

Purpose: This Product Change Notification (PCN) is to provide notification to PHYTEC customers of component, process or other relevant engineering changes on a PHYTEC hardware subassembly. Impact, qualification, validation and approval of this change shall be documented on the corresponding Customer-Specific Modification (KSM/KSP) form for the PHYTEC hardware subassembly

Per JEDEC Standard JESD46-D Section 3.2.3; lack of acknowledgment of this PCN within 30 days constitutes acceptance of change

| Type of Change | | |
|---|---|---|
| Notice Date: 2017.07.03 <yyyy.mm.dd> | | LPN #: LPN-256e_2 |
| <input type="checkbox"/> Major Change <input checked="" type="checkbox"/> Minor Change | | |
| Description of Change: Intel's Programmable Solutions Group ("Intel PSG," formerly Altera) is discontinuing the CPLD MAX 7000 (EPM7064), because the demand is declining. PHYTEC has released the replacement ATF1502AS from Atmel for the miniMODUL-C515 to ensure the deliveries for the next years. | | |
| Referenced Documents: intel PDN1619 | | |
| Type of Change: <input type="checkbox"/> Lifecycle change to <input checked="" type="checkbox"/> Component change <input type="checkbox"/> Software update <input type="checkbox"/> Other | Component Change <input type="checkbox"/> Controller <input type="checkbox"/> PCB <input type="checkbox"/> RAM <input type="checkbox"/> FLASH <input checked="" type="checkbox"/> Other CPLD | Software Update necessary <input type="checkbox"/> Linux <input type="checkbox"/> Android <input type="checkbox"/> Windows <input checked="" type="checkbox"/> Other |
| Product Affected | | |
| Affected PHYTEC Productgroup: miniMODUL-C515 | | |
| Affected PHYTEC Productgroup Part: MM-003 | | |
| Anticipated impact on Form, Fit, Function, EMI, Quality or Reliability (positive / negative): | | |
| (1) no impact in fit form or function | | |
| Possible Measures | | |
| <input checked="" type="checkbox"/> Change to new PHYTEC product revision with replacement part <input type="checkbox"/> Change to different option of product <input type="checkbox"/> Change to different PHYTEC Product <input checked="" type="checkbox"/> Interims stock \ final stock | | |
| Schedule | | |
| Last Time Buy (current product version): 2017.05.01 <yyyy.mm.dd> (Last date to set an order for the current product version) ORDERS ARE NON-CANCELABLE AND NON-RETURNABLE. | | |
| Samples of new PHYTEC product revision orderable: 2017-04-24 | | |
| Planned Mass production of new PHYTEC product revision: Q2/2017 (in dependence from stock) | | |

| Product Affected | |
|-------------------------|----------------------------|
| Affected Product Number | Replacement Product Number |
| MM-003-CC.A1 | MM-003-CC.A2 |
| MM-003-0CCQ6-X.A1 | MM-003-0CCQ6-X.A2 |
| MM-003-2CC.A2 | MM-003-2CC.A3 |
| MM-003-KSMxy.Az | MM-003-KSMxy.Az+1 |
| MM-003-KSPxy.Az | MM-003-KSPxy.Az+1 |

| Engineering Change (Component, Firmware, Process, other) | | |
|---|-------------------------------|-----------------|
| Current Part | | New Part |
| IL242, IL242, IL248 | PHYTEC Internal Part # | |
| Intel (Altera) | Manufacturer | Atmel |
| EPM7064STC44-10N | Manufacturer Part # | ATF1502AS-7AX44 |
| 5 V CPLD | Description | 5 V CPLD |

| Technical Parameter | | | |
|--|--|---|------------------------------|
| Parameter | Original EPM7064STC44-10N | Replacement ATF1502AS-7AX44 | Assess- ment ¹ |
| Package Pitch, Form | 44 TQFP, 12 mm x 12 mm with 0.8 mm Pitch | 44 TQFP, 12 mm x 12 mm with 0.8 mm Pitch | 2 |
| Pinning | identical to replacement | identical to original | 2 |
| Supply Voltage for internal logic and input buffers VCCINT | Min. 4.75 V Max. 5.25 V | Min. 4.75 V Max. 5.25 V | 2 |
| Supply voltage for output drivers VCCIO | Min. 4.75 V Max. 5.25 V | Min. 4.75 V Max. 5.25 V | 2 |
| Ambient Temperature | 0°C to +70 °C | 0°C to +70 °C | 2 |
| tPD | 5 ns | 7.5 ns | 1 |
| tCO1 | 3.2 ns | 4.5 ns | 1 |
| Frequency fMAX | 175.4 MHz | 166.7 MHz | 1 |
| Data Retention | n.A. | 20 years | |
| ESD Protection | n.A. | 2000 V | |
| Timing Model | identical to replacement | identical to original | 2 |
| Macrocells | 64 three sections (PTMUX, Programmable Register, Logic Array) | 32 five sections (PTMUX, OR/XOR/CASCADE Logic, Flip-Flop, Output Select\Enable, Logic Array Input) | 1 |
| Logic Array Blocks | 4 | 4 | 2 |

¹ Assessments:
 1: Effects are to be expected
 2: No negative effects are to be expected

PHYTEC Qualification

The new product(s) were qualified according to our Company qualification procedure and best practices.

| | |
|--|---|
| <input type="checkbox"/> PCB redesign was necessary, because | <input type="checkbox"/> Software Adaption was necessary, because Linux: Windows: Android: |
|--|---|

Software tests were conducted with BSP for testing:
 Test program: RAM and Flash Testprogramm

| Validation Steps | Conditions | Result |
|---|---|---|
| Datasheet Comparison | Checking Footprint, Pinning, Temperature Range, Voltage Range, Register\Command structure, internal configuration, Signal timing, Power Up\ Power Down Sequency, Data Retention, ESD | Differences in Timing => must be tested Differences in Macrocell structure => conversation of POF File |
| Conversation of POF File to JED File | Atmel Program Pof2jed Version 4.45 Jan 10 2005 EPM7064STC44-10 --> 1504asTQFP44 | completed successful |
| Initial commissioning | Running Production\Function Test Current consumption normal Mode (< 100 mA) Current consumption battery supply 3 V (< 10 µA) Current consumption battery supply 3 V (< 10 µA) with BSS127S-7 on T1 and T2 | pass 66 mA pass 4 mA fail => change FET T1 and T2 5 µA pass |
| Testing Samples with FlashTools98 (56 kBaud) | Start FlashTools on Win7 64bit Sector Erase 1 to 7 Flashing File 448 kBytes to 512 kByte Flash | pass pass pass |
| Testing Samples in Climatic Chamber with RAM and Flash Test | Temperature Range: 0 °C to +70 °C Temperature Cycle: 1 h x 0 °C => 1 h x 70 °C Test Time > 24 h | pass |
| | | |

=> Replacement Part is successful PHYTEC internal released as Minor change

Recommended Measures for Customer

Software update or patch
 Linux BSP: backward compatible
 Link:
 Windows BSP: backward compatible
 Link:
 Android BSP: backward compatible
 Link:
 Update Programming Tool

Fit integration test with your system and case.
 Phytec recommends that customers take this opportunity to review these changes against current application notes, system design considerations and customer environment conditions to assess impact (if any) to their application.

Note:
 Technical differences and similarities in the tables above may not be complete. Please refer to the manufacture datasheets for a complete comparison.

Please contact our order team to ask for an interims or final stock for components or PHYTEC products.
Please contact our support, if you need any further information.

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Revision History of the Document

- _1: Initial Document
- _2: Add Validation Steps

Documentversion: 2016-rev12