

**Reliability Report
For
OPA725AID
New product qualification**

09/23/2003

**Texas Instruments
High Performance Analog Products**

Approved by:

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Supervisor/Reliability Engineering

The **OPA725AID** 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:	SOIC	Die Size:	39 X 58 mils
Lead Count:	8	Mask Revision:	C
Mold Compound:	EME6300HR	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	3	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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