

**Reliability Report
For
OPA725AIDBV
New product qualification**

09/23/2003

**Texas Instruments
High Performance Analog Products**

Approved by:

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Supervisor/Reliability Engineering

The OPA725AIDBV 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:	ICC03166
Package Type:	SOT23 /DBV	Die Size:	39 X 58 mils
Lead Count:	5	Mask Revision:	C
Mold Compound:	MP8000C	Wafer Fab Site:	TSMC Fab 2B
Die Attach:	84-1LMISR4	Process:	0.5 um H.V. DPTM
Bond Wire Material:	Gold	Technology:	CMOS
Bond Wire Diameter:	1.3	Metal 1:	Ti (0.4kÅ)/TiN (1kÅ)/ AlSiCu (4kÅ)/TiN (1.2 kÅ)
Lead Frame Material:	Silver Spot Copper	Metal 2:	Ti (1kÅ)/ AlSiCu (4kÅ)/TiN (1.25kÅ)
Lead Frame Finish:	Solder Plate	Metal 3:	Ti (1kÅ)/ AlSiCu (8kÅ)/TiN (0.25kÅ)
Flammability Rating	UL94-V0	Passivation:	SiO2 (2kÅ)/Si3N4 (7kÅ)
Moisture Sensitivity Level	1	Transistor Count:	500
Reflow Temperature	240		

Thermal Information

Absolute Max Junction Temp T_{J-MAX}	150°C
Recommended Junction Temp T_J	<150°C
θ_{JC}	125°C/W
θ_{JB}	N/A
Specification Operating Temperature T_A	-55°C to 150°C
Lead Soldering Temperature 1.6mm from case	300°C
Storage Temperature T_{STG}	-55°C to 150°C

Qualification Evaluation & Results:

New product qualification

Qualification Material			
HTOL assem/wafer/lot :	N/A	Latch Up assem/wafer/lot	N/A
HAST assem/wafer/lot :	N/A	ESD assem/wafer/lot	N/A
Autoclave assem/wafer/lot :	N/A	X-Ray assem/wafer/lot	N/A
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	155°C, 183 Hrs.	116/0			OPA726AID
HAST	130°C, 85%RH, 33.5 psia, 100 Hrs.	77/0			OPA726AID
Autoclave	121°C, 15 psia, 100%RH, 240 Hrs.		77/0		OPA726AID
Temp Cycle	-65°C to 150°C, 1000 cycles		77/0		OPA726AID
ESD	HBM/500 volts	3/0			OPA726AID
	HBM/1000 volts	3/0			OPA726AID
	HBM/1750 volts	3/0			OPA726AID
	CDM/100 volts	3/0			OPA726AID
	CDM/200 volts	3/0			OPA726AID
	CDM/500 volts	3/0			OPA726AID
	CDM/1000 volts	3/0			OPA726AID
Latch Up			12/0		OPA726AID
Elec. Charac. over Temp	PDS		48/0		OPA726AID
X-Ray			125/0		

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.

MODEL	OPA726AID		Activation Energy (eV)	
OVEN TEMP C°	155		0.7	
TEST DEVICES	116		(90% Confidence level)	
PROCESS	0.5um HV DPTM			
	READ POINTS (HOURS)	TOTAL FAILURES	PASS	DEVICE HOURS
	0	0	116	0
	183	0	116	21228
	Total Failures	0		21228
TEMP.		FAILRATE (FITS)	MTTF (HOURS)	MTTF (YEARS)
25		2.75E+01	3.64E+07	4150.5
30		4.31E+01	2.32E+07	2646.9
35		6.66E+01	1.50E+07	1712.9
40		1.02E+02	9.85E+06	1124.0
45		1.53E+02	6.55E+06	747.3
50		2.27E+02	4.41E+06	503.3
55		3.33E+02	3.00E+06	343.0
60		4.83E+02	2.07E+06	236.5
65		6.93E+02	1.44E+06	164.8
70		9.83E+02	1.02E+06	116.1
75		1.38E+03	7.24E+05	82.6
80		1.92E+03	5.20E+05	59.4
85		2.65E+03	3.77E+05	43.0
90		3.62E+03	2.76E+05	31.5
95		4.91E+03	2.04E+05	23.2
100		6.60E+03	1.51E+05	17.3
105		8.81E+03	1.14E+05	13.0
110		1.17E+04	8.57E+04	9.8
115		1.53E+04	6.52E+04	7.4
120		2.00E+04	5.00E+04	5.7
125		2.59E+04	3.85E+04	4.4

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