

PROCESS CHANGE NOTIFICATION

PCN0813

POLYIMIDE WAFER COAT REMOVAL FOR SELECTED ALTERA DEVICES

Change Description

Altera is implementing a change to the wafer coat on selected product lines fabricated at Taiwan Semiconductor Manufacturing Co. (TSMC). This change includes the exclusion of the existing polyimide wafer coat for the Cyclone[®] FPGA, Cyclone II FPGA, MAX[®] II CPLD, and Stratix[®] FPGA product families.

Recommended Action

No action is required as a result of this change.

Reason for Change

Altera is implementing this change in order to be consistent with the current wafer-fabrication practices. Historically, polyimide coat has been used to reduce mechanical stress between the top surface of the die and the package mold compound. With current technologies, the die surface to package mold compound interface is robust, therefore eliminating the need for the polyimide coating. This change is fully qualified and the data is included in this PCN. Products assembled with the non-polyimide coated wafers meet Altera's high quality and reliability requirements. By being more consistent with current wafer-fabrication practices, this change also improves the availability of supply and the overall product life.

Products Affected

The product lines affected by this change are listed in Table 1. A list of ordering part numbers is included in Appendix 1. The products will transition to the non-polyimide wafers as the current inventory is consumed.

Table 1: Affected Product Lines

Product Family	Product Line	Package Type	Product Transition
Cyclone II FPGA	EP2C5	T144, Q208, F256	Dec 2008
	EP2C5A	T144, F256	Dec 2008
	EP2C8	T144, Q208, F256	Dec 2008
	EP2C8A	F256	Dec 2008
	EP2C15A	F256, F484	Dec 2008
	EP2C20A		Dec 2008
	EP2C20	Q240, F256, F484	Dec 2008
	EP2C35	U484, F484, F672	Dec 2008
	EP2C50		Dec 2008
	EP2C70	F672, F896	Dec 2008
Cyclone FPGA	EP1C3	T100, T144	Dec 2008
	EP1C4	F324, F400	Dec 2008
	EP1C6	T144, Q240, F256	Dec 2008
	EP1C12	Q240, F256, F324	Dec 2008
	EP1C20	F324, F400	Dec 2008
MAX II CPLD	EPM240	T100, F100, M100	Dec 2008
	EPM240G		Dec 2008
	EPM570	T100, T144, F100, F256, M100, M256	Dec 2008
	EPM570G		Dec 2008
	EPM1270	T144, F256, M256	Dec 2008
	EPM1270G		Dec 2008
	EPM2210	F256, F324	Dec 2008
	EPM2210G		Dec 2008
Stratix FPGA	EP1S10	B672, F672	Dec 2008
	EP1S20		Dec 2008
	EP1S25		Dec 2008

Product Traceability and Transition Dates

This change will be implemented in December 2008. Customers may receive products with this change beginning with a date-code marking of 0843 or later on the top of the package. See Figure 1. The 0843 date-code marking indicates the earliest date that the new material may be used for any of the affected devices.

Figure 1. Date-Code Marking

Altera Date Code Marking Format
A XβZαα 0843 T

Qualification Data

Qualification data is summarized in Table 2.

Table 2. Summary of Qualification Data

Product Family	Product Line	Representative Packages	Qualification Test	Read Out	Results
Cyclone II FPGA	EP2C50	F672	PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycle	0 /64
			High Temp Bake @ 150° C	1000 hrs	0 /64
			PCL 3 +Temperature Humidity Bias (85°C/85%RH)	1000 hrs	0 /50
Cyclone FPGA	EP1C12	F324	PCL 3 + HAST (130°C/85%RH)	96 hrs	0 /50
			PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycles	0 /154
	Q240	PCL 3 + HAST (130°C/85%RH)	96 hrs	0 /100	
		PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycles	0 /204	
MAX II CPLD	EPM1270	F256	Life Test	1000 hrs	0 /308
			PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycles	0 /180
		T144	Life Test	1000 hrs	0 /154
			PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycles	0 /90
			PCL 3 + HAST (130°C/85%RH)	96 hrs	0 /90
Stratix FPGA	EP1S25	F672	PCL 3 + HAST (130°C/85%RH)	96 hrs	0 /100
			PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycles	0 /200

Contact

For more information, please contact Altera Customer Quality Engineering at customer-quality@altera.com.

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

Revision History

Date	Rev	Description
10/14/2008	1.0.0	Initial Release

Appendix 1. Affected Ordering Part Numbers

EP2C5F256C6	EP2C8AF256A7N	EP2C35F672C7N	EP2C70F672I8	EP1C6F256C7NAB
EP2C5F256C6N	EP2C8AF256I8N	EP2C35F672C8	EP2C70F672I8N	EP1C6F256C8
EP2C5F256C7		EP2C35F672C8KK	EP2C70F896C6	EP1C6F256C8EC
EP2C5F256C7N	EP2C15AF256A7N	EP2C35F672C8N	EP2C70F896C6N	EP1C6F256C8ES
EP2C5F256C8	EP2C15AF256C6N	EP2C35F672I8	EP2C70F896C7	EP1C6F256C8N
EP2C5F256C8KK	EP2C15AF256C7N	EP2C35F672I8KK	EP2C70F896C7N	EP1C6F256I7
EP2C5F256C8N	EP2C15AF256C8N	EP2C35F672I8N	EP2C70F896C8	EP1C6F256I7N
EP2C5F256I8	EP2C15AF256I8N	EP2C35U484C6	EP2C70F896C8KK	EP1C6Q240C6
EP2C5F256I8N	EP2C15AF484A7N	EP2C35U484C6N	EP2C70F896C8N	EP1C6Q240C6N
EP2C5Q208C7	EP2C15AF484C6N	EP2C35U484C7	EP2C70F896C8NKK	EP1C6Q240C7
EP2C5Q208C7N	EP2C15AF484C7N	EP2C35U484C7N	EP2C70F896I8	EP1C6Q240C7ES
EP2C5Q208C8	EP2C15AF484C8N	EP2C35U484C8	EP2C70F896I8N	EP1C6Q240C7N
EP2C5Q208C8N	EP2C15AF484I8N	EP2C35U484C8N		EP1C6Q240C8
EP2C5Q208I8		EP2C35U484I8	EP1C3T100A8N	EP1C6Q240C8ES
EP2C5Q208I8N	EP2C20AF256A7N	EP2C35U484I8N	EP1C3T100C6	EP1C6Q240C8N
EP2C5T144C6	EP2C20AF256I8N		EP1C3T100C6N	EP1C6Q240I7
EP2C5T144C6N	EP2C20AF484A7N	EP2C50F484C6	EP1C3T100C7	EP1C6Q240I7N
EP2C5T144C7	EP2C20AF484I8N	EP2C50F484C6KK	EP1C3T100C7N	EP1C6T144C6
EP2C5T144C7N	EP2C20F256C6	EP2C50F484C7	EP1C3T100C8	EP1C6T144C6N
EP2C5T144C8	EP2C20F256C6N	EP2C50F484C7N	EP1C3T100C8N	EP1C6T144C7
EP2C5T144C8N	EP2C20F256C7	EP2C50F484C8	EP1C3T100I7	EP1C6T144C7N
EP2C5T144C8NLO	EP2C20F256C7N	EP2C50F484C8KK	EP1C3T100I7N	EP1C6T144C8
EP2C5T144I8N	EP2C20F256C8	EP2C50F484C8N	EP1C3T144A8N	EP1C6T144C8AA
	EP2C20F256C8KK	EP2C50F484C8NKK	EP1C3T144C6	EP1C6T144C8N
EP2C5AF256A7N	EP2C20F256C8N	EP2C50F484I8N	EP1C3T144C6N	EP1C6T144I7
EP2C5AF256I8N	EP2C20F256I8	EP2C50F484I8NKK	EP1C3T144C7	EP1C6T144I7N
EP2C5AT144A7N	EP2C20F256I8N	EP2C50F672C6	EP1C3T144C7N	
	EP2C20F484C6	EP2C50F672C6KK	EP1C3T144C8	EP1C12F256C6
EP2C8F256C6	EP2C20F484C6N	EP2C50F672C6N	EP1C3T144C8N	EP1C12F256C6AA
EP2C8F256C6KK	EP2C20F484C7	EP2C50F672C7	EP1C3T144I7	EP1C12F256C6N
EP2C8F256C6N	EP2C20F484C7KK	EP2C50F672C7KK	EP1C3T144I7N	EP1C12F256C7
EP2C8F256C7	EP2C20F484C7N	EP2C50F672C7N		EP1C12F256C7N
EP2C8F256C7N	EP2C20F484C8	EP2C50F672C7NKK	EP1C4F324C6	EP1C12F256C8
EP2C8F256C8	EP2C20F484C8KK	EP2C50F672C8	EP1C4F324C6N	EP1C12F256C8EC
EP2C8F256C8KK	EP2C20F484C8N	EP2C50F672C8KK	EP1C4F324C7	EP1C12F256C8N
EP2C8F256C8N	EP2C20F484I8	EP2C50F672C8N	EP1C4F324C7N	EP1C12F256I7
EP2C8F256C8NAB	EP2C20F484I8N	EP2C50F672C8NKK	EP1C4F324C8	EP1C12F256I7N
EP2C8F256C8NKK	EP2C20Q240C8	EP2C50F672I8	EP1C4F324C8N	EP1C12F324C6
EP2C8F256CXNAA	EP2C20Q240C8N	EP2C50F672I8KK	EP1C4F324I7	EP1C12F324C6AA
EP2C8F256I8		EP2C50F672I8N	EP1C4F324I7N	EP1C12F324C6N
EP2C8F256I8N	EP2C35F484C6	EP2C50U484C6	EP1C4F400C6	EP1C12F324C7
EP2C8Q208C7	EP2C35F484C6N	EP2C50U484C6N	EP1C4F400C6N	EP1C12F324C7N
EP2C8Q208C7N	EP2C35F484C7	EP2C50U484C7	EP1C4F400C7	EP1C12F324C8
EP2C8Q208C8	EP2C35F484C7KK	EP2C50U484C7N	EP1C4F400C7N	EP1C12F324C8N
EP2C8Q208C8KK	EP2C35F484C7N	EP2C50U484C8	EP1C4F400C8	EP1C12F324I7
EP2C8Q208C8N	EP2C35F484C8	EP2C50U484C8N	EP1C4F400C8N	EP1C12F324I7N
EP2C8Q208I8	EP2C35F484C8KK	EP2C50U484I8	EP1C4F400C8NAA	EP1C12Q240C6
EP2C8Q208I8N	EP2C35F484C8N	EP2C50U484I8N	EP1C4F400C8NAB	EP1C12Q240C6N
EP2C8T144C6	EP2C35F484C8NAA	EP2C70F672C6	EP1C4F400I7	EP1C12Q240C7
EP2C8T144C6N	EP2C35F484C8NKK	EP2C70F672C6N	EP1C4F400I7N	EP1C12Q240C7N
EP2C8T144C7	EP2C35F484I8	EP2C70F672C7		EP1C12Q240C8
EP2C8T144C7N	EP2C35F484I8N	EP2C70F672C7KK	EP1C6F256C6	EP1C12Q240C8N
EP2C8T144C8	EP2C35F672C6	EP2C70F672C7NKK	EP1C6F256C6N	EP1C12Q240I7
EP2C8T144C8N	EP2C35F672C6N	EP2C70F672C8	EP1C6F256C7	EP1C12Q240I7N
EP2C8T144I8N	EP2C35F672C7	EP2C70F672C8KK	EP1C6F256C7ES	
	EP2C35F672C7KK	EP2C70F672C8N	EP1C6F256C7N	

Appendix 1. Affected Ordering Part Numbers (continued)

EP1C20F324C6	EPM240T100C5N	EPM570GT100I5	EPM1270F256C3	EPM1270T144C4ES
EP1C20F324C6N	EPM240T100C5NRR	EPM570GT100I5N	EPM1270F256C3ES	EPM1270T144C4N
EP1C20F324C7	EPM240T100C5RR	EPM570GT100I5NRR	EPM1270F256C3N	EPM1270T144C5
EP1C20F324C7N	EPM240T100C5TT	EPM570GT100I5RR	EPM1270F256C4	EPM1270T144C5ES
EP1C20F324C8	EPM240T100I5	EPM570GT144C3	EPM1270F256C4ES	EPM1270T144C5N
EP1C20F324C8N	EPM240T100I5N	EPM570GT144C3N	EPM1270F256C4N	EPM1270T144C5NAA
EP1C20F324I7	EPM240T100I5NRR	EPM570GT144C4	EPM1270F256C4NES	EPM1270T144C5RR
EP1C20F324I7N	EPM240T100I5RR	EPM570GT144C4N	EPM1270F256C4NRR	EPM1270T144I5
EP1C20F400C6		EPM570GT144C5	EPM1270F256C4RR	EPM1270T144I5N
EP1C20F400C6AB	EPM570F100C4N	EPM570GT144C5N	EPM1270F256C5	EPM1270T144C5AA
EP1C20F400C6N	EPM570F100C5N	EPM570GT144C5TT	EPM1270F256C5ES	EPM1270T144C5ESAA
EP1C20F400C7	EPM570F100I5	EPM570GT144I5	EPM1270F256C5N	
EP1C20F400C7N	EPM570F100C5NAA	EPM570GT144I5N	EPM1270F256C5N	EPM2210F256A5N
EP1C20F400C8	EPM570F100I5N	EPM570M100C4N	EPM1270F256C5NAA	EPM2210F256C3
EP1C20F400C8N	EPM570F256C3	EPM570M100C5N	EPM1270F256C5NES	EPM2210F256C3
EP1C20F400C8NAC	EPM570F256C3N	EPM570M100C5NAA	EPM1270F256C5NRR	EPM2210F256C3N
EP1C20F400I7	EPM570F256C4	EPM570M100C5N	EPM1270F256C5RR	EPM2210F256C4
EP1C20F400I7N	EPM570F256C4N	EPM570M100I5N	EPM1270F256I5	EPM2210F256C4N
	EPM570F256C5	EPM570M256C4N	EPM1270F256I5N	EPM2210F256C4RR
EPM240F100C4N	EPM570F256C5TT	EPM570M256C5N	EPM1270F256I5NRR	EPM2210F256C5
EPM240F100C5N	EPM570F256C5N	EPM570M256I5N	EPM1270F256I5RR	EPM2210F256C5N
EPM240F100C5N	EPM570F256C5NRR	EPM570T100A5N	EPM1270GF256C3	EPM2210F256C5RR
EPM240F100I5N	EPM570F256C5RR	EPM570T100C3	EPM1270GF256C3N	EPM2210F256I5
EPM240GF100C5N	EPM570F256I5	EPM570T100C3N	EPM1270GF256C4	EPM2210F256I5N
EPM240GF100I5N	EPM570F256I5N	EPM570T100C4	EPM1270GF256C4N	EPM2210F324A5N
EPM240GM100C5N	EPM570GF100C5N	EPM570T100C4N	EPM1270GF256C5	EPM2210F324C3
EPM240GM100I5N	EPM570GF100I5N	EPM570T100C5	EPM1270GF256C5N	EPM2210F324C3N
EPM240GT100C3	EPM570GF256C3	EPM570T100C5TT	EPM1270GF256C5RR	EPM2210F324C4
EPM240GT100C3N	EPM570GF256C3N	EPM570T100C5N	EPM1270GF256I5	EPM2210F324C4N
EPM240GT100C3TT	EPM570GF256C4	EPM570T100C5NAA	EPM1270GF256I5N	EPM2210F324C4RR
EPM240GT100C4	EPM570GF256C4N	EPM570T100C5NRR	EPM1270GM256C5N	EPM2210F324C5
EPM240GT100C4N	EPM570GF256C5	EPM570T100C5RR	EPM1270GM256I5N	EPM2210F324C5N
EPM240GT100C4TT	EPM570GF256C5N	EPM570T100I5	EPM1270GT144C3	EPM2210F324C5NRR
EPM240GT100C5	EPM570GF256C5RR	EPM570T100I5TT	EPM1270GT144C3N	EPM2210F324I5
EPM240GT100C5N	EPM570GF256C5TT	EPM570T100I5N	EPM1270GT144C4	EPM2210F324I5N
EPM240GT100C5TT	EPM570GF256I5	EPM570T100I5RR	EPM1270GT144C4N	EPM2210GF256C3
EPM240GT100I5	EPM570GF256I5N	EPM570T144A5N	EPM1270GT144C5	EPM2210GF256C3N
EPM240GT100I5N	EPM570GM100C5N	EPM570T144C3	EPM1270GT144C5N	EPM2210GF256C4
EPM240GT100I5NRR	EPM570GM100I5N	EPM570T144C3N	EPM1270GT144I5	EPM2210GF256C4N
EPM240GT100I5RR	EPM570GM256C5N	EPM570T144C3NRR	EPM1270GT144I5N	EPM2210GF256C5
EPM240M100C4N	EPM570GM256I5N	EPM570T144C3RR	EPM1270M256C4N	EPM2210GF256C5N
EPM240M100C5NAA	EPM570GT100C3	EPM570T144C4	EPM1270M256C5N	EPM2210GF256C5RR
EPM240M100C5N	EPM570GT100C3N	EPM570T144C4N	EPM1270M256C5NAA	EPM2210GF256I5
EPM240M100I5N	EPM570GT100C4	EPM570T144C5	EPM1270M256I5N	EPM2210GF256I5N
EPM240T100A5N	EPM570GT100C4N	EPM570T144C5N	EPM1270T144A5N	EPM2210GF324C3
EPM240T100C3	EPM570GT100C5	EPM570T144C5NRR	EPM1270T144C3	EPM2210GF324C3N
EPM240T100C3N	EPM570GT100C5N	EPM570T144C5RR	EPM1270T144C3ES	EPM2210GF324C4
EPM240T100C3RR	EPM570GT100C5RR	EPM570T144C3TT	EPM1270T144C3N	EPM2210GF324C4N
EPM240T100C3TT	EPM570GT100C5TT	EPM570T144C5TT	EPM1270T144C3RR	EPM2210GF324C5
EPM240T100C4		EPM570T144I5	EPM1270T144C4	EPM2210GF324C5N
EPM240T100C4N		EPM570T144I5N		EPM2210GF324I5
EPM240T100C4TT		EPM570T144I5TT		EPM2210GF324I5N
EPM240T100C5				
EPM240T100C5AA				

Appendix 1. Affected Ordering Part Numbers (continued)

EP1S10B672C6				
EP1S10B672C7				
EP1S10F672C6				
EP1S10F672C6N				
EP1S10F672C7				
EP1S10F672C7AA				
EP1S10F672C7N				
EP1S10F672I7				
EP1S10F672I7N				
EP1S20B672C6				
EP1S20B672C6N				
EP1S20B672C7				
EP1S20B672C7N				
EP1S20F672C6				
EP1S20F672C6N				
EP1S20F672C7				
EP1S20F672C7N				
EP1S20F672I7				
EP1S20F672I7N				
EP1S25B672C6				
EP1S25F672C6				
EP1S25F672C6N				
EP1S25F672C7				
EP1S25F672C7N				
EP1S25F672C8				
EP1S25F672C8N				
EP1S25F672C8NAC				
EP1S25F672I7				
EP1S25F672I7N				