



## **PROCESS CHANGE NOTIFICATION PCN0707 SEALING GLASS CHANGE FOR CERAMIC DUAL IN-LINE PACKAGE ASSEMBLED IN THE PHILIPPINES**

### **Change Description:**

Altera assembly supplier Amkor Philippines will be changing the Ceramic Dual In-Line Package (CerDIP) base and cap sealing glass from ATG-Asahi Techno Glass T187 to NEG-Nippon Electric Glass LS2010 on its 24-lead CerDIP packages.

The new glass material had been fully qualified by Altera. The qualification data and the material properties are listed in Tables 1 and 2, respectively.

This change will not affect the form, fit, or function of the devices.

### **Reason for Change:**

ATG-Asahi Techno Glass has stopped production of the T187 material.

### **Product Traceability and Transition Dates**

This change will be implemented in June 2007. Customers may receive products with this change beginning with a date code marking of 0725 on the top of the package.

Altera Date Code Marking Format
A XβZαα <b>0725</b> T

### **Products Affected:**

Assembly Site	Package	Pin Count	Product Line
Philippines	CerDIP	24	EP600I
			EP610
			EP610I

**Contact:**

For more information on this PCN, please contact Altera Customer Quality support at [customer-quality@altera.com](mailto:customer-quality@altera.com).

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*In accordance with JESD46-B, this change is deemed acceptable to the customer if no acknowledgement is received within 30 days from this notification.*

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**Revision History:**

Rev	Date Released	Description of Change
0	21-Mar-07	Initial Release

**Table 1 - Qualification Data for LS2010**

Qualification Test	Read Out	Results
Temperature Cycle Condition B	1000 cycle	0/50

**Table 2 - Material Properties Comparison for LS2010 and T187**

Glass Code No.		LS2010	T187	
Coefficient of thermal expansion (30~250°C)		$10^{-7}/^{\circ}\text{C}$	65.0	68.0
Density		$\text{g}/\text{cm}^3$	5.65	5.60
Transition point		$^{\circ}\text{C}$	313	308
Softening point		$^{\circ}\text{C}$	400	342
Dielectric constant (1MHz 25°C)			12.5	12.8
tan $\delta$ (1MHz 25°C)		$\times 10^{-4}$	34	30
Volume resistivity	150°C	Log $\Omega$ -cm	12.4	11.9
	250°C		9.8	9.4
Acid resisting (weight loss)	20% H <sub>2</sub> SO <sub>4</sub> 70°C 1min	mg/cm <sup>2</sup>	0.8	0
	10% H <sub>2</sub> SO <sub>4</sub> 20°C 10min		0.5	0.1
	10% HCl 20°C 10min		1.9	1.6
	10% HNO <sub>3</sub> 20°C 10min		120	49
Coefficient of thermal conductivity		Kcal/m • hr • °C	1.24	1.00
$\alpha$ -emission		count/hr • cm <sup>2</sup>	<0.5	<0.6
Sealing Condition		$^{\circ}\text{C}$	435	435
		min	10	10