



FINAL PRODUCT/PROCESS CHANGE NOTIFICATION

Generic Copy

23 Jun 2009

SUBJECT: ON Semiconductor Final Product/Process Change Notification #16290

TITLE: CARSEM to Seremban D2PAK and TO220 Assembly Transfer

PROPOSED FIRST SHIP DATE: 23 Sep 2009

AFFECTED CHANGE CATEGORY(S): Manufacturing Transfer (assembly)

AFFECTED PRODUCT DIVISION(S): APRG

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

Contact your local ON Semiconductor Sales Office or Bill Fontes <bill.fontes@onsemi.com>

SAMPLES: Contact your local ON Semiconductor Sales Office

ADDITIONAL RELIABILITY DATA: Available

Contact your local ON Semiconductor Sales Office or Peter Turlo <Peter.Turlo@onsemi.com>

NOTIFICATION TYPE:

Final Product/Process Change Notification (FPCN)

Final change notification sent to customers. FPCNs are issued at least 90 days prior to implementation of the change.

ON Semiconductor will consider this change approved unless specific conditions of acceptance are provided in writing within 30 days of receipt of this notice. To do so, contact your local ON Semiconductor Sales Office.

DESCRIPTION AND PURPOSE:

Transfer of device assembly operation from CARSEM to ON Semiconductor, Seremban. Purpose of the transfer is to consolidate manufacturing operations.

The project will also include an update of device datasheets to include more accurate dimensions in the case outline drawings. There will be no changes to the dimensions of the actual product being shipped to customers, only the drawings will be revised to accurately reflect the dimensions.


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RELIABILITY DATA SUMMARY:

Reliability Test Results follow:

Primary D2pak-7 Qualification Vehicle NCV8141 (RMS 4462, 5214, 4380)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntrl
Test Group A- Accelerated Environment Stress Tests									
Test	E1				Test at R H	All	All	All	All
PC	A1	JESD22 A113 J-STD-020	Preconditioning: (Test @ R/H) SMD only; Moisture Load and Reflow	Preconditioning for SAT, AC, TC, HAST (MSL= 3 @ 245°C)		xxx	xxx	xxx	xx
HAST	A2	JESD22 A110	Highly Accelerated Stress Test: 130°C/85% RH, 18.8psi, bias, for 96hrs		T96, c=0 Test at R H	0 / 84	0 / 84	0 / 84	0 / 84
AC	A3	JESD22 A102	Autoclave: 121°C/100% RH, 15 psi for 96 hrs		T96, c=0 Test at R	0 / 84	0 / 84	0 / 84	0 / 84
TC	A4	JESD22 A104	Temperature Cycle: (Test @ H) -65°C to +150°C; for 500 cycles.		TC500, c=0 Test at R H	0 / 84	0 / 84	0 / 84	0 / 84
HTSL	A6	JESD22 A103	High Temperature Storage Life TA=175°C for 500 hrs.		T500, c=0 Test at R H	0 / 84	0 / 84	0 / 84	0 / 84
Test Group B- Accelerated LifeTime Simulation Tests									
HTOL	B1	JESD22 A108	High Temperature Operational Life: TA=125°C for 1008 hrs		T1008, c=0 Test at R H	0 / 84	0 / 84	0 / 84	0 / 84
Test Group C- Package Assembly integrity Test									
WBS	C1	AEC-Q100-001	Wire Bond Shear Test: Cpk >1.33	In line data. 30 bonds		Pass			
WBP		Milstd88 3 M 2011	Condition C. Cpk>1.33.	In line data. 30 bonds		Pass			
WBP	C2	Milstd88 3 M 2011	Wire Bond Pull: >3gr. Condition C. 0 fails or Cpk>1.33.	Post TC500	c=0 and Cpk>1.33	Pass			
DPA		AEC-Q101	Destructive Physical Analysis Post HAST			0 / 2	0 / 2	0 / 2	
DPA		AEC-Q101	Destructive Physical Analysis Post TC500			0 / 2	0 / 2	0 / 2	
SDx	C3	JESD22 B102	Solderability, 8hr steam age, 245°C Sn solder. >95% coverage	Pb-free	c=0	0/15			
SDy	C3	JESD22 B102	Solderability, 8hr steam age, 215°C PbSn solder. >95% coverage	Pb using activated flux	c=0	0 / 15			0 / 15
RSH		JESD22 B106	Resistance to Solder Heat. Devices shall be fully submerged during test	Pb-free profile	c=0	0 / 30			
PD	C4	JESD22 B100/8	Physical Dimension	In line data. >1.33 Cpk		Pass			
Test Group E- Electrical Verification									
ED	E5	AEC-Q100-009	Electrical Distribution: (Test @ C/ R/ H)	>1.33 Cpk	Cpk>1.33 at R H C	Pass	Pass	Pass	



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Secondary D2pak-7 Qualification Vehicle NCV8508 (RMS 4463)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntr
Test Group A- Accelerated Environment Stress Tests									
Test	E1		Electrical Test	Initial Electrical	Test at R H	All			
PC	A1	JESD2 2 A113 J-STD- 020	Preconditioning: (Test @ R/H) SMD only; Moisture Load and Reflow	Preconditioning for SAT, TC (MSL= 3 @ 245°C)		xxx			
TC	A4	JESD2 2 A104	Temperature Cycle: (Test @ H) -65°C to+150°C; for 500 cycles.	TC1000 FYI	TC500, c=0 Test at R H	0*/80			
HTSL	A6	JESD2 2 A103	High Temperature Storage Life TA=175°C for 500 hrs.		T500, c=0 Test at R H	0*/82			

Test Group B- Accelerated LifeTime Simulation Tests

HTOL	B1	JESD2 2 A108	High Temperature Operational Life: TA=125°C for 1008 hrs		T1008, c=0 Test at R H	0*/83			
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Test Group C- Package Assembly integrity Test

WBS	C1	AEC- Q100- 001	Wire Bond Shear Test: Cpk >1.33	In line data		Pass			
WBP		Mil-Std- 883 Method 2011	Condition C. Cpk>1.33.	In line data		Pass			
WBP	C2	Mil-Std- 883 Method 2011	Wire Bond Pull: >3gr. Condition C. 0 fails or Cpk>1.33.	Post TC500	c=0 and Cpk>1.33	Pass			
DPA		AEC- Q101	Destructive Physical Analysis Post TC500			0 / 2			
PD	C4	JESD2 2 B100,B 108	Physical Dimension	>1.33 Cpk		Pass			

Test Group E- Electrical Verification

ED	E5	AEC- Q100- 009	Electrical Distribution: (Test @ C/ R/ H)	>1.33 Cpk	Cpk>1.33 at R H C	Pass			
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* EOS failures discounted see text.

D2pak-5 Qualification Vehicle CS5253 (RMS 5484)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntrl
Test Group A- Accelerated Environment Stress Tests									
Test	E1		Electrical Test	Initial Electrical	Test at R H	All			
PD	C4	JESD2 2 B100,B 108	Physical Dimension	>1.33 Cpk		Pass			

D2pak-3 Qualification Vehicle NCP1086 (RMS 5483)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntrl
Test Group A- Accelerated Environment Stress Tests									
Test	E1		Electrical Test	Initial Electrical	Test at R H	All			
PD	C4	JESD22 B100,B1 08	Physical Dimension	>1.33 Cpk		Pass			


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TO220-7 Qualification Vehicle CS44116 (RMS 4464)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntrl
Test Group A- Accelerated Environment Stress Tests									
Test	E1				Test at R H	All	All	All	All
HAST	A2	JESD22 A110	Highly Accelerated Stress Test: 130°C/85% RH, 18.8psi, bias, for 96hrs		T96, c=0 Test at R H	0 / 80	0 / 80	0 / 80	0 / 80
AC	A3	JESD22 A102	Autoclave: 121°C/100% RH, 15 psi for 96 hrs		T96, c=0 Test at R	0 / 80	0 / 80	0 / 80	0 / 80
TC	A4	JESD22 A104	Temperature Cycle: (Test @ H) -65°C to +150°C; for 500 cycles.		TC500, c=0 Test at R H	0 / 80	0 / 80	0 / 80	0 / 80
HTSL	A6	JESD22 A103	High Temperature Storage Life TA=175°C for 500 hrs.		T500, c=0 Test at R H	0 / 80	0 / 80	0 / 80	0 / 80

Test Group B- Accelerated LifeTime Simulation Tests

HTOL	B1	JESD22 A108	High Temperature Operational Life: TA=125°C for 1008 hrs		T1008, c=0 Test at R H	0 / 80	0 / 80	0 / 80	0 / 80
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Test Group C- Package Assembly integrity Test

WBS	C1	AEC-Q100-001	Wire Bond Shear Test: Cpk >1.33	In line data. 30 bonds		Pass			
WBP		Milstd88 3 M 2011	Condition C. Cpk>1.33.	In line data. 30 bonds		Pass			
WBP	C2	Milstd88 3 M 2011	Wire Bond Pull: >5.5 gr. Condition C. 0 fails or Cpk>1.33.	Post TC500	c=0 and Cpk>1.33	Pass			
DPA		AEC-Q101	Destructive Physical Analysis Post HAST			Pass	Pass	Pass	
DPA		AEC-Q101	Destructive Physical Analysis Post TC500			0 / 2	0 / 2	0 / 2	0 / 2
SDx	C3	JESD22 B102	Solderability, 8hr steam age, 245°C Sn solder. >95% coverage	Pb-free	c=0	0/15			
SDy	C3	JESD22 B102	Solderability, 8hr steam age, 215°C PbSn solder. >95% coverage	Pb (perform 1 st)	c=0	0 / 15			
RSH		JESD22 B106	Resistance to Solder Heat. Devices shall be fully submerged during test	Pb-free profile		0/10			
PD	C4	JESD22 B100 108	Physical Dimension	In line data. >1.33 Cpk		Pass			

Test Group E- Electrical Verification

ED	E5	AEC-Q100-009	Electrical Distribution: (Test @ C/ R/ H)	>1.33 Cpk	Cpk>1.33 at R H C	Pass	Pass	Pass	
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TO220-5 Qualification Vehicle CS41085 (RMS 5482)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntrl
Test Group A- Accelerated Environment Stress Tests									
Test	E1		Electrical Test	Initial Electrical	Test at R H	All			
PD	C4	JESD22 B100,B108	Physical Dimension	>1.33 Cpk, 30 units		Pass			

TO220-3 Qualification Vehicle NCP1086 (RMS 4827)

Test	#	Ref	Test Conditions	Comments	Qual Points	Lot A	Lot B	Lot C	Cntrl
Test Group A- Accelerated Environment Stress Tests									
Test	E1		Electrical Test	Initial Electrical	Test at R H	All			
PD	C4	JESD22 B100,B108	Physical Dimension	>1.33 Cpk, 30 units		Pass			

**Final Product/Process Change Notification #16290****AFFECTED DEVICE LIST**

CS41109DPR3G
CS44116T7G
CS44116TVA7G
CS5253B-1GDPR5G
CS5253B-8GDP5G
CS5253B-8GDPR5G
CS8126-1YDPSR7G
CS8182YDPS5G
CS8182YDPSR5G
CS8361YDPS7G
CS8361YDPSR7G
CS8363YDPS7G
CS8363YDPSR7G
NCP1086D2T-33R4G
NCP1086D2T33R4GH
NCP1086D2TADJR4G
NCP1086D2T-ADJG
NCP1086T-033G
NCP1086T-ADJG
NCV8141D2TG
NCV8141D2TR4G
NCV8505D2T25G
NCV8505D2T25R4G
NCV8505D2T33G
NCV8505D2T33R4G
NCV8505D2T50G
NCV8505D2T50R4G
NCV8505D2TADJG
NCV8505D2TADJR4G
NCV8506D2T25G
NCV8506D2T25R4G
NCV8506D2T33G
NCV8506D2T33R4G
NCV8506D2T50G
NCV8506D2T50R4G
NCV8506D2TADJG
NCV8506D2TADJR4G
NCV8508D2T50G
NCV8508D2T50R4G
SCV8182DSR4G