

# CHANGE NOTIFICATION



Linear Technology Corporation  
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June 4, 2010

PCN#: 060410

Dear Sir/Madam:

**Subject: Notification of Enhanced Internal Substrate Design Change in LTM4602 Product Family**

Please be advised that Linear Technology Corporation has made a minor change to the internal package substrate layout in the LTM4602  $\mu$ Module product family in order to improve our package assembly process and to allow for higher peak reflow temperature during the PCB surface mount assembly process. In addition, bake requirements prior to board rework processes have been relaxed.

This change facilitates better process control in the package assembly process. While the package remains at MSL (Moisture Sensitivity Level) 3 per Jedec standards, the peak package body temperature during surface mount IR reflow is now increased to 250°C, which exceeds the lead free peak reflow requirement per JSTD-020 for this package size.

Moisture Sensitivity Level 3	
Peak Reflow Temperature of Package During Primary Reflow (Old)	Peak Reflow Temperature of Package During Primary Reflow (New)
245°C	<b>250°C</b>

Also, the bake requirement for PCB assemblies prior to part removal from the board has been reduced from 125°C / 24 hours to 70°C / 24 hours or 100°C / 12 hours:

Baking Temperature and Duration of PCB Assembly For Part Removal From the Board	
Baking Temperature and Duration (Old)	Baking Temperature and Duration (New)
125°C for 24 hours	<b>70°C for 24 hours OR 100°C for 12 hours</b>

Rework (reattach) processes can use up to 260°C peak reflow temperature provided the packages are reflowed within 8 hours after removal from sealed bag / dry storage or after baking at 125°C for 48 hours.

No functional, parametric, mechanical, or datasheet specifications are affected, and the component bill of materials is unchanged. There are no changes associated with the package footprint, PCB layout or product top marking, so customer applications will be unaffected.

Parts incorporating the new substrate design have been characterized over the full operating junction temperature range and tested for package level reliability (MSL3 preconditioning followed by 1000 thermal shock completed). In addition, board level reliability and power cycling have been successfully completed with the LTM4601A (15x15 mm) which incorporates very similar layout changes as previously announced. Products built using the improved design are targeted for shipment in early August, 2010.

Should you have any further questions, please feel free to contact me at 408-432-1900 ext. 2519, or by e-mail at [NGIRN@linear.com](mailto:NGIRN@linear.com). If I do not hear from you by July 6, 2010, we will consider this change to be approved by your company.

Sincerely,

Naib Girn  
Quality Assurance Manager

Confidential Statement

This change notice is for Linear Technology's Customers only.  
Distribution or notification to third parties is prohibited

# LTM4600, LTM4601, LTM4601A, and LTM4602 Qualification

6/2/2010

**• HIGH TEMPERATURE BAKE AT 150°C**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	DEVICE HOURS AT +150°C	NUMBER OF FAILURES
LGA	224	0941	0941	224,000	0

**• J-STD-020 PRECONDITIONING (192 HOURS 30°C/60%RH, 3X IR REFLOW, CSAM)**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	DEVICE HOURS AT +30°C	NUMBER OF FAILURES
LGA	1,630	0941	1012	312,960	0

**• J-STD-020 PRECONDITIONING FOLLOWED BY TEMP CYCLE FROM -55°C to +125°C**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	DEVICE CYCLES	NUMBER OF FAILURES
LGA	683	0941	1001	1,366,000	0

**• BOARD MOUNTED TEMP CYCLE FROM -40°C to +125°C**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	DEVICE CYCLES	NUMBER OF FAILURES
LGA	86	0941	0941	86,000	0

**• J-STD-020 PRECONDITIONING FOLLOWED BY THERMAL SHOCK FROM -55°C to +125°C**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	DEVICE CYCLES	NUMBER OF FAILURES
LGA	764	0941	1012	1,451,000	0

**• SOLDER SHOCK (3 HRS PCT + 1 SOLDER IMMERSION 245°C)**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE		NUMBER OF FAILURES
LGA	75	0941	0941		0

**• POWER CYCLE FROM +50°C to +100°C**

PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	DEVICE CYCLES	NUMBER OF FAILURES
LGA	12	0941	0941	600,000	0