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PCN # 20040502-A

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.**

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

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PCN Type: Alternate Assembly/Test Location/Qualification

Effectivity

Expected 1st Device Shipment Date: 6/7/2004
Earliest Year/Work Week of Changed Product: 0414
(Note: Package marking may differ from this format)

Product ID (Description):

Affects all DMOS devices in MosFet BGA package.

Description of Change:

As part of Fairchild Semiconductor's effort to increase and secure a future available capacity and meet customer's need of a reliable 2nd source for MosFet BGA package, we are qualifying GEM Electronics Shanghai Ltd., located in Shanghai, China as an additional assembly, test and finishing subcontractor for MosFet BGA package.

This change is intended to meet additional demand for various products in these package, improve cycle time and service to customers.

These products are currently assembled and tested in Fairchild Semiconductor, Cebu, Philippines.

1. Process of Record (POR) Comparison:

PROCESS	FSCP	GEM
Wafer Fab	SL	SL
Solder Bumps	95Pb-5 Sn	95Pb-5 Sn
Leadframe Material	Cu/Eftec3S	Cu/Eftec3S
Lead Frame Type	Cu Stud, Dual Gage, Dual Strand	Cu Stud, Dual Gage, Dual Strand
Plating	NiPd	NiPd
Die Attach	SnSb8.5	SnSb8.5
Die attach temperature	285 +/- 5 deg C	285 +/- 5 deg C
Die to frame alignment (capability)	+/- 2 mils	+/- 2 mils
Nub Difference	2 mils max.	2 mils max.
Carrier Tape	1.5x1.5mm pkg: 9mm 4.0x3.5mm okg: 12mm	1.5x1.5mm pkg: 9mm 4.0x3.5mm okg: 12mm
Cover Tape	1.5x1.5mm pkg: 5.3mm 4.0x3.5mm okg: 9.3mm	1.5x1.5mm pkg: 5.3mm 4.0x3.5mm okg: 9.3mm
Reel	1.5x1.5mm pkg: 7" Reel 4.0x3.5mm okg: 13" Reel	1.5x1.5mm pkg: 7" Reel 4.0x3.5mm okg: 13" Reel

Effect of Change:

Qualifying GEM Electronics Shanghai will provide Fairchild Semiconductor the ability to meet the increase in customer demand in MosFet BGA package without any change in product performance, quality or reliability.

Qualification:

The qualification plan as written is intended to meet all our criteria for qualifying assembly and test sites and the overall quality and reliability of our products.

Qual/REL Plan Numbers

Additional Qualification Data

Results/Discussion

Test: Autoclave Test (ACLV) with 3pass Reflow

Test Request	Device	Sbgrp	TP	Duration	SS	Reject
240070	FDZ206P	AZ5	1	96	79	0
240071	FDZ206P	BZ5	1	96	79	0
240072	FDZ206P	CZ5	1	96	79	0
240073	FDZ299P	AZ7	1	96	79	0
240074	FDZ299P	BZ7	1	96	79	0
240075	FDZ299P	CZ7	1	96	79	0

Test: Temperature Cycle(TMCL)with 3pass Reflow

Test Request	Device	Sbgrp	TP	Duration	SS	Reject
240070	FDZ206P	AZ5	1	100	79	0
240070	FDZ206P	AZ5	2	500	79	0
240071	FDZ206P	BZ5	1	100	79	0
240071	FDZ206P	BZ5	2	500	79	0
240072	FDZ206P	CZ5	1	100	79	0
240072	FDZ206P	CZ5	2	500	79	0

240073	FDZ299P	AZ7	1	100	79	0
240073	FDZ299P	AZ7	2	500	79	0
240074	FDZ299P	BZ7	1	100	79	0
240074	FDZ299P	BZ7	2	500	79	0
240075	FDZ299P	CZ7	1	100	79	0
240075	FDZ299P	CZ7	2	500	79	0

Test: Highly Accelerated Stress Test (HAST) with 3pass Reflow

Test Request	Device	Sbgrp	TP	Duration	SS	Reject
240070	FDZ206P	AZ5	1	96	79	0
240071	FDZ206P	BZ5	1	96	79	0
240072	FDZ206P	CZ5	1	96	79	0
240073	FDZ299P	AZ7	1	96	79	0
240074	FDZ299P	BZ7	1	96	79	0
240075	FDZ299P	CZ7	1	96	79	0

Test: High Temperature Reverse Bias (HTRB)

Test Request	Device	Sbgrp	TP	Duration	SS	Reject
240101	FDZ206P	AZ5	1	168	79	0
240101	FDZ206P	AZ5	2	500	79	0
240101	FDZ206P	AZ5	3	1000	79	0
240102	FDZ206P	BZ5	1	168	79	0
240102	FDZ206P	BZ5	2	500	79	0
240102	FDZ206P	BZ5	3	1000	79	0
240103	FDZ206P	CZ5	1	168	79	0
240103	FDZ206P	CZ5	2	500	79	0
240103	FDZ206P	CZ5	3	1000	79	0
240073	FDZ299P	AZ7	1	168	79	0
240073	FDZ299P	AZ7	2	500	79	0
240073	FDZ299P	AZ7	3	1000	79	0
240074	FDZ299P	BZ7	1	168	79	0
240074	FDZ299P	BZ7	2	500	79	0
240074	FDZ299P	BZ7	3	1000	78	0
240075	FDZ299P	CZ7	1	168	79	0
240075	FDZ299P	CZ7	2	500	79	0
240075	FDZ299P	CZ7	3	1000	79	0

Test: High Temperature Gate Bias (HTGB)

Test Request	Device	Sbgrp	TP	Duration	SS	Reject
240101	FDZ206P	AZ5	1	168	79	0
240101	FDZ206P	AZ5	2	500	79	0
240101	FDZ206P	AZ5	3	1000	79	0
240102	FDZ206P	BZ5	1	168	79	0
240102	FDZ206P	BZ5	2	500	79	0
240102	FDZ206P	BZ5	3	1000	79	0

240103	FDZ206P	CZ5	1	168	79	0
240103	FDZ206P	CZ5	2	500	79	0
240103	FDZ206P	CZ5	3	1000	79	0
240073	FDZ299P	AZ7	1	168	79	0
240073	FDZ299P	AZ7	2	500	79	0
240073	FDZ299P	AZ7	3	1000	79	0
240074	FDZ299P	BZ7	1	168	79	0
240074	FDZ299P	BZ7	2	500	79	0
240074	FDZ299P	BZ7	3	1000	78	0
240075	FDZ299P	CZ7	1	168	79	0
240075	FDZ299P	CZ7	2	500	79	0
240075	FDZ299P	CZ7	3	1000	79	0
Test: Power Cycle (PRCL)						
Test Request	Device	Sbgrp	TP	Duration	SS	Reject
240070	FDZ206P	AZ5	1	5000	79	0
240070	FDZ206P	AZ5	2	10000	79	0
240071	FDZ206P	BZ5	1	5000	79	0
240071	FDZ206P	BZ5	2	10000	79	0
240072	FDZ206P	CZ5	1	5000	79	0
240072	FDZ206P	CZ5	2	10000	79	0
240073	FDZ299P	AZ7	1	5000	79	0
240073	FDZ299P	AZ7	2	10000	79	0
240074	FDZ299P	BZ7	1	5000	79	0
240074	FDZ299P	BZ7	2	10000	79	0
240075	FDZ299P	CZ7	1	5000	79	0
240075	FDZ299P	CZ7	2	10000	79	0

Conclusion

Based on the reliability result obtained, GEM is qualified as subcontractor for 300um and 200um BGA.

Affected FSIDs

FDZ201N	FDZ202P	FDZ203N
FDZ204P	FDZ206P	FDZ208P
FDZ209N	FDZ210P	FDZ226P
FDZ2551N	FDZ2552P	FDZ2553N
FDZ2553NZ	FDZ2554P	FDZ2554PZ
FDZ2555NZ	FDZ298N	FDZ299P
FDZ3547N	FDZ5047N	FDZ7064N
FDZ7064S		