



Cypress Semiconductor Corporation, 198 Champion Court, San Jose, CA 95134. Tel: (408) 943-2600

PRODUCT CHANGE NOTIFICATION

PCN: PCN154207

Date: October 21, 2015

Subject: Qualification of an Alternate Mold Compound and Die Attach Epoxy for TSOP Packages

Change Type: Major

Description of Change:

Cypress announces the qualification of an alternate die attach epoxy (Sumitomo CRM-1150B) and mold compound (Sumitomo G600B/SB) for all TSOP packages assembled at Cypress Bangkok. The qualification will enable Cypress to continually provide world-class services and meet our customers' stringent quality and reliability requirements. TSOP packages assembled at Cypress Bangkok will use the following Bill of Materials (BOM).

TSOP		
	Current	New
Die Attach Epoxy	Ablestik 8340	Ablestik 8340 Sumitomo CRM-1150B
Mold Compound	Hitachi CEL 9200HF10 Hitachi CEL 9200HF10-U	Hitachi CEL 9200HF10 Hitachi CEL 9200HF10-U Sumitomo G600B Sumitomo G600SB

There are no changes to ordering part numbers. Product datasheets remain the same and can be downloaded from the Cypress Website (www.cypress.com).

Benefit of Change:

The addition of Sumitomo CRM-1150B die attached epoxy and G600B/G600SB mold compound allows the increase of assembly material availability and flexibility.

Affected Part Numbers: 653

Affected Parts: See the attached 'Affected Parts List' file for a list of all part numbers affected by this change. Note that any new TSOP parts that are introduced after the publication of this PCN may also be manufactured with CRM-1150B die attach epoxy and G600B/G600SB mold compound at the Cypress Bangkok facility.

Qualification Status:

The change has been qualified through a series of tests documented in Qualification Test Plan (QTP) 153704. The qualification report can be found as an attachment to this notification.

Sample Status:

Qualification samples are not built ahead of time for all part numbers affected by this change. Please contact your local Cypress Sales representative for sample availability as soon as possible, but within 30 days of the date of this PCN, to place any sample orders.

Approximate Implementation Date:

Effective 90 days from the date of this notification or upon customer approval, whichever comes first, all shipments of the affected part numbers in the attached file will be manufactured with the combination of the BOM shown above.

Anticipated Impact:

Products manufactured with Sumitomo CRM-1150B die attach epoxy and Sumitomo G600B/G600SB mold compound are completely compatible with existing product from a functional, parametric, and quality performance perspective.

Cypress 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.

Method of Identification:

There will be no changes to the part number. Cypress maintains traceability of product to wafer level, including wafer fabrication location, through the lot number marked on the package.

Response Required:

No response is required.

For additional information regarding this change, contact your local sales representative or contact the PCN Administrator at pcn_adm@cypress.com.

Sincerely,

Cypress PCN Administration

Item	Marketing Part Number	Sample Order Part Number
1	V29GL512P11TAI020	Available to order; subject to lead time
2	V29GL512P10TAI010	Available to order; subject to lead time
3	V29GL256P11TAI020	Available to order; subject to lead time
4	V29GL256P11TAI010	Available to order; subject to lead time
5	V29GL128P90TAIR10	Available to order; subject to lead time
6	V29GL128P10TAI020	Available to order; subject to lead time
7	V29GL01GP11TFIR10	Available to order; subject to lead time
8	V29GL01GP11TAIR20	Available to order; subject to lead time
9	S99PL127J0250 P	Available to order; subject to lead time
10	S99PL127J0230 P	Available to order; subject to lead time
11	S99PL127J0220	Available to order; subject to lead time
12	S99PL127J0130	Available to order; subject to lead time
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355	S29GL128S90TFI023	Available to order; subject to lead time
356	S29GL128S90TFI020	Available to order; subject to lead time

357	S29GL128S90TFI013	Available to order; subject to lead time
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363	S29GL128S10TFV023	Available to order; subject to lead time
364	S29GL128S10TFV020	Available to order; subject to lead time
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459	S29GL064N90TAI010	Available to order; subject to lead time
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620	GE323776 1	Available to order; subject to lead time
621	C3FBMY000307	Available to order; subject to lead time
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624	C3FBLY000085	Available to order; subject to lead time
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638	811600-68260870	Available to order; subject to lead time
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641	7GA6Y0020	Available to order; subject to lead time
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646	51-20632Z01-A	Available to order; subject to lead time
647	51-14890Z01-A	Available to order; subject to lead time
648	51-04565Z01-A	Available to order; subject to lead time
649	462791-0870	Available to order; subject to lead time
650	10324-02440	Available to order; subject to lead time
651	051JL032J70TFI010	Available to order; subject to lead time
652	051GL512S10TFI010	Available to order; subject to lead time
653	051GL256S90TFI010	Available to order; subject to lead time

Package Chemistry Substances Analysis Table

Package Type:	TSOP 056 (Pb-free)
Dimension:	18.4 x 14 x 1 mm
Weight of Unit Package:	586.0
Temperature rating:	260 °C
MSL:	3

PRODUCT IS RoHS COMPLIANT

Description	Chemicals Present	CAS Number	unit weight(mg)	unit weight/package (%)	Amount (ppm)
Silicon Die	#1 Silicon	7440-21-3	91.40	15.60	155,970
	subtotal		91	15.60	155,970
Bond wire	#1 Copper	7440-50-8	0.13	0.02	227
0.8mils	subtotal		0.13	0.02	227
Die Attach	#1 Organic filler	Trade Secret	0.908	0.15	1,549
CRM-1150B	#2 Silica	Trade Secret	0.363	0.06	619
	#3 Epoxy Resin A	9003-36-5	0.68	0.12	1,161
	#4 Epoxy Resin B	Trade Secret	0.68	0.12	1,161
	#5 Diluent	Trade Secret	1.09	0.19	1,858
	#6 Phenolic Hardener	Trade Secret	0.68	0.12	1,161
	#7 Adhesion promoter	Trade Secret	0.14	0.02	232
	subtotal		4.54	0.77	7,743
Leadframe	#1 Copper	7440-50-8	133	22.70	227,019
CDA 194	#2 Iron	7439-89-6	3.3	0.56	5,591
	#3 Zinc	7440-66-6	0.137	0.02	233
	#4 Phosphorus	7723-14-0	0.068	0.01	116
	subtotal		136.5	23.30	232,960
Internal Plating	#1 Silver	7440-22-4	0.32	0.06	554
	subtotal		0.32	0.06	554
Mold compound	#1 Carbon Black	1333-86-4	2.09	0.36	3,559
EME-G600SB/EME-G600B	#2 Epoxy Resin	Trade Secret	27.81	4.75	47,456
	#3 Silica (Amorphous)	60676-86-0	303.82	51.85	518,453
	#4 Phenol Resin	Trade Secret	10.43	1.78	17,796
	#5 Phosphoric Catalyst	Trade Secret	3.48	0.59	5,932
	subtotal		347.6	59.32	593,196
External Plating	#1 Tin	7440-31-5	5.48	0.94	9,351
	subtotal		5.48	0.94	9,351
TOTAL PACKAGE			586.0	100.00	1,000,000

Disclaimer:

In general, two decimal values are shown. However, some variance remains from package to package. The mass values presented are thought to be accurate to within 20 percent. The report does not include materials not intentionally added to our products (impurities), or material concentrations less than 1 ppm.

Package Chemistry Substances Analysis Table

Package Type:	TSOP 048 (Pb-free)
Dimension:	18.4 x 12 x 1 mm
Weight of Unit Package:	524.3
Temperature rating:	260 °C
MSL:	3

PRODUCT IS RoHS COMPLIANT

Description	Chemicals Present	CAS Number	unit weight(mg)	unit weight/package (%)	Amount (ppm)
Silicon Die	#1 Silicon	7440-21-3	11	2.1	21,398
	subtotal		11	2.1	21,398
Bond wire 0.8 mil	#1 Copper	7440-50-8	0.58	0.11	1,114
	subtotal		0.58	0.11	1,114
Die Attach CRM-1150B	#1 Organic filler	Trade Secret	0.105	0.0200	200
	#2 Silica	Trade Secret	0.042	0.0080	80
	#3 Epoxy Resin A	9003-36-5	0.079	0.0150	150
	#4 Epoxy Resin B	Trade Secret	0.079	0.0150	150
	#5 Diluent	Trade Secret	0.126	0.0241	241
	#6 Phenolic Hardener	Trade Secret	0.079	0.015	150
	#7 Adhesion promoter	Trade Secret	0.02	0.003	30
subtotal			0.53	0.10	1,002
Leadframe CDA 194	#1 Copper	7440-50-8	91.0	17.4	173,577
	#2 Iron	7439-89-6	2.2	0.43	4,275
	#3 Zinc	7440-66-6	0.093	0.018	178
	#4 Phosphorus	7723-14-0	0.047	0.0089	89
subtotal			93.4	17.8	178,119
Internal Plating	#1 Silver	7440-22-4	0.14	0.026	257
	subtotal		0.14	0.026	257
Mold compound EME-G600SB/EME-G600B	#1 Carbon Black	1333-86-4	2.5	0.5	4,746
	#2 Epoxy Resin	Trade Secret	33.18	6.33	63,277
	#3 Silica (Amorphous)	60676-86-0	362.48	69.13	691,305
	#4 Phenol Resin	Trade Secret	12.4	2.37	23,729
	#5 Phosphoric Catalyst	Trade Secret	4.1	0.8	7,910
subtotal			414.7	79.1	790,967
External Plating	#1 Tin	7440-31-5	3.7	0.71	7,141
	subtotal		3.7	0.71	7,141
TOTAL PACKAGE			524.3	100.0	1,000,000

Disclaimer:

In general, two decimal values are shown. However, some variance remains from package to package. The mass values presented are thought to be accurate to within 20 percent. The report does not include materials not intentionally added to our products (impurities), or material concentrations less than 1 ppm.

Cypress Semiconductor Package Qualification Report

**QTP# 153704 VERSION **
September 2015**

**TSOP 48LD (20x12x1.2mm)
TSOP 56LD (20x14x1.2mm)
Pure Sn Lead Frame, Copper Wire
MSL3, 260°C Reflow
BKK-Thailand (SB)**

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
reliability@cypress.com or via a CYLINK CRM CASE

Prepared By:
Eng Keat Ng (EKNG)
Quality & Reliability Engineer

Reviewed By:
Francis Classe (FCCL)
Quality & Reliability Manager

Approved By:
Don Darling (DCDA)
Reliability Director

PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
153704	Qualification of an Alternate Mold Compound (Sumitomo G600B/G600SB) and Die Attach Epoxy (Sumitomo CRM-1150B) for TSOP Packages	Sept. 2015

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	TSOP Type I
Package Outline, Type, or Name:	TSOP 48LD / 56LD
Mold Compound Name/Manufacturer:	EME G600B/G600SB Sumitomo
Mold Compound Flammability Rating:	V-0 equivalent (UL94)
Oxygen Rating Index:	>28
Lead Frame Designation:	TSOP
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Sumitomo
Die Attach Material:	CRM-1150B
Bond Diagram Designation:	F09-Bonding diagrams
Wire Bond Method:	Thermosonic
Wire Material/Size:	Cu/ 0.9 Mil
Thermal Resistance Theta JA °C/W:	40.1°C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	F02-001.32
Name/Location of Assembly (prime) facility:	BKK-Thailand (SB)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	BKK – Thailand (SB)

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc = 3.6V, 150 C/125 C JESD22-A108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc = 3.6V, 150 C/125 C JESD22-A108	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	250V/500V/750V/1,000V JESD22-C101	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85% RH, 3.6V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
High Temperature Storage	JESD22-A103:200°C No bias	P
Unbiased Temperature/Humidity (Unbiased HAST)	JESD22-A118:130°C /85%RH Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
Temperature Cycle	JESD-A104, -40°C to 150°C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P



Reliability Test Data

QTP #: 153705

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	COMP	231	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	COMP	231	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	COMP	231	0	
S29GL01GS (98661A2)	14T62091234B7	RFB0614	SB-Thailand	COMP	231	0	
S29GL01GS (98661A2)	14T62091260E1	RFB0615	SB-Thailand	COMP	231	0	
S29GL01GS (98661A2)	14T62091074C7	RFB0616	SB-Thailand	COMP	231	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	COMP	196	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	COMP	196	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9923	SB-Thailand	COMP	182	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9924	SB-Thailand	COMP	182	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.6V), PRE COND 192 HR 30C/60%RH (MSL3)							
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	96	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	96	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	96	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	192	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	192	77	0	
S29GL01GS (98661A2)	14T62091234B7	RFB0614	SB-Thailand	96	77	0	
S29GL01GS (98661A2)	14T62091260E1	RFB0615	SB-Thailand	96	77	0	
S29GL01GS (98661A2)	14T62091074C7	RFB0616	SB-Thailand	96	77	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	96	42	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	96	42	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	192	42	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	192	42	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9923	SB-Thailand	96	28	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9924	SB-Thailand	96	28	0	



Reliability Test Data

QTP #: 153705

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TEMPERATURE CYCLE COND. C -40C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	1000	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	1000	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	1000	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	1500	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	1500	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	1500	77	0	
S29GL01GS (98661A2)	14T62091234B7	RFB0614	SB-Thailand	1000	77	0	
S29GL01GS (98661A2)	14T62091260E1	RFB0615	SB-Thailand	1000	77	0	
S29GL01GS (98661A2)	14T62091074C7	RFB0616	SB-Thailand	1000	77	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	1000	77	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	1000	77	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	1500	74	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	1500	75	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9923	SB-Thailand	1000	77	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9924	SB-Thailand	1000	77	0	
STRESS: UNBIASED TEMPERATURE/HUMIDITY (130C, 85%RH), PRE COND 192 HR 30C/60%RH (MSL3)							
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	96	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	96	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	96	77	0	
S29GL01GS (98661A2)	14T62091234B7	RFB0614	SB-Thailand	96	77	0	
S29GL01GS (98661A2)	14T62091260E1	RFB0615	SB-Thailand	96	77	0	
S29GL01GS (98661A2)	14T62091074C7	RFB0616	SB-Thailand	96	77	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	96	48	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	96	48	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9923	SB-Thailand	96	77	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9924	SB-Thailand	96	77	0	

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Reliability Test Data

QTP #: 153705

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: CONSTRUCTIONAL ANALYSIS							
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	COMP	30	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9919	SB-Thailand	COMP	30	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9924	SB-Thailand	COMP	20	0	
STRESS: ESD-CHARGE DEVICE MODEL							
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	COMP	15	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	COMP	15	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	COMP	15	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9918	SB-Thailand	COMP	15	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9864	SB-Thailand	COMP	15	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9923	SB-Thailand	COMP	15	0	
3ML01G12 (98855AC)	BGK7730A0	RFB9924	SB-Thailand	COMP	15	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 200C							
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	350	45	0	
S29GL01GS (98661A2)	14T62091234B7	RFB0614	SB-Thailand	350	43	0	
3ML01G12 (98855AC)	BGK4110A0	RFB9919	SB-Thailand	350	45	0	



Reliability Test Data

QTP #: 153705

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: HIGH TEMPERATURE OPERATING LIFE, PLASTIC, 125C/150C							
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	168	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	168	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	168	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	500	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	500	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	500	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0412	SB-Thailand	1000	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0411	SB-Thailand	1000	77	0	
S29GL032N (98M68B)	J2094Z0	RFB0409	SB-Thailand	1000	77	0	
S29GL01GS (98661A2)	14T62091234B7	RFB0614	SB-Thailand	168	77	0	
S29GL01GS (98661A2)	14T62091260E1	RFB0615	SB-Thailand	168	77	0	
S29GL01GS (98661A2)	14T62091074C7	RFB0616	SB-Thailand	168	77	0	



Document History Page

Document Title: QTP #153704: TSOP I 48LD (20X12X1.2MM), TSOP I 56LD PURE SN LEADFINISH, 0.8MIL CU WIRE, MSL3, 260C REFLOW, BKK-THAILAND(SB)
Document Number: 002-03590

Rev.	ECN No.	Orig. of Change	Description of Change
**	4927696	EKNG	Initial spec release.