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## Texas Instruments Enhanced Plastic Products Reliability Report

(Subject To Attached Disclaimers)

Device Type/Device Family: REF5020MDREP, REF5040MDREP, REF  
 Package Type: 8/D  
 Wafer Fabrication Facility: DM5  
 Assembly/Test Facility: MLA  
 Compiled: 05/11

### Biased Life Test

Test Method: JESD22-A108  
 Test Condition: 125°C / 1000 hours or equivalent  
 Sample Size: 542  
 Rejects: 0  
 Activation Energy (eV): 0.7  
 Equivalent Device Hours: 1.29E+07  
 Failure Rate (FIT)\*: 71.4

\*Derated to +55°C with a 6

### Package Related Tests

<u>Description</u>	<u>Condition</u>	<u>Referenced Method</u>	<u>Sample Size</u>
Biased Humidity or HAST	85°C / 85% / 1000 hours or 130°C / 85% / 96 hours	JESD22-A101  JESD22-A110	231
Autoclave	121°C @ 2 atmospheres absolute for 96 hours	JESD22-A102	231
Temperature Cycle	-65°C to +150°C non-biased for 500 cycles or equivalent	JESD22-A104	231
High Temp Storage	150°C / 1,000 hours	JESD22-A103-A	77

\* Preconditioning per JEDEC Std. 2.

## Initial Product Qualification

The subject Enhanced Plastic device, device family, and/or package family have passed Texas Instruments product qualification as

<u>Description</u>	<u>Condition</u>	<u>Referenced Method</u>	<u>Sample</u>
Electrical Characterization	TI Data Sheet	N/A	3 lot(s)/l
Electrostatic Discharge Sensitivity	HBM MM CDM	EIA/JESD22-A114 EIA/JESD22-A115 JESD22-C101	3 Units/ N/ N/
Latch-up	Per Technology	EIA/JESD78	6/
Physical Dimensions	TI Data Sheet	EIA/JESD22- B100	15
Thermal Impedance	Theta-JA on board	EIA/JESD51	Per Pin-l
Bias Life Test	125°C / 1000 hours or equivalent	JESD22-A108	77
Biased Humidity or HAST	85°C / 85% / 1000 hours or 130°C / 85% / 96 hours	JESD22-A101 JESD22-A110	77
Autoclave	121°C @ 2 atmospheres absolute for 96 hours	JESD22-A102	77
Temperature Cycle	-65°C to +150°C non-biased for 1000 cycles or equivalent	JESD22-A104	77
High Temp Storage	150°C / 1,000 hours	JESD22-A103-A	77
Solder Heat	260°C for 10 seconds	JESD22-B106	N/
Solderability	Condition A (steam age for 8 hours)	ANSI/J-STD-002-92	22
Bond Strength	-	ASTM F-459	30
Moisture Sensitivity	Surface Mount Only	J-STD-020-A	12

\* Preconditioning per JEDEC Std. 2.

## Supplemental Device Characteristics

Master Die: CREF5020CGNP, CREF5040CJNP, CREF5050CLNP  
 Wafer Fab: DM5  
 Fab Process: 50HPA07  
 Fab Technology: CMOS  
 Die Revision: C  
 Passivation: Nitride  
 Metal 1: Ti/TiN/AICu/TiN  
 Metal 2: Ti/TiN/AICu/TiN

Assembly Site: MLA  
 Pin/Package Type: 8/D  
 Lead Composition: CU  
 Lead Finish: NIPDAU  
 Mount Compound: ABLESTIK 829C  
 Bond: 0.96 MILS  
 Mold Compound: SUMITOMO EM  
 Die Thickness: 10.00 ± 0.500 M

#### **Quality and Reliability Data Disclaimer**

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5090  
outh  
5090

5050MDREP

0% Confidence Level

**Rejects**

0 \*

0 \*

0 \*

0 \*

2, Method A112/A113

as follows:

**le Size**

90 Units

1/voltage

1/A

1/A

1/0

1/0

Package

1/0

1/0 \*

1/0 \*

1/0 \*

1/0 \*

1/A

1/0

1/0

1/0

2, Method A112/A113

0

MEG700FGT

MILS



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