

PRODUCT / PROCESS CHANGE NOTIFICATION

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

Tak Cheong Electronics (Holdings) Co., Ltd. will consider this change approved unless specific conditions of acceptance are provided in writing within 30 days of receipt of this notice. If you require data or samples to qualify this change, please contact our local *Tak Cheong Electronics (Holdings) Co., Ltd.* sales office.

For any questions concerning this change, please contact:

Name : Steven Zhao
Email : steven.zhao@takcheong.com
Phone : 86-660-337 5888

SUBJECT : Product & Process Change Notification # PCN-002
TITLE : 1) Zener D035/41 Bump Plating Process Transfer
2) Second Source For D035/41 Zener Wafer
CATEGORY : Process and Zener Die Change
PRODUCT AFFECTED : D035/41 Axial Leaded Glass Zener Diodes
EFFECTIVITY : January 12, 2003

DESCRIPTION AND PURPOSE:

In conjunction with the purchasing agreement in which ON Semiconductor announced in PCN #12323, that Tak Cheong Electronics (Holdings) Co., Ltd. is licensed to manufacture and market double-slug axial leaded glass zener diodes, and herein, Tak Cheong Electronics is pleased to announce that in-house bump plating process has been qualified to continue processing ON Semiconductor un-bumped supplied double-slug zener wafers.

Tak Cheong Electronics continues to make substantial effort to develop cost effective products. And subsequently, we are announcing also that a new zener wafer supplier has been qualified as a second source, designed for D035/41 axial-leaded glass zener diodes. We believe that these dealings will provide capability to continuous supply quality products. The device parameters will continue to meet all Data Book specifications, and reliability will continue to meet existing standards.

Summary of Change:

- 1) Zener D035/41 Bump Plating Process Transfer

FROM

Wafer Fab Site : Phoenix, Arizona, USA
Bump Plating Process: Phoenix, Arizona, USA
Assembly Site : Tak Cheong, China
Final Test Site : Tak Cheong, China

TO

Wafer Fab Site : Phoenix, Arizona, USA
Bump Plating Process: Tak Cheong, China
Assembly Site : Tak Cheong, China
Final Test Site : Tak Cheong, China

- 2) Second Source For D035/41 Zener Wafer

Current Wafer Supplier

Wafer Fab Site : Phoenix, Arizona, USA

Second Source Wafer Supplier

Wafer Fab Site : Okayama, Japan

EFFECT OF CHANGE:

The parts covered in these dealings are expected to meet all device parameters specifications and reliability will continue to meet existing standards.

QUALIFICATION PLAN:

1) Zener D035/41 Bump Plating Process Transfer

Test	Condition	Duration	Sample Size
Autoclave	TA = 121°C RH = 100% PSIG = 15	96 Hours	80
H3TRB	TA = 85°C RH = 85% VR = 80% of VZ	1000 Hours	80
HTB	TA = 150°C	1000 Hours	80
Temperature Cycle	TA = -65°C to 150°C	1000 Cycles	80
DPA-TC	CDF-AEC-Q101-004	---	3
RSH	TS = 260°C	TDWELL = 10 Seconds	10

2) Second Source For D035/41 Zener Wafer

Test	Condition	Duration	Sample Size
HTRB	TA = 150°C VR = 80% of VZ	1000 Hours	77
HTSL	TA = 200°C	1000 Hours	77
DCOL	TA = 25°C IF = 200mA	1000 Hours	77
PRCL	•TJ = •100°C TON/TOFF = 2 minutes	5000 Cycles	77
Temperature Cycle	TA = -65°C to 150°C TDWELL = 15 minutes	1000 Cycles	77
RSH	TS = 260°C	TDWELL = 10 Seconds	10
VF Pull	Initial Force = 0 Lbs Final Force = 10 Lbs IF = 200mA •VF = <25mV	---	26
Joy Bomb (Hermetic Seal)	Pressure = 7kgf/cm2 TDWELL = 10 minutes	---	50
Lead Pull	Force = 15 Lbs	---	10
Solderability	TS = 240°C	16 Hours Ageing	10

RELIABILITY TESTING DATA SUMMARY:

1) Zener D035/41 Bump Plating Process Transfer

Test	1N5237B		BZX85C18		1N4760A	
	Control	Test	Control	Test	Control	Test
Autoclave	0/80	0/80	0/80	0/80	0/80	0/80
H3TRB	0/80	0/80	0/80	0/80	0/80	0/80
HTB	0/80	0/80	0/80	0/80	0/80	0/80
Temperature Cycle	0/80	0/80	0/80	0/80	0/80	0/80
DPA-TC	Pass	Pass	Pass	Pass	Pass	Pass
RSH	Pass	Pass	Pass	Pass	Pass	Pass

2) Second Source For D035/41 Zener Wafer

Test	1N5231B		1N5242B		1N4758A	
	Control	Test	Control	Test	Control	Test
HTRB	0/77	0/77	0/77	0/77	0/77	0/77
HTSL	0/77	0/77	0/77	0/77	0/77	0/77
DCOL	0/77	0/77	0/77	0/77	0/77	0/77
PRCL	0/77	0/77	0/77	0/77	0/77	0/77
Temperature Cycle	0/77	0/77	0/77	0/77	0/77	0/77
RSH	Pass	Pass	Pass	Pass	Pass	Pass
VF Pull	Pass	Pass	Pass	Pass	Pass	Pass
Joy Bomb (Hermetic Seal)	Pass	Pass	Pass	Pass	Pass	Pass
Lead Pull	Pass	Pass	Pass	Pass	Pass	Pass
Solderability	Pass	Pass	Pass	Pass	Pass	Pass

RELIABILITY TESTING CONCLUSION:

Qualification of bump plating process and second source for zener wafer reliability testing has successfully completed and passed on all requirements as outlined above. The in-house bump plating process and the second source for zener wafer has been found to be as good than the control lots in terms of reliability and quality. Based on the positive reliability test results, bump plating process and the second source for zener wafer is considered qualified and can now be use for production.

QUALIFICATION PLAN NUMBERS:

- 1) Zener D035/41 Bump Plating Process Transfer - AQP #02-076
- 2) Second Source For D035/41 Zener Wafer - AQP #02-037

CHANGE PART IDENTIFICATION:

Customers may receive these products manufactured with new bump plating process and the second source for zener wafers with Date Code 0309 or later.

ADDITIONAL CONTACT INFORMATION:

Contact/s at Tak Cheong Electronics:



SYNSEMI SEMICONDUCTOR

Name	Department	Email address	Direct line
Mr. Karl Williams	Managing Director	synsemi@yahoo.com kawsynsemi@sbcglobal.net	(1)-650-560-0095



Name	Department	Email address	Direct line
Miss. Xiao Chau	Sales & Marketing	swsales@takcheong.com	(86)-660-337-4499



Name	Department	Email address	Direct line
Ms. Jennifer Ng	Sales & Marketing	tcsales@takcheong.com	(852)-2334-1357 Ext 15

AFFECTED DEVICE LIST:

1N4370ARL	1N4734A	1N4745A	1N4756ARL
1N4731ARL	1N4734ARL	1N4745ARL	1N4757A
1N4731ATA	1N4735A	1N4745ATA	1N4757ARL
1N4372ARL	1N4735ARL	1N4746A	1N4758A
1N4372ATA	1N4735ATA	1N4746ARL	1N4758ARL
1N4678	1N4736A	1N4746ATA	1N4759A
1N4678RL	1N4736ARL	1N4747A	1N4759ARL
1N4679RL	1N4736ATA	1N4747ARL	1N4760A
1N4680	1N4737A	1N4747ATA	1N4760ARL
1N4685RL	1N4737ARL	1N4748A	1N4760ATA
1N4688RL	1N4737ATA	1N4748ARL	1N4761A
1N4689RL	1N4737D	1N4748ATA	1N4761ARL
1N4690RL	1N4738A	1N4749A	1N4762A
1N4702TA	1N4738ARL	1N4749ARL	1N4762ARL
1N4702TA2	1N4738ATA	1N4749ATA	1N4763A
1N4728A	1N4739A	1N4750A	1N4763ARL
1N4728ARL	1N4739ARL	1N4750ARL	1N5221B
1N4728ATA	1N4739ATA	1N4750ATA	1N5221BRL
1N4729A	1N4740A	1N4751A	1N5221BTA
1N4729ARL	1N4740ARL	1N4751ARL	1N5222B
1N4730A	1N4740ATA	1N4751ATA	1N5222BRL
1N4730ARL	1N4741A	1N4752A	1N5223B
1N4730ATA	1N4741ARL	1N4752ARL	1N5223BRL
1N4731A	1N4741ATA	1N4753A	1N5223BTA
1N4731ARL	1N4742A	1N4753ARL	1N5223BTA2
1N4732A	1N4742ARL	1N4753ATA	1N5224BRL
1N4732ARL	1N4742ATA	1N4754A	1N5225B
1N4732ATA	1N4743A	1N4754ARL	1N5225BRL
1N4733A	1N4743ARL	1N4754ATA	1N5226B
1N4733ARL	1N4743ATA	1N4755A	1N5226BRL
1N4733ATA	1N4744A	1N4755ARL	1N5226C
1N4733ATA2	1N4744ARL	1N4755ATA	1N5227B
1N4733DRL	1N4744ATA	1N4756A	1N5227BRL
1N5227BTA	1N5241B	1N5256CRL	1N749A
1N5228B	1N5241BRL	1N5257B	1N749ARL
1N5228BRL	1N5241CRL	1N5257BRL	1N749ATA
1N5228BTA	1N5242B	1N5257BTA	1N749DRL
1N5228BTA2	1N5242BRL	1N5258B	1N750A
1N5229B	1N5242BTA	1N5258BRL	1N750ARL
1N5229BRL	1N5243B	1N5258BTA	1N750ATA
1N5230B	1N5243BRL	1N5259B	1N750D
1N5230BRL	1N5243BTA	1N5259BRL	1N750DRL
1N5230BTA	1N5244B	1N5259BTA	1N751A
1N5230BTA2	1N5244BRA2	1N5259BTA2	1N751ARL
1N5231B	1N5244BRL	1N5259CRL	1N751ATA
1N5231BRA1	1N5245B	1N5260B	1N751CRL
1N5231BRL	1N5245BRL	1N5260BRL	1N751D
1N5231BRR2	1N5245BTA	1N5260BTA	1N751DRL
1N5231BTA	1N5245CRL	1N5261B	1N752A
1N5231CRL	1N5246B	1N5261BRL	1N752ARL
1N5232B	1N5246BRA1	1N5261BTA	1N752ATA
1N5232BRL	1N5246BRL	1N5262B	1N752C
1N5232BTA	1N5246CRL	1N5262BRL	1N753A
1N5232CRL	1N5247B	1N5262BTA	1N753ARL
1N5233B	1N5247BRL	1N5263B	1N753ATA
1N5233BRL	1N5247BTA	1N5263BRL	1N753DRL
1N5233D	1N5248B	1N5263BTA	1N754A
1N5234B	1N5248BRL	1N5264BRL	1N754ARL
1N5234BRL	1N5248BTA	1N5264BTA	1N754ATA
1N5234BRR1	1N5249B	1N5265B	1N755A
1N5234CRL	1N5249BRL	1N5265BRL	1N755ARL
1N5235B	1N5250B	1N5266B	1N755ATA

AFFECTED DEVICE LIST: (...continuation)

1N5235BRL	1N5250BRL	1N5266BRL	1N756A
1N5236B	1N5251B	1N5267B	1N756ARL
1N5236BRL	1N5251BRL	1N5267BRL	1N756ATA
1N5236BTA2	1N5252B	1N5268B	1N757A
1N5236CRL	1N5252BRL	1N5269BRL	1N757ARL
1N5237B	1N5252BRL2	1N5270B	1N757ATA
1N5237BRL	1N5252BTA	1N5270BRL	1N758A
1N5237BRR1	1N5253B	1N5270CRL	1N758ARL
1N5237C	1N5253BRL	1N5280BRL	1N758ATA
1N5238B	1N5253BTA	1N5985BRL	1N759A
1N5238BRL	1N5254B	1N6004BRL	1N759ARL
1N5239B	1N5254BRL	1N746A	1N759ATA
1N5239BRL	1N5254BTA	1N746ARL	1N961BRL
1N5239BTA	1N5255B	1N746ATA	1N961BRR1
1N5239C	1N5255BRL	1N747A	1N962BRL
1N5239CRL	1N5255BTA	1N747ARL	1N962BTA
1N5240B	1N5256B	1N747ATA	1N963BRL
1N5240BRL	1N5256BRL	1N748A	1N963BRR1
1N5240CRL	1N5256BTA	1N748ARL	1N964BRL
1N964BTA	BZX79C2V4RL	MZ4623	SZ2367-1RR1
1N965BRL	BZX79C2V7RL	MZ4623RL	SZ2367RR1
1N965BTA	BZX79C30RL	MZ4624	SZ2367RR2
1N966BRL	BZX79C33RL	MZ4626	SZ2372RA2
1N966BTA	BZX79C3V0RL	SZ11594RL	SZ2372RR2
1N967BRL	BZX79C3V3RL	SZ11755RL	SZ2390-1RR2
1N967BTA	BZX79C3V6RL	SZ12818-107RL	SZ2390RA1
1N968BRL	BZX79C3V9RL	SZ12818-1RL	SZ2390RA2
1N969BRL	BZX79C4V7RL	SZ12990-11RL	SZ2390RR2
1N970BRL	BZX79C5V1RL	SZ12990-12RL	SZ2394RL
1N971BRL	BZX79C5V6RL	SZ12990-17RL	SZ2413RL
1N971BTA	BZX79C6V2RL	SZ12990-203TA3	SZ2461RA2
1N972BRL	BZX79C6V8RL	SZ12990-20ARL2	SZ2469-1RL
1N972BTA	BZX79C7V5RL	SZ12990-20RL	SZ2509RL
1N973BRL	BZX79C8V2RL	SZ12990-242TA3	SZ2516RL
1N974BRL	BZX85C10RL	SZ12990-26RL	SZ2553RL
1N974BTA	BZX85C12RL	SZ12990-27RL	SZ2568RL
1N975BRL	BZX85C13RL	SZ12990-32ARL	SZ2580RL
1N979BRL	BZX85C15RL	SZ12990-32ARL2	SZ2593RL
1N986BRL	BZX85C16RL	SZ12990-8RL	SZ2593RR1
1N991BRL	BZX85C18RL	SZ12990-9ARL	SZ2631RR1
BZX55B5V6RL	BZX85C22RL	SZ12993-11RL	SZ2631RR2
BZX55C10RL	BZX85C24RL	SZ12993-17RL	SZ2648RA2
BZX55C12RL	BZX85C27RL	SZ12993-18RL	SZ2648RR1
BZX55C15RL	BZX85C30RL	SZ12993-227TA3	SZ2648RR2
BZX55C2V7RL	BZX85C33RL	SZ12993-27RL	SZ2659RL
BZX55C3V0RL	BZX85C36RL	SZ13002-11RL	SZ2669RR1
BZX55C3V3RL	BZX85C3V3RL	SZ13002-13RL	SZ2669RR2
BZX55C3V6RL	BZX85C3V6RL	SZ13002-213TA3	SZ2670RL
BZX55C3V9RL	BZX85C3V9RL	SZ13002-8RL	SZ2682RR2
BZX55C4V3RL	BZX85C43RL	SZ13002-9RL	SZ2691RA2
BZX55C4V7RL	BZX85C47RL	SZ13003-2RL	SZ2710RR1
BZX55C5V1RL	BZX85C4V3RL	SZ13698-100TA	SZ2710RR2
BZX55C5V6RL	BZX85C4V7RL	SZ13698-200TA	SZ2719RL
BZX55C6V2RL	BZX85C5V1RL	SZ13698-330TA	SZ2822RL
BZX55C6V8RL	BZX85C5V6RL	SZ13698-519TA	SZ2824RL
BZX55C7V5RL	BZX85C62RL	SZ13698-569TA	SZ2829RL
BZX55C8V2RL	BZX85C6V2RL	SZ13698-829TA	SZ2830RL
BZX55C9V1RL	BZX85C6V8RL	SZ2179RA1	SZ2831RL
BZX79B6V2RL	BZX85C75RL	SZ2179RL	SZ2833RL
BZX79C10RL	BZX85C7V5RL	SZ2220RL	SZ2850RL
BZX79C12RL	BZX85C82RL	SZ2245-1RL	SZ2854RL
BZX79C15RL	BZX85C8V2RL	SZ2245RL	SZ2855RL

AFFECTED DEVICE LIST: (...continuation)

BZX79C16RL	BZX85C9V1RL	SZ2250RL	SZ2880RL
BZX79C18RL	MZ4615	SZ2294RL	SZ2881RL
BZX79C22RL	MZ4616	SZ2344RL	SZ2882RL
BZX79C24RL	MZ4620	SZ2357RL	SZ2883RL
BZX79C27RL	MZ4620RL	SZ2359RL	SZ2884RL
SZ2885RL	SZG30373RL	SZG40144RL	
SZ30016-117RL	SZG30420-2RL	SZG40175RL	
SZ30016-122RL	SZG30422RL	SZG40180RL	
SZ30016-123RL	SZG30437RL	SZG40188-19RL	
SZ30016-134RL	SZG30460RL	SZG40188-22RL	
SZ30016-146RL	SZG30469RL	SZG40188-26RL	
SZ30016-213RL	SZG30555RL	SZG40188-29RL	
SZ30016-231RL	SZG30569-5RL	SZG40188-6RL	
SZ30016-257RL	SZG30593RL	SZG40189RL	
SZ30016-26RL	SZG30608RL	SZG40204RL	
SZ30016-272RL	SZG30616RL	SZG40233RL	
SZ30016-32RL	SZG30623RL	SZG40235-13RL	
SZ30016-362RL	SZG30628-1TA2	SZG40235-17RL	
SZ30016-38RL	SZG30628-2TA2	SZG40235-19RL	
SZ30016-422RL	SZG30628-8TA2	SZG40235-32RL	
SZ30016-62RL	SZG30635RL	SZG40235-5RL	
SZ30016-77RL	SZG30662RL	SZG40235-6RL	
SZ30016-98RL	SZG30675-16RL	SZG40235-7RL	
SZ30016-99RL	SZG30675-32RR2	SZG40235-8RL	
SZ30035-10RL	SZG30675-38RR2	SZG40237-12RL	
SZ30035-11RL	SZG30680RL	SZG40237-14RL	
SZ30035-12RL	SZG30688-16RL	SZG40237-15RL	
SZ30035-14RL	SZG30774RA2	SZG40237-16RL	
SZ30035-16RL	SZG30774RL	SZG40237-17RL	
SZ30035-17RL	SZG30774RR2	SZG40237-18RL	
SZ30035-18RL	SZG30775RL	SZG40237-19RL	
SZ30035-19RL	SZG30775RR2	SZG40237-1RL	
SZ30035-1RL	SZG30796-5RL	SZG40237-21RL	
SZ30035-20RL	SZG30806RL	SZG40237-22RL	
SZ30035-21RL	SZG30817-1RL	SZG40237-23RL	
SZ30035-22RL	SZG30817-2RL	SZG40237-24RL	
SZ30035-23RL	SZG30817-5RL	SZG40237-33RL	
SZ30035-24RL	SZG30817-7RL	SZG40237-34RL	
SZ30035-25RL	SZG30817-8RL	SZG40237-4RL	
SZ30035-26RL	SZG30817-9RL	SZG40237-5DRL	
SZ30035-27RL	SZG30821RA1	SZG40237-5RL	
SZ30035-28RL	SZG30821RR2	SZG40237-6RL	
SZ30035-2RL	SZG30829RL	SZG40237-8RL	
SZ30035-3RL	SZG30885RL	SZG40237-9RL	
SZ30035-4RL	SZG35052RL	SZP30050KRL	
SZ30035-5RL	SZG39044RL		
SZ30035-6RL	SZG39047RL		
SZ30035-7RL	SZG39072RL		
SZ30035-8RL	SZG39073RL		
SZ30035-9RL	SZG39075RL		
SZG30132RL	SZG40102RL		
SZG30348RL	SZG40133RL		
SZG30371RL	SZG40134RL		