PCN Number:	20121105001D	**PCN Date:**	06/25/2013

Title:	Qualification of CLARK-AT as new assembly site for affected device(s) moving from SCSAT and corresponding package change from punched RTK to sawn RGP

Customer Contact:	PCN_ww_admin_team@list.ti.com	**Phone:**	+1(214)480-6037	**Dept:**	Quality Services

Proposed 1st Ship Date:	02/19/2013	**Estimated Sample Availability:**	01/16/2013

Change Type:

☒	Assembly Site	☐	Assembly Process	☒	Assembly Materials
☐	Design	☐	Electrical Specification	☐	Mechanical Specification
☐	Test Site	☐	Packing/Shipping/Labeling	☐	Test Process
☐	Wafer Bump Site	☐	Wafer Bump Material	☐	Wafer Bump Process
☐	Wafer Fab Site	☐	Wafer Fab Materials	☐	Wafer Fab Process

PCN Details

Description of Change:

The purpose of this D version of the PCN is to clarify the last date PCN affected devices (current part numbers listed in the 'product affected' section of this document) may be ordered (6/30/13), and the last day to take delivery on those devices (9/30/13). 'New part numbers' must be used to place orders after 06/30/2013. The last delivery date of current part numbers is 09/30/2013.

Texas Instruments is pleased to announce the ongoing qualification of its CLARK-AT facility as a new assembly site for 4x4 mm, 20-pin RTK VQFN packaged device(s) currently being assembled at its SCSAT subcon facility. A package change (see package mechanical drawings) and an order number change will accompany this change. The sawn RGP package is considered backwards compatible with the punched RTK package, i.e. no PCB footprint change is necessary. Please see the tables below for further details on site and associated RoHS compliant and REACH compliant bill of material changes. Packing materials (shipping boxes, tape & reels, trays, etc.) at the additional site will be consistent with materials currently in use at that added site.

	Current	Qualification
Assembly Site	SCSAT	CLARK-AT
Package Designator	RTK	RGP
Leadframe	SID#R002-2077X (NiPdAu)	4211288-0003 (NiPdAu)
Mount Compound	SID#R008-0103X	4207123-0002
Mold Compound	SID#R003-0302X	4208625-0005
Bond Wire	SID#R005-0077X 25.4 µm (1 mil Au)	4072459-0500 (0.96 mil Au)

Device Names / Orderables

The orderable part number will change to reflect the RGP package. Customers must convert their systems over to the new part numbers when this PCN goes into effect. The "Package Option Addendum" section in the updated datasheet as well as product information page on web will reflect these orderable device changes when they go into effect.

Package marking:

CC1101 is used as an example below. The same marking change applies to all affected product.

Current (RTK)

```
Topside Symbol           : QFN4X4-CC
  +----------------+
  ! O              !         Y = YEAR
  !   CC1101       !         M = MONTH
  !   YMMLLLG      !         M = SECONDARY SITE CODE FOR STATS
  !   YYWW         !       LLL = ASSY LOT CODE
  !                !         G = PRIMARY SITE CODE FOR STATS
  +----------------+        YY = YEAR (LAST TWO DIGITS OF YEAR)
    O - PIN 1 (MARKED)      WW = WEEK NUMBER

                            7 CHARACTERS MAX LINE 1
```

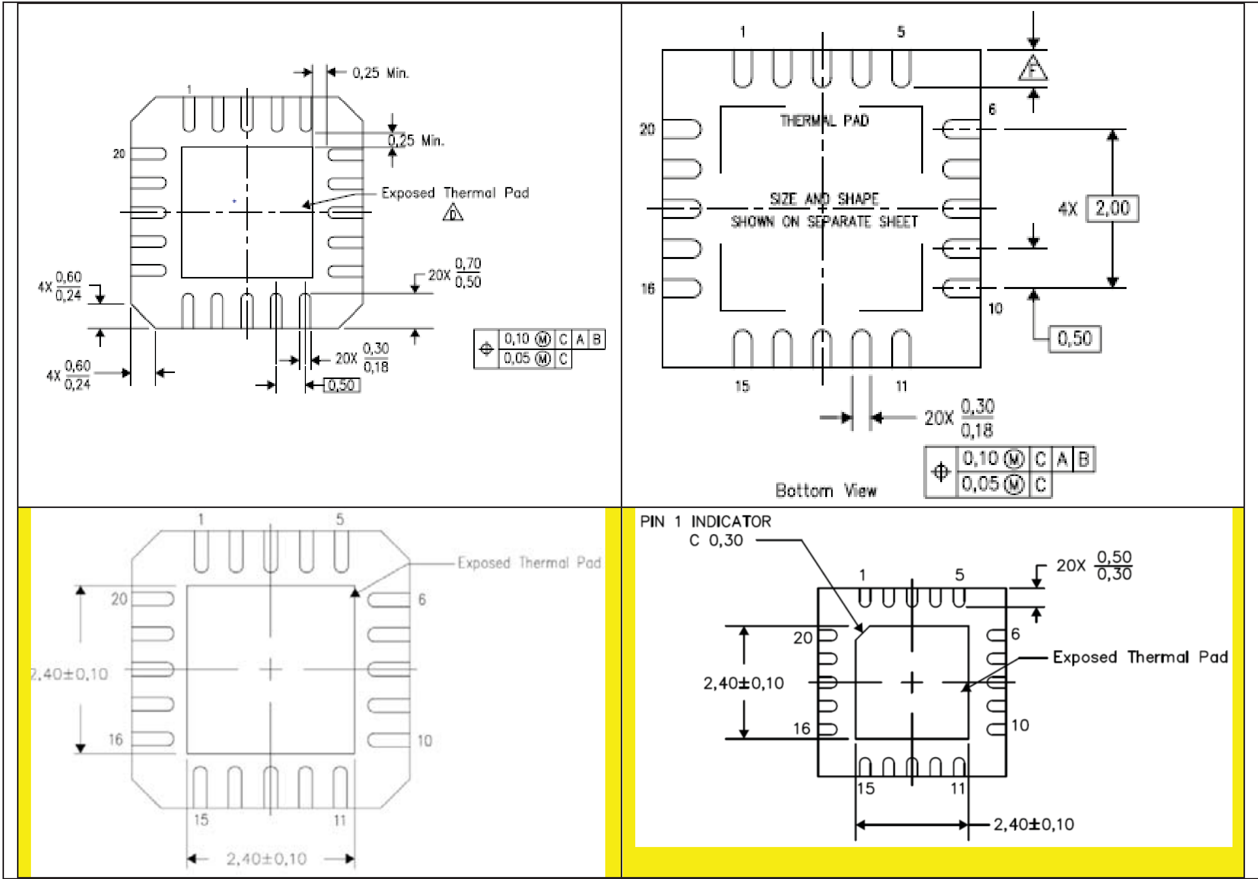
Qualification ongoing (RGP)

```
Topside Symbol           : QFN4X4-CC
  +----------------+
  ! O              !     TI = TI LETTERS
  !   CC1101       !     YM = YEAR MONTH DATE CODE
  !                !   LLLL = ASSY LOT CODE
  !   TI YMS       !      S = ASSEMBLY SITE CODE FOR QSS 005-120
  !   LLLL G4      !
  !                !      LINES 1 & 2 MAXIMUM 7 CHARACTERS PER ROW
  +----------------+
     O - PIN 1 (MARKED)  G4      MUST BE SYMBOLIZED WITH A SOLID
                     LINE UNDERSCORE, IF PRESENT

  #SYMBOL ECAT : G4      MUST BE SYMBOLIZED WITH AN UNDERSCORE
  #SYMBOL PIN 1 QUADRANT : 1
  #SYMBOL DEVICE NAME1: CC1101
  #SYMBOL DEVICE NAME2:
  #SYMBOL LOGO : TI
```

Package Drawings (please see datasheets for complete package Mechanical Data):

Current (RTK)	Qualification ongoing (RGP)



Reason for Change:
Continuity of Supply
Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):
Improved reliability by changing to sawn RGP package with higher package integrity.
Changes to product identification resulting from this PCN:

Shipment Labels:

Current

Assembly Site	Assembly site Origin (22L)	Assembly country Origin (23L)
SCSAT	STS	SGP

New

Assembly Site	Assembly site Origin (22L)	Assembly country Origin (23L)
CLARK-AT	QAB	PHL

Sample product shipping label

Product Affected:

Current Part number	New Part Number
CC1100ERTKR	CC1100ERGPR
CC1100ERTKT	CC1100ERGPT
CC1101RTK	CC1101RGP
CC1101RTKR	CC1101RGPR
CC1101-LP-RTKR	CC1101-LP-RGPR
CC110LRTKR	CC110LRGPR
CC110LRTKT	CC110LRGPT
CC113LRTKR	CC113LRGPR
CC113LRTKT	CC113LRGPT
CC115LRTKR	CC115LRGPR
CC115LRTKT	CC115LRGPT
HPA00409RTKR	HPA00409RGPR
HPA00632RTKR	HPA00632RGPR
TLMW301RTKR	TLMW301RGPR

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:**	2012-10-15	**End:**	2013-02-01

Qualification Device Construction Details:

Device:	See the Product Affected section of this document for a list of qualified devices	*Qual Device1 for QBS* CC1101RTK
Wafer Fab:	TSMC Fab4	TSMC Fab4
Wafer Technology:	0.18um CMOS	0.18um CMOS
Assembly Site:	CLARK-AT	SCS-AT
Package Type/Code:	20VQFN / RGP	20VQFN / RTK
Package Pins:	20	20
Mold Compound:	4208625-0005	SID#R003-0302X
Mold Compound Supplier:	Sumitomo	Sumitomo
Lead Frame:	4211288-0003	SID#R002-2077X
Composition:	NiPdAu, Cu base	NiPdAu, Cu base
Die Attach:	4207123-0002	SID#R008-0103X
Die Attach Supplier:	Ablestik	Ablestik
Wire Diameter:	24.3 um (0.96 mils)	24.3 um (0.96 mils)
Moisture Level:	MSL3	MSL3

Qualification: ☐ Plan ☒ Test Results		
Reliability Test	Conditions	Sample Size (PASS/FAIL)
ESD HBM	Human Body Model JEDEC STD 22 A114 Per device datasheet	3 / 0 PASS (QBS)
ESD CDM	Charged Device Model JEDEC STD 22 C101 Per device datasheet	**3 / 0** **PASS**
Latch-up	100mA / 1.5xVddmax JEDEC STD 78	18 / 0 PASS (QBS)
Manufacturability	Per assembly site specification	**PASS**
Pre-conditioning Level 3	24h bake @ 125°C, 192h soak @ 30°C/60%RH, 3 IR cycles 260°C + 5/-0°C SAM required JEDEC STD 22 A113	**723 / 0** **PASS**
Temperature Cycles air/air*	-55°C / +125°C JEDEC STD 22 A104	**231 / 0** **PASS**
Storage*	150°C / 600h JEDEC STD 22 A103	**228 / 0** **PASS**
Bias Temperature & Humidity*	130°C / 85%RH, Vmax JEDEC STD 22 A101/A110	77 / 0 PASS (QBS)
Unbiased HAST*	110°C / 85%RH, Vmax JEDEC STD 22 A118	**231 / 0** **PASS**
Operating Life Test	Dynamic 140°C (480 Hrs), Vcc Max JEDEC STD 22 A108	77 / 0 PASS (QBS)
Thermal Integrity Sequence	(level 3 @ 260C +5/-0C)	**12 / 0** **PASS**
Electrical characterization	Low (minimum) and high (maximum) extremes for device bias voltage and temperature.	**PASS**

Notes: * Test requires Moisture Preconditioning
Qualification tests "pass" on zero fails for each test
"QBS" stands for Qualification by Similarity

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
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