

**Reliability Report**  
**For**  
**OPA726AID**  
**New product qualification**

**09/23/2003**

**Texas Instruments**  
**High Performance Analog Products**

Approved by:

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Supervisor/Reliability Engineering

The **OPA726AID** 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
$\theta_{JA}$	125°C/W
$\theta_{JB}$	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 :	3055898/38H60XK	Latch Up assem/wafer/lot	3031963/35ZNQ
HAST assem/wafer/lot :	3055898/38H60XK	ESD assem/wafer/lot	3055898/38H60XK
Autoclave assem/wafer/lot :	3031963/35ZNQ	X-Ray assem/wafer/lot	3031963/35ZNQ
Temp Cycle assem/wafer/lot :	3031963/35ZNQ	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			
HAST	130°C, 85%RH, 33.5 psia, 100 Hrs.	77/0			
Autoclave	121°C, 15 psia, 100%RH, 240 Hrs.		77/0		
Temp Cycle	-65°C to 150°C, 1000 cycles		77/0		
ESD	HBM/500 volts	3/0			
	HBM/1000 volts	3/0			
	HBM/1750 volts	3/0			
	CDM/100 volts	3/0			
	CDM/200 volts	3/0			
	CDM/500 volts	3/0			
	CDM/1000 volts	3/0			
Latch Up			12/0		
Elec. Charac. over Temp	PDS		48/0		
X-Ray			125/0		
Ball Shear			25/0		
Moisture Sensitivity Test	Level 3 @ 240°C	12/0			

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 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.

<b>MODEL</b>	<b>OPA726AID</b>		<b>Activation Energy (eV)</b>	
<b>OVEN TEMP C°</b>	<b>155</b>		<b>0.7</b>	
<b>TEST DEVICES</b>	<b>116</b>		<b>(90% Confidence level)</b>	
<b>PROCESS</b>	<b>0.5um HV DPTM</b>			
	<b>READ POINTS (HOURS)</b>	<b>TOTAL FAILURES</b>	<b>PASS</b>	<b>DEVICE HOURS</b>
	0	0	116	0
	183	0	116	21228
	Total Failures	0		21228
<b>TEMP.</b>		<b>FAILRATE (FITS)</b>	<b>MTTF (HOURS)</b>	<b>MTTF (YEARS)</b>
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
<b>55</b>		<b>3.33E+02</b>	<b>3.00E+06</b>	<b>343.0</b>
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
<b>85</b>		<b>2.65E+03</b>	<b>3.77E+05</b>	<b>43.0</b>
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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