

Date Created : 2007/09/11  
Date Issued On : 2007/10/12  
PCN# : Q3073704

DESIGN/PROCESS CHANGE NOTIFICATION -- FINAL

This is to inform you that a design and/or process change will be made to the following product(s). This notification is for your information and concurrence.

If you require data or samples to qualify this change, please contact **Fairchild Semiconductor within 30 days of receipt of this notification.**

Updated process quality documentation, such as FMEAs and Control Plans, are available for viewing upon request.

If you have any questions concerning this change, please contact:

Technical Contact:

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Implementation of change:

Expected 1st Device Shipment Date: 2007/12/26

Earliest Year/Work Week of Changed Product: 0752

Change Type Description: Lead Frame Composition, Lead Frame Dimensions (Internal and External)

Description of Change (From): Copper lead frame

Description of Change (To): Copper leadframe or Iron lead frame (Qualification of Iron(Fe)leadframe as alternate material for TO92 package)

Reason for Change : To improve product availability and manufacturing flexibility

Qual/REL Plan Numbers : Q20070371

Qualification :

The qualification plan is intended to meet our criteria for qualifying changed BOM  
Change To

> **Bill of material**

Material	Current	Future
Lead frame Material	Copper(PMC90-1/2H)	Fe + Cu plating(Min.0.5Um)
Die attach adhesive	Eutectic	Eutectic
Bond wire	Au	Au
Epoxy Molding Compound	LMC 300TKL	LMC 300TKL
Plating	Pure Tin	Pure Tin

> **LF pad size Comparison** (Changed internal & external dimension)

Package	Part	PAD Size	
		Current (Cu LF)	Future (Fe LF)
TO92	Center	3.00 x 1.19	3.56 x 2.11
		3.96 x 1.40	3.96 x 1.40
	Side	3.20 x 1.33	2.97 x 1.33
		3.80 x 1.50	3.80 x 1.50

Note> This dimension change is not affected Package outline drawing(SB-T-2487-B)

> **LF Composition Comparison**

Part	C	Fe	Si	Mn	Ni	Cu	P	S	Ag
SPCC (Fe base)	0.05	Re	0.044	0.213	0.65	0.78	0.16	0.16	
PMC90-1/2H (Cu base)	Re	0.05~0.15					0.025~ 0.040		

> **LF Properties Comparison**

Unit	Properties							
	Melting Point	Density	Thermal conductivity	Thermal expansion	Coefficient of Elastic	Tensile strength	Elongation	Hardness
	°C	g/cm <sup>3</sup>	w/km <sup>2</sup> C/sec	×10 <sup>-6</sup> /°C (25-100)	kg/cm <sup>2</sup>	kg/cm <sup>2</sup>	%	Hv
PMC 90-1/2H	1082	8.94	0.870	16.9	12800	36-44	Min 6	100-125
SPCC-8B	1539	7.87	0.143	12	21000	60	15	190

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**Results/Discussion**

Test: (Autoclave)			
Lot	Device	96-HOURS	Failure Code
Q20070371AAACLV	KSB564ACGBU	0/77	
Q20070371ABACLV	KSB564ACGBU	0/77	
Q20070371BAACLV	KSP44BU_NL	0/77	
Test: (Power Cycle)			

Lot	Device	5000-CYCLES	Failure Code		
Q20070371AAPRCL	KSB564ACGBU	0/77			
Q20070371ABPRCL	KSB564ACGBU	0/77			
Q20070371BAPRCL	KSP44BU_NL	0/77			
<b>Test: (Temperature Humidity Biased Test)</b>					
Lot	Device	168-HOURS	500-HOURS	1000-HOURS	Failure Code
Q20070371AATHBT	KSB564ACGBU	0/77	0/77		
				0/77	
Q20070371ABTHBT		0/77	0/77		
				0/77	
Q20070371BATHBT	KSP44BU_NL	0/129			
			0/129		
				1/129	Bake Recoverable (Moisture Induced Leakage)
<b>Test: -65C, 150C (Temperature Cycle)</b>					
Lot	Device	200-CYCLES	500-CYCLES	Failure Code	
Q20070371AATMCL1	KSB564ACGBU	0/77			
Q20070371AATMCL1	KSB564ACGBU		0/77		
Q20070371ABTMCL1	KSB564ACGBU	0/77			
Q20070371ABTMCL1	KSB564ACGBU		0/77		
Q20070371BATMCL1	KSP44BU_NL	0/77			
Q20070371BATMCL1	KSP44BU_NL		0/77		
<b>Test: Ambient Storage for Whisker Growth (Storage Bake)</b>					
Lot	Device	2000-HOURS	3000-HOURS	4000-HOURS	Failure Code
Q20070371AASBAKE	KSB564ACGBU	0/3	0/3		
				0/3	
Q20070371ABSBAKE		0/3	0/3		
				0/3	
Q20070371BASBAKE	KSP44BU_NL	0/3			
			0/3		
				0/3	
<b>Test: TMCL for Whisker Growth (Temperature Cycle)</b>					
Lot	Device	500-CYCLES	1000-CYCLES	1500	Failure Code
Q20070371AATMCL4	KSB564ACGBU	0/3	0/3		
				0/3	
Q20070371ABTMCL4		0/3	0/3		
				0/3	
Q20070371BATMCL4	KSP44BU_NL	0/3			
			0/3		
				0/3	
<b>Test: Temp/Humidity Storage for Whisker Growth (Aging Bake)</b>					
Lot	Device	2000-HOURS	3000-HOURS	4000-HOURS	Failure Code
Q20070371AAABAKE	KSB564ACGBU	0/3	0/3		
				0/3	
Q20070371ABABAKE		0/3	0/3		
				0/3	
Q20070371BAABAKE	KSP44BU_NL	0/3	0/3		
				0/3	
			0/3		
				0/3	

Product Id Description :

Affected FSIDs :

2N3904BU	2N3904BU_NL	2N3904CBU
2N3904CTA	2N3904NLBU	2N3904TA

2N3904TAR	2N3904TA_NL	2N3904TF
2N3904TFR	2N3904TF_NL	2N3905BU
2N3905TA	2N3905TAR	2N3905TF
2N3905TFR	2N3906BU	2N3906BU_NL
2N3906TA	2N3906TAR	2N3906TA_NL
2N3906TF	2N3906TFR	2N4123BU
2N4123TA	2N4123TAR	2N4123TF
2N4123TFR	2N4124BU	2N4124TA
2N4124TAR	2N4124TF	2N4124TFR
2N4125BU	2N4125TA	2N4125TAR
2N4125TA_NL	2N4125TF	2N4125TFR
2N4126BU	2N4126TA	2N4126TAR
2N4126TF	2N4126TFR	2N4400BU
2N4400TA	2N4400TAR	2N4400TF
2N4400TFR	2N4401BU	2N4401NLBU
2N4401TA	2N4401TAR	2N4401TA_NL
2N4401TF	2N4401TFR	2N4401TFR_NL
2N4402BU	2N4402TA	2N4402TAR
2N4402TF	2N4402TFR	2N4403BU
2N4403NLBU	2N4403TA	2N4403TAR
2N4403TA_NL	2N4403TF	2N4403TFR
2N5086BU	2N5086TA	2N5086TAR
2N5086TF	2N5086TFR	2N5087BU
2N5087TA	2N5087TAR	2N5087TA_NL
2N5087TF	2N5087TFR	2N5088BU
2N5088TA	2N5088TAR	2N5088TA_NL
2N5088TF	2N5088TFR	2N5089BU
2N5089TA	2N5089TAR	2N5089TF
2N5089TFR	2N5210BU	2N5210NMBU
2N5210TA	2N5210TAR	2N5210TA_NL
2N5210TF	2N5210TFR	2N5401BU
2N5401CTA	2N5401CYTA	2N5401NLBU
2N5401TA	2N5401TAR	2N5401TF
2N5401TFR	2N5401YBU	2N5401YBU_NL
2N5401YTA	2N5550BU	2N5550TA
2N5550TAR	2N5550TF	2N5550TFR
2N5551BU	2N5551CBU	2N5551CTA
2N5551CYTA	2N5551TA	2N5551TAR
2N5551TF	2N5551TFR	2N5551YBU
2N5551YTA	2N6517BU	2N6517BU_NL
2N6517CBU	2N6517CTA	2N6517CTA_NL
2N6517TA	2N6518BU	2N6518TA
2N6519BU	2N6519TA	2N6520BU
2N6520TA	BC237ABU	BC237ATA
BC237BBU	BC237BTA	BC237BTAR
BC237BTF	BC237BTFR	BC237BU
BC237CBU	BC237CTA	BC237TF
BC237TFR	BC238ABU	BC238ATA

BC238ATF	BC238ATFR	BC238BBU
BC238BTA	BC238BU	BC238CBU
BC238CTA	BC238TAR	BC238TF
BC238TFR	BC239ABU	BC239ATA
BC239BBU	BC239BTA	BC239CBU
BC239CTA	BC307ABU	BC307ATA
BC307BBU	BC307BTA	BC307BTF
BC307BTFR	BC307BU	BC307CBU
BC308ABU	BC308ATA	BC308ATF
BC308ATFR	BC308BBU	BC308BTA
BC308BU	BC308CBU	BC308TA
BC308TAR	BC309ABU	BC309ATA
BC309BBU	BC309BTA	BC309CBU
BC32716BU	BC32716TA	BC32716TAR
BC32716TF	BC32716TFR	BC32725BU
BC32725TA	BC32725TAR	BC32725TA_NL
BC32725TF	BC32725TFR	BC32740BU
BC32740TA	BC32740TA_NL	BC327ABU
BC327BU	BC327TA	BC327TAR
BC327TF	BC327TFR	BC32816BU
BC32816TA	BC32825BU	BC32825TA
BC32840BU	BC32840TA	BC328BU
BC328TA	BC328TAR	BC328TF
BC328TFR	BC33716BU	BC33716TA
BC33716TAR	BC33716TF	BC33716TFR
BC33725BU	BC33725TA	BC33725TAR
BC33725TA_NL	BC33725TF	BC33725TFR
BC33740BU	BC33740TA	BC33740TA_NL
BC337ABU	BC337BU	BC337TF
BC337TFR	BC33816BU	BC33816TA
BC33825BU	BC33825TA	BC33840BU
BC33840TA	BC338BU	BC338TF
BC338TFR	BC546ABU	BC546ATA
BC546ATAR	BC546BBU	BC546BTA
BC546BTAR	BC546BTA_NL	BC546BTF
BC546BTFR	BC546BU	BC546CBU
BC546CTA	BC546TA	BC546TAR
BC546TF	BC546TFR	BC547ABU
BC547ATA	BC547ATAR	BC547BBU
BC547BNMBU	BC547BTA	BC547BTAR
BC547BTA_NL	BC547BTF	BC547BTFR
BC547BU	BC547CBU	BC547CNMBU
BC547CTA	BC547CTAR	BC547CTA_NL
BC547CTF	BC547CTFR	BC547TA
BC547TAR	BC547TF	BC547TFR
BC548ABU	BC548ATA	BC548ATF
BC548ATFR	BC548BBU	BC548BTA
BC548BTAR	BC548BTA_NL	BC548BTF

BC548BTFR	BC548BU	BC548CBU
BC548CTA	BC548CTAR	BC548CTF
BC548CTFR	BC548TA	BC548TAR
BC548TF	BC548TFR	BC549ABU
BC549ATA	BC549BBU	BC549BTA
BC549BTAR	BC549BTF	BC549BTFR
BC549BU	BC549CBU	BC549CTA
BC549CTF	BC549CTFR	BC549TAR
BC549TF	BC549TFR	BC550ABU
BC550ATA	BC550BBU	BC550BTA
BC550BTAR	BC550BU	BC550CBU
BC550CTA	BC556ABU	BC556ATA
BC556BBU	BC556BTA	BC556BTAR
BC556BTF	BC556BTFR	BC556BU
BC556CBU	BC556CTA	BC556TF
BC556TFR	BC557ABU	BC557ATA
BC557BBU	BC557BTA	BC557BTAR
BC557BTA_NL	BC557BTF	BC557BTFR
BC557BU	BC557TA	BC557TAR
BC557TF	BC557TFR	BC558ABU
BC558ATA	BC558BBU	BC558BTA
BC558BTAR	BC558BTF	BC558BTFR
BC558BU	BC558CBU	BC558CTA
BC558TA	BC558TAR	BC558TF
BC558TFR	BC559ABU	BC559ATA
BC559BBU	BC559BTA	BC559BTAR
BC559BU	BC559CBU	BC559CTA
BC560ABU	BC560ATA	BC560BBU
BC560BTA	BC560BU	BC560CBU
BC560CTA	BC560CTAR	BC636BU
BC636TA	BC636TAR	BC636TF
BC636TFR	BC638BU	BC638TA
BC638TF	BC638TFR	BC640BU
BC640TA	BC640TAR	BC640TF
BC640TFR	FJN10BU	FJN10TA
FJN3301RBU	FJN3301RTA	FJN3302RBU
FJN3302RTA	FJN3302RTA_NL	FJN3303RBU
FJN3303RTA	FJN3304RBU	FJN3304RTA
FJN3305RBU	FJN3305RTA	FJN3306RBU
FJN3306RTA	FJN3307RBU	FJN3307RTA
FJN3308RBU	FJN3308RTA	FJN3309RBU
FJN3309RTA	FJN3310RBU	FJN3310RTA
FJN3311RBU	FJN3311RTA	FJN3312RBU
FJN3312RTA	FJN3313RBU	FJN3313RTA
FJN3314RBU	FJN3314RTA	FJN3315RBU
FJN3315RTA	FJN4301RBU	FJN4301RTA
FJN4302RBU	FJN4302RTA	FJN4303RBU
FJN4303RTA	FJN4304RBU	FJN4304RTA

FJN4305RBU	FJN4305RTA	FJN4306RBU
FJN4306RTA	FJN4307RBU	FJN4307RTA
FJN4308RBU	FJN4308RTA	FJN4309RBU
FJN4309RTA	FJN4310RBU	FJN4310RTA
FJN4311RBU	FJN4311RTA	FJN4312RBU
FJN4312RTA	FJN4313RBU	FJN4313RTA
FJN4314RBU	FJN4314RTA	FJN5471BU
FJN5471TA	FJN598JABU	FJN598JATA
FJN598JBBU	FJN598JBTA	FJN598JCBU
FJN598JCTA	FJN965BU	FJN965TA
KS3302BU	KS3302TA	KSA1015GRBU
KSA1015GRTA	KSA1015OBU	KSA1015OTA
KSA1015YBU	KSA1015YTA	KSA1015YTA_NL
KSA539CYBU	KSA539CYTA	KSA539OTA
KSA539YBU	KSA539YTA	KSA642CGBU
KSA642CYBU	KSA642CYTA	KSA642GBU
KSA642OBU	KSA642OTA	KSA642YBU
KSA642YTA	KSA643CYBU	KSA643CYTA
KSA643GBU	KSA643GTA	KSA643OTA
KSA643YBU	KSA643YTA	KSA708CYBU
KSA708CYTA	KSA708OBU	KSA708OTA
KSA708YBU	KSA708YTA	KSA709CGBU
KSA709CGTA	KSA709COBU	KSA709COTA
KSA709CYBU	KSA709CYTA	KSA709GBU
KSA709GTA	KSA709OBU	KSA709OTA
KSA709YBU	KSA709YTA	KSA733CGBU
KSA733CGBU_NL	KSA733CGTA	KSA733CLBU
KSA733CLTA	KSA733CYBU	KSA733CYTA
KSA733CYTA_NL	KSA733GBU	KSA733GTA
KSA733LBU	KSA733OBU	KSA733YBU
KSA733YBU_NL	KSA733YIUTA	KSA733YTA
KSA910YSHTA	KSA992FBU	KSA992FTA
KSA992PBU	KSA992PTA	KSB1116AGBU
KSB1116AGTA	KSB1116AYBU	KSB1116AYTA
KSB1116AYTA_NL	KSB1116GBU	KSB1116GTA
KSB1116LBU	KSB1116LTA	KSB1116SYBU
KSB1116SYTA	KSB1116YBU	KSB1116YTA
KSB564ACGBU	KSB564ACGTA	KSB564ACOBU
KSB564ACOTA	KSB564ACYBU	KSB564ACYTA
KSB564ACYTA_NL	KSB564AGBU	KSB564AGTA
KSB564AOBU	KSB564AOTA	KSB564AYBU
KSB564AYTA	KSC1008COBU	KSC1008COTA
KSC1008CYBU	KSC1008CYTA	KSC1008GBU
KSC1008GTA	KSC1008OBU	KSC1008OTA
KSC1008RBU	KSC1008RTA	KSC1008YBU
KSC1008YTA	KSC1008YTF	KSC1009CYBU
KSC1009CYTA	KSC1009GBU	KSC1009GTA
KSC1009OBU	KSC1009OTA	KSC1009YBU

KSC1009YTA	KSC1187OBU	KSC1187OTA
KSC1187YBU	KSC1187YTA	KSC1393OBU
KSC1393OTA	KSC1393RBU	KSC1393RTA
KSC1393YBU	KSC1393YTA	KSC1674COBU
KSC1674COTA	KSC1674CYBU	KSC1674CYTA
KSC1674CYTA_NL	KSC1674OBU	KSC1674OTA
KSC1674RBU	KSC1674RTA	KSC1674YBU
KSC1674YTA	KSC1675COBU	KSC1675CRBU
KSC1675CYBU	KSC1675CYTA	KSC1675OBU
KSC1675OTA	KSC1675RBU	KSC1675YBU
KSC1675YS1TA	KSC1675YTA	KSC1730OBU
KSC1730OTA	KSC1730YBU	KSC1730YTA
KSC1815GRBU	KSC1815GRBU_NL	KSC1815GRTA
KSC1815GRTA_NL	KSC1815YBU	KSC1815YTA
KSC1845EBU	KSC1845ETA	KSC1845FBU
KSC1845FTA	KSC1845PBU	KSC1845PTA
KSC1845UBU	KSC2001GBU	KSC2001GTA
KSC2001OBU	KSC2001YBU	KSC2001YTA
KSC2331YSHTA	KSC388CTA	KSC388CYBU
KSC388CYTA	KSC388YBU	KSC388YTA
KSC5019MBU	KSC5019MTA	KSC5019MTA_NL
KSC5019NTA	KSC815COBU	KSC815CYBU
KSC815CYTA	KSC815OBU	KSC815OTA
KSC815YBU	KSC815YTA	KSC900CGTA
KSC900CYTA	KSC900GTA	KSC900LBU
KSC900LTA	KSC945CGBU	KSC945CGBU_NL
KSC945CGTA	KSC945CLTA	KSC945COTA
KSC945CYBU	KSC945CYTA	KSC945CYTA_NL
KSC945GBU	KSC945GTA	KSC945GTA_NL
KSC945LBU	KSC945LTA	KSC945OBU
KSC945OTA	KSC945YBU	KSC945YBU_NL
KSC945YTA	KSC945YTA_NL	KSD1616AGBU
KSD1616AGBU_NL	KSD1616AGTA	KSD1616ALBU
KSD1616ALTA	KSD1616AYBU	KSD1616AYTA
KSD1616GBU	KSD1616GTA	KSD1616LBU
KSD1616YBU	KSD1616YTA	KSD227GBU
KSD227GTA	KSD227YBU	KSD227YTA
KSD261CGBU	KSD261CGTA	KSD261CGTA_NL
KSD261CYBU	KSD261CYTA	KSD261GBU
KSD261GTA	KSD261YBU	KSD261YTA
KSD471ACGBU	KSD471ACGTA	KSD471ACYBU
KSD471ACYTA	KSD471AGBU	KSD471AGTA
KSD471AYBU	KSD471AYBU_NL	KSD471AYTA
KSD5041PBU	KSD5041PTA	KSD5041QBU
KSD5041QTA	KSD5041RBU	KSD5041RTA
KSK30OBU	KSK30RBU	KSK30YBU
KSK30YTA	KSK30YTA_NL	KSP05BU
KSP05TA	KSP06BU	KSP06BU_NL



KSP06TA	KSP10BU	KSP10TA
KSP10TA_NL	KSP12BU	KSP12TA
KSP13BU	KSP13TA	KSP13TA_NL
KSP13TF	KSP14BU	KSP14TA
KSP2222ABU	KSP2222ATA	KSP2222ATA_NL
KSP2222ATF	KSP25BU	KSP25TA
KSP26BU	KSP26TA	KSP27BU
KSP27TA	KSP2907ABU	KSP2907ACBU
KSP2907ACTA	KSP2907ATA	KSP2907ATA_NL
KSP2907ATF	KSP42ABU	KSP42ATA
KSP42BU	KSP42BU_NL	KSP42TA
KSP43BU	KSP43TA	KSP44BU
KSP44TA	KSP44TF	KSP45BU
KSP45TA	KSP45TF	KSP5179TA
KSP55TA	KSP55TA_NL	KSP56BU
KSP56TA	KSP56TF	KSP62BU
KSP62TA	KSP62TF	KSP63BU
KSP63TA	KSP63TF	KSP64BU
KSP64TA	KSP6520BU	KSP6521BU
KSP6521NBU	KSP75BU	KSP75TA
KSP75TF	KSP76BU	KSP77BU
KSP77TA	KSP8098CBU	KSP8098CTA
KSP8098TA	KSP8098TF	KSP8099BU
KSP8099TA	KSP8099TF	KSP8598TA
KSP8599BU	KSP8599CTA	KSP8599TA
KSP8599TF	KSP92ABU	KSP92ATA
KSP92BU	KSP92BU_NL	KSP92TA
KSP93BU	KSP93TA	KSP94BU
KSP94BU_NL	KSP94TA	PN2222ABU
PN2222ANLBU	PN2222ATA	PN2222ATAR
PN2222ATF	PN2222ATFR	PN2222BU
PN2222TA	PN2222TAR	PN2222TF
PN2222TFR	PN2907ABU	PN2907ABU_NL
PN2907ANLBU	PN2907ATA	PN2907ATAR
PN2907ATF	PN2907ATFR	PN2907ATFR_NL
PN2907BU	PN2907TA	PN2907TAR
PN2907TF	PN2907TFR	SS8050BBU
SS8050CBU	SS8050CTA	SS8050DBU
SS8050DBU_NL	SS8050DTA	SS8550BBU
SS8550BTA	SS8550CBU	SS8550CTA
SS8550CTA_NL	SS8550DBU	SS8550DBU_NL
SS8550DTA	SS9011FBU	SS9011GBU
SS9011HBU	SS9012GBU	SS9012GTA
SS9012HBU	SS9012HTA	SS9013FBU
SS9013FTA	SS9013FTF	SS9013GBU
SS9013GTA	SS9013HBU	SS9013HTA
SS9014ABU	SS9014BBU	SS9014BTA
SS9014CBU	SS9014CTA	SS9014DBU

SS9014DTA	SS9015ABU	SS9015BBU
SS9015BTA	SS9015CBU	SS9015CTA
SS9018FBU	SS9018GBU	SS9018HBU