.5 psia, 96 Hrs.	952/0			CBC10 Qualification
Autoclave	121°C, 15 psia, 100%RH, 240 Hrs.	617/0			CBC10 Qualification
Temp Cycle	-65°C to 150°C, 1000 cycles	618/0			CBC10 Qualification
ESD	HBM/500 volts	3/0			OPA2846ID, Rev A
	HBM/1000 volts	3/0			OPA2846ID, Rev A
	HBM/1500 volts	3/0			OPA2846ID, Rev A
	HBM/2000 volts	3/0			OPA2846ID, Rev A
	HBM/3000 volts	3/0			OPA2846ID, Rev A
	HBM/4000 volts	3/0			OPA2846ID, Rev A
	CDM/100 volts	3/0			OPA2846ID, Rev A
	CDM/200 volts	3/0			OPA2846ID, Rev A
	CDM/500 volts	3/0			OPA2846ID, Rev A
	CDM/1000 volts	3/0			OPA2846ID, Rev A
	MM/100 volts	3/0			OPA2846ID, Rev A
	MM/200 volts	3/0			OPA2846ID, Rev A
	MM/300 volts	3/0			OPA2846ID, Rev A
MM/400 volts	2/1			OPA2846ID, Rev A	
Latch Up		6/0			OPA2846ID, Rev A
Elec. Charac. over Temp	PDS	50/0			OPA2846ID, Rev A
X-Ray		125/0			OPA2846ID, Rev A
Wire Pull Test		50/0			OPA2846ID, Rev A
Die Shear		50/0			OPA2846ID, Rev A
Ball Shear		50/0			OPA2846ID, Rev A

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°	125	Activation Energy (eV)		
TEST DEVICES	1039	0.7		
PROCESS	CBC10-A13	(90% Confidence level)		
	READ POINTS (HOURS)	TOTAL FAILURES	PASS	DEVICE HOURS
	0	0	1039	0
	168	0	1039	174552
	504	0	1039	349104
	1008	0	1039	523656
	Totals	0		1047312
TEMP.		FAILRATE (FITS)	MTTF (HOURS)	MTTF (YEARS)
25		2.33E+00	4.29E+08	48971.7
30		3.66E+00	2.74E+08	31230.9
35		5.65E+00	1.77E+08	20210.0
40		8.61E+00	1.16E+08	13261.3
45		1.29E+01	7.72E+07	8817.8
50		1.92E+01	5.20E+07	5937.8
55		2.82E+01	3.55E+07	4046.9
60		4.09E+01	2.44E+07	2790.1
65		5.87E+01	1.70E+07	1944.9
70		8.33E+01	1.20E+07	1370.1
75		1.17E+02	8.54E+06	974.9
80		1.63E+02	6.14E+06	700.4
85		2.25E+02	4.45E+06	507.9
90		3.07E+02	3.25E+06	371.6
95		4.16E+02	2.40E+06	274.1
100		5.60E+02	1.79E+06	203.9
105		7.47E+02	1.34E+06	152.9
110		9.88E+02	1.01E+06	115.5
115		1.30E+03	7.70E+05	87.9
120		1.70E+03	5.90E+05	67.3
125		2.20E+03	4.55E+05	51.9

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

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