

**Reliability Report  
For  
OPA726AIDGK  
New product qualification**

**09/23/2003**

**Texas Instruments  
High Performance Analog Products**

Approved by:

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Supervisor/Reliability Engineering

The OPA726AIDGK 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:	MSOP/DGK	Die Size:	39 X 58 mils
Lead Count:	8	Mask Revision:	C
Mold Compound:	EME6600HR	Wafer Fab Site:	TSMC Fab 2B
Die Attach:	84-ILMISR4	Process:	0.5 um H.V. DPTM
Bond Wire Material:	Gold	Technology:	CMOS
Bond Wire Diameter:	1.3 mil	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		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 :	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		
Moisture Sensitivity Test	Level 3 @ 240°C	12/0			

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.

<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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