



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

**PCN# 20101215000A
TMS320DM648
Conversion to Pb-free Internal Package Bump and
2nd Source Bump/Assembly Sites
Informational Update**

Dear Customer:

Texas Instruments would like to provide you with the following status update regarding this PCN Notification:

- At this time, samples are available for customer evaluations and TI advises customers to continue their evaluations/qualifications as planned on the "CUT" device.
- Texas Instruments will continue to deliver the Pb-based internal package bump "ZUT" units without interruption.
- The actual production transition from the "ZUT" device to the pb-free internal bump "CUT" device will be delayed until the end of 2014. Customers do not need to take any further actions for existing orders.

Please note that this is an informational notice only. You have previously received the final notification of this change. For your reference, the details of this change are included again in this notice.

For questions regarding this informational notice, contact your local Field Sales Representative or the PCN Manager (PCN_ww_admin_team@list.ti.com).

Sincerely,

PCN Team
SC Business Services
Phone: +1(214) 480-6037
Fax: +1(214) 480-6659

| | | | |
|---|--|---------------------------------------|--------------------------|
| PCN Number: | 20101215000 | PCN Date: | 11/08/2012 |
| Title: | TMS320DM648ZUTQ7 Conversion to Pb-free Internal Package Bump and 2nd Source Bump/Assembly Sites/Substrate Supplier | | |
| Customer Contact: | PCN Manager | Phone: | +1(214)480-6037 |
| Dept: | Quality Services | | |
| Proposed 1st Ship Date: | 10/22/2012 | Estimated Sample Availability: | 09/21/2012 |
| Change Type: | | | |
| <input checked="" type="checkbox"/> | Assembly Site | <input checked="" type="checkbox"/> | Assembly Process |
| <input checked="" type="checkbox"/> | Assembly Materials | <input type="checkbox"/> | Design |
| <input type="checkbox"/> | Electrical Specification | <input type="checkbox"/> | Mechanical Specification |
| <input type="checkbox"/> | Packing/Shipping/Labeling | <input type="checkbox"/> | Test Process |
| <input checked="" type="checkbox"/> | Wafer Bump Site | <input checked="" type="checkbox"/> | Wafer Bump Material |
| <input checked="" type="checkbox"/> | Wafer Bump Process | <input type="checkbox"/> | Wafer Fab Site |
| <input type="checkbox"/> | Wafer Fab Materials | <input type="checkbox"/> | Wafer Fab Process |
| PCN Details | | | |
| Description of Change: | | | |
| <p>To support customer environmental material content needs, TI is converting this product family to a Pb-free (SnAg) internal package bump from a Pb-based (SnPb) bump.</p> <p>In conjunction with this change, TI is qualifying an additional substrate supplier and additional bump and assembly sites to enable improved on-time delivery.</p> <p>TI is adding SEMCO as a substrate supplier.</p> <p>With this PCN, TI is notifying customers about additional sites currently being qualified and sites that may be qualified in the future.</p> <p>Additional sites currently being qualified include:</p> <ul style="list-style-type: none"> • Internal package bump site: Amkor-K4 • Package assembly site: Amkor-K4 <p>Future sites that may be qualified include:</p> <ul style="list-style-type: none"> • Wafer fab site: UMC12i • Internal package bump site: Amkor-T5, TI-Clark • Package assembly site: Amkor-T5, TI-Clark <p>Additionally, as part of this change, the orderable TI part number(s) will change. The characters "ZUT" in the orderable part number will change to "CUT". This part number change enables customers to align end product environmental paperwork to the content of the TI device received.</p> <p>We recommend customers add the "CUT" part number to their product bill of materials (BOM) and keep the "ZUT" part number on the BOM until "ZUT" inventory is depleted.</p> <p>After release of the change and shipment of the remaining "ZUT" inventory, the "ZUT" part numbers will become obsolete.</p> | | | |

Reason for Change:

Environmental RoHS compliance (eliminating the need for the RoHS exemption for Pb in the internal package bumps) and supply flexibility.

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Changes to product identification resulting from this PCN:

The topside marking will change as follows:

The characters "ZUT" will change to "CUT" indicating Pb-free bump

The marking format for all sites will appear as follows:

The character values marked will change based on the site/supplier.

Example of Topside Symbol:

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/PKG PIN1 CORNER-----+
!                               !   S = ASSEMBLY SITE CODE
! /-----\                   !       W = TI Philippines
! ! O           720MHZ !     !       9 = Amkor-K4
! !   TI           !     !
! !   BUG           DSP   !     !   $$ = WAFER FAB CODE
! !               !     !       $N = UMC12A
! !               !     !       $7 = UMC12i
! !   TMS320DM648CUT !     !
! !   $$&&-YMLLLLS   !     !
! !               !     !
! !               !     !
! \-----/                   !
!                               !
+-----+
O = PKG PIN1 CORNER
YMLLLLS = TI LOT TRACE CODE (for lot traceability)

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Future product (including these PCN changes) will have different part numbers as noted below:

Example of orderable part number difference: (**Z will change to C** in the changed part number)

| CURRENT PART NUMBER | CHANGED PART NUMBER |
|-----------------------------|----------------------------|
| <u>SnPb bump (Eutectic)</u> | <u>SnAg bump (Pb-free)</u> |
| TMS320DM648 Z UT7 | TMS320DM648 C UT7 |

| Product Affected: | | |
|--------------------------|--------------------|--------------------|
| TMS320C6451ZUT7 | TMS320DM648ZUTD9 | TNETV2685VIDZUTA11 |
| TMS320C6451ZUT7 | TNETV2684ZUT | TNETV2685VIDZUTA5 |
| TMS320C6452ZUT7 | TNETV2685FIBZUT | TNETV2685VIDZUTA7 |
| TMS320C6452ZUT9 | TNETV2685FIBZUT11 | TNETV2685VIDZUTA9 |
| TMS320DM647ZUT1 | TNETV2685FIBZUT11 | TNETV2685ZUT11 |
| TMS320DM647ZUT1 | TNETV2685FIBZUT5 | TNETV2685ZUT11 |
| TMS320DM647ZUT7 | TNETV2685FIBZUT7 | TNETV2685ZUT5 |
| TMS320DM647ZUT9 | TNETV2685FIBZUT9 | TNETV2685ZUT7 |
| TMS320DM647ZUTA6 | TNETV2685FIBZUTA11 | TNETV2685ZUT9 |
| TMS320DM647ZUTA8 | TNETV2685FIBZUTA5 | TNETV2685ZUTA11 |
| TMS320DM647ZUTD0 | TNETV2685FIBZUTA7 | TNETV2685ZUTA5 |
| TMS320DM647ZUTD1 | TNETV2685FIBZUTA9 | TNETV2685ZUTA7 |
| TMS320DM647ZUTD7 | TNETV2685FIDZUT11 | TNETV2685ZUTA9 |
| TMS320DM647ZUTD8 | TNETV2685FIDZUT5 | TNETV2686FIBZUTA |
| TMS320DM647ZUTD9 | TNETV2685FIDZUT7 | TNETV2686ZUT |
| TMS320DM648ZUT1 | TNETV2685FIDZUT9 | TNETV2686ZUTA |
| TMS320DM648ZUT7 | TNETV2685FIDZUTA11 | TNETV2689FIBZUT |
| TMS320DM648ZUT9 | TNETV2685FIDZUTA5 | TNETV2689FIBZUTA |
| TMS320DM648ZUT9HK | TNETV2685FIDZUTA7 | TNETV2689ZUT |
| TMS320DM648ZUTA6 | TNETV2685FIDZUTA9 | TNETV2689ZUTD |
| TMS320DM648ZUTA8 | TNETV2685VIDZUT11 | VCBUSAM647T9 |
| TMS320DM648ZUTD0 | TNETV2685VIDZUT11 | VCBUSAM647T9 |
| TMS320DM648ZUTD1 | TNETV2685VIDZUT5 | VCBUSAM648T9 |
| TMS320DM648ZUTD7 | TNETV2685VIDZUT7 | |
| TMS320DM648ZUTD8 | TNETV2685VIDZUT9 | |

Qualification Data:

This qualification has been specifically developed for the validation of this change. The qualification data validates that the proposed change meets the applicable released technical specifications.

| | | | | |
|---|--|-----------------------|-------------------------|----------------------------------|
| Qualification Schedule: | Start: | | End: | 07/27/2012 |
| Qualification Device Construction Details: | | | | |
| | Qual Vehicle 1 | Qual Vehicle 2 | Qual Vehicle 3 | |
| Device: | TMS320DM648CUT | TMS320DM6467 | TMS320DM648CUT | |
| Wafer Fab: | UMC12A | UMC12A | UMC12A | |
| Wafer Technology: | C027.A | C027.A | C027.A | |
| Die Size: | 9.158 X 9.458 mm | 8.822944 X 8.69188 mm | 9.158 X 9.458 mm | |
| Assembly Site: | Amkor K4 | Amkor K4 | Amkor K4 | |
| Package Type/Code: | FCBGA / CUT | FCBGA / CUT | FCBGA / CUT | |
| Package Pins: | 529 | 529 | 529 | |
| Lead Frame: | Kinsus | Kinsus | Semco | |
| Die Attach: | 4173 | 4173 | 4173 | |
| Die Attach Supplier: | Dow Corning | Dow Corning | Dow Corning | |
| Moisture Level: | MSL 4 | MSL 4 | MSL 4 | |
| Qualification: | <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results | | | |
| Reliability Test | Conditions | Sample Size (SS/Lot) | Test Results (SS/Fails) | Qual Vehicle |
| BLR | -40/125C (1000 cycles w/o fail, Board thickness per IPC9701) | 42/1 | 44/0 | Qual Vehicle 2 |
| HTSL Bake | 150c (1000 Hrs) | 45/1 | 45/0 | Qual Vehicle 1 |
| Biased Temp Humidity | 85C/85%RH (1200 Hrs) | 77/3 | 231/0 | Qual Vehicle 1 |
| Unbiased HAST | 110C/85%RH/17.7 psis (264 Hrs) | 77/3 | 231/0 | Qual Vehicle 1 |
| T/C -55C/125C | -55C/+125C (1000 Cyc) | 77/3 | 231/0 | Qual Vehicle 1 |
| T/C -55/125C | -55C/+125C (1000 Cyc) | 77/3 | 231/0 | Qual Vehicle 3 |
| ESD CDM | 500 V | 3/1 | 3/0 | Qual Vehicle 1 Qual Vehicle 1 |
| Manufacturability Qualification | Per Amkor MFGS | 3 lots | Pass | Qual Vehicle 1 |

For questions regarding this notice, e-mails can be sent to the regional contacts shown below or your local Field Sales Representative.

| Location | E-Mail |
|--------------|--|
| USA | PCNAmericasContact@list.ti.com |
| Europe | PCNEuropeContact@list.ti.com |
| Asia Pacific | PCNAsiaContact@list.ti.com |
| Japan | PCNJapanContact@list.ti.com |