



PRODUCT AND PROCESS CHANGE NOTIFICATION
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ISSUE DATE: 05-Nov-2013
NOTIFICATION: 15889
TITLE: SPC5602/3/4C & SPC5602/3/4B 100/144LQFP TSMC14 Qualification and ATMC Copper Wire Qualification
EFFECTIVE DATE: 03-Feb-2014

DEVICE(S)

	MPN
MPC5604BF1MLL6	
MPC5604BF1MLQ6	
SPC5602BF1MLL6	
SPC5602BF2CLL4	
SPC5602BF2CLQ4	
SPC5602BF2MLL4	
SPC5602BF2MLL4R	
SPC5602BF2MLL6	
SPC5602BF2MLQ6	
SPC5602BF2VLL4	
SPC5602BF2VLL4R	
SPC5602BF2VLL6	
SPC5602BF2VLL6R	
SPC5602BF2VLQ4	
SPC5602BF2VLQ4R	
SPC5603BF2CLL4	
SPC5603BF2CLL4R	
SPC5603BF2CLL6	
SPC5603BF2MLL4	
SPC5603BF2MLL4R	
SPC5603BF2MLL6	
SPC5603BF2VLL4	
SPC5603BF2VLL4R	
SPC5603BF2VLQ4	
SPC5603BF2VLQ4R	
SPC5603CF2CLL4	
SPC5603CF2CLL6	
SPC5604BF1MLL6	
SPC5604BF2CLL4	
SPC5604BF2CLL4R	
SPC5604BF2CLL6	
SPC5604BF2CLL6R	
SPC5604BF2CLQ6	
SPC5604BF2CLQ6R	
SPC5604BF2MLL4	
SPC5604BF2MLL4R	
SPC5604BF2MLL6	
SPC5604BF2MLL6R	
SPC5604BF2MLQ4	
SPC5604BF2MLQ6	
SPC5604BF2VLL4	
SPC5604BF2VLL4R	
SPC5604BF2VLL6	
SPC5604BF2VLL6R	
SPC5604BF2VLQ4	
SPC5604BF2VLQ4R	
SPC5604BF2VLQ6	
SPC5604BF2VLQ6R	
SPC5604BK0MLL6	
SPC5604BK0MLL6R	
SPC5604BK0MLQ6	
SPC5604BK0VLQ4	

SPC5604BK0VLQ4R
SPC5604BK0VLQ6
SPC5604BK0VLQ6R
SPC5604CF1VLL6
SPC5604CF1VLL6R
SPC5604CF2CLL6
SPC5604CF2MLL6
SPC5604CF2MLL6R
SPC5604CF2VLL6
SPC5604CF2VLL6R
SPC5604CK0MLL6

AFFECTED CHANGE CATEGORIES

- BILL OF MATERIAL CHANGE (SAME ASSEMBLY SITE)
- FAB SITE

DESCRIPTION OF CHANGE

To meet the increasing demand for the SPC5602/3/4C, SPC 5602/3/4B family of products Freescale is announcing the introduction of Taiwan Semiconductor Manufacturing Company Fab 14 (TSMC14), Tainan, Taiwan as primary wafer manufacturing location for this family. TSMC14 has been qualified with Copper wirebond material.

Target backlog conversion date for TSMC14 is 180 days after notification issuance.

As a result, to standardize and aid manufacturing flexibility, a change from Gold to Copper Wire has been qualified for Austin Technology Manufacturing Center (ATMC), Austin, USA sourced material. ATMC Copper Wire conversion will take place per the GPCN expiration date.

The change to Cu wire also includes a change in wire diameter and mold compound. The wire diameter and part number of the mold compound will be updated per the table below.

WAFER FAB	ASSEMBLY SITE	PACKAGE TYPE	CURRENT WIRE	NEW WIRE	CURRENT MOLD COMPOUND	NEW MOLD COMPOUND
TSMC14	FSL-KLM-FM	144LQFP / 100LQFP	N/A	PdCu 20um	N/A	Sumitomo G700LS
FSL-ATMC	FSL-KLM-FM	144LQFP / 100LQFP	Au 23um	PdCu 20um	Sumitomo G700E	Sumitomo G700LS

FSL-KLM-FM is the current qualified assembly site.

Mask ID Register (MIDR) Values listed below:

Product	ATMC		TSMC14	
	MIDR1	MIDR2	MIDR1	MIDR2
5062B, 5602C	56020413	20004210	56020414	20004210
5603	56030413	22004210	56030414	22004210
5604	56040413	28004210	56040414	28004210

REASON FOR CHANGE

The Fab manufacturing site capacity expansion to TSMC14 as the primary site will improve Freescale's ability to meet increasing customer demand, while still maintaining the ability to provide backup supply from the original Fab (ATMC) in case of emergency or demand surges.

The transfer from Gold to Copper wire is required to standardize manufacturing flows mitigate against raw material cost increases.

ANTICIPATED IMPACT OF PRODUCT CHANGE(FORM, FIT, FUNCTION, OR RELIABILITY)

There is no impact to form, fit, function or reliability. Reliability is equivalent or improved.

Freescale will consider specific conditions of acceptance of this change submitted within 30 days of receipt of this notice on a case by case basis. To request further data or inquire about the notification, please enter a [Service Request](#).

For sample inquiries - please go to www.freescale.com

QUAL DATA AVAILABILITY DATE: 30-Sep-2013

QUALIFICATION STATUS: COMPLETED

QUALIFICATION PLAN:

Freescale Semiconductor Transfer of Qualified Processes specification for Fab and Assembly Qualifications were followed.

RELIABILITY DATA SUMMARY:

See attached qualification results.

ELECTRICAL CHARACTERISTIC SUMMARY:

No change was made to the operating performance of the device. No change to datasheet. Electrical Distribution enclosed. EMC reports available upon request.

CHANGED PART IDENTIFICATION:

The Tracecode marking on the device includes assembly site and datecode. Freescale will have Copper wire traceability by assembly site and datecode.

Table below provides sample part numbers:

Bolero512K	ATMC Sample Part Numbers	TSMC14 Sample Part Numbers	ATMC Equivalent	
100LQFP	KPC5604BF2MLL6/R KPC5604CF2MLL6/R	SPC5604BK0MLL6/R SPC5604CK0VLL6/R	SPC560 f _y F2 t _{LL} s _{/R}	f = Flash memory size (4=512K, 3=384K, 2=256K) y = B or C t = Temp range (M, V, C)
144LQFP	KPC5604BF2MLQ6/R KPC5604BF2VLQ6/R KPC5604BF2VLQ4/R	SPC5604BK0MLQ6/R SPC5604BK0VLQ6/R SPC5604BK0VLQ4/R	SPC560 f _y F2 t _{LQ} s _{/R}	s = Speed (6=64MHz, 4=48MHz)

Table below provides production part numbers:

ATMC PNs	Convert To:		
	TSMC14 PNs	or	
SPC560 f _y Fx t _{pp} s _{/R}	SPC560 f _y K0 t _{pp} s _{/R}		SPC560 f _y A t _{pp} s _{/R}
			f = Flash memory size 4=512K 3=384K 2=256K y = B or C t = Temp range (M, V, C) pp = package LH = 100LQFP LQ = 144LQFP s = Speed
F = ATMC	K = TSMC14		(No wafer fab designator)
x=rev 1 or 2	0= rev 0		A = ATMC rev2=TSMC14rev0

Freescale recommends customer to qualify both ATMC and TSMC and utilize Flexible part numbers.

SAMPLE AVAILABILITY DATE: 15-Nov-2013

ATTACHMENT(S):

External attachment(s) FOR this notification can be viewed AT:

[15889 Bolero512K LC Result 144L_100L.pdf](#)

[15889 Bolero512k_N68H_144LQFP_ED_TSMC_Cu_Qual_v3_customer.pdf](#)

[15889 Bolero512K_144LQFP TSMC Cu vs ATMC Au Electrical Distribution Report.pdf](#)