



FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
Generic Copy

19-FEB-2004

SUBJECT: ON Semiconductor Final Product/Process Change Notification #13317

TITLE: Phase#3 Die Design Change (Die Shrink) for Bipolar Power Products

EFFECTIVE DATE: 19-Apr-2004

AFFECTED CHANGE CATEGORY: Design Change

AFFECTED PRODUCT DIVISION: Discretes Products

ADDITIONAL RELIABILITY DATA: Available

Contact your local ON Semiconductor Sales Office or Laura Rivers <S20636@onsemi.com>

SAMPLES: Contact your local ON Semiconductor Sales Office
or Mike Schager <RMF150@onsemi.com>

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

Contact Sales Office or Jose Ramirez <RVEG40@onsemi.com>

NOTIFICATION TYPE:

Final Product/Process Change Notification (FPCN)

Final change notification sent to customers. FPCNs are issued at least 60 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:

This is the Final Notification for the devices listed in Phase#3 of the Die design change (Die shrink) for Bipolar Power Products manufactured in ON Semiconductor's ZR fab in Phoenix, Arizona. This FPCN corresponds to IPCN#12868 found at www.onsemi.com. ON Semiconductor wishes to notify its customers that the listed Bipolar Power Transistors have been subjected to a Die size reduction. Electrical characterization and qualification data have been completed, and device parametric specifications and ratings have not changed.

RELIABILITY DATA SUMMARY:

Mask#1

TEST MJD45H11T4

	Qual	Lot	Control
HTRB	0/77	0/77	
H3TRB	0/77	0/77	
IOL	0/77	0/77	
TC	0/77	0/77	
AC	0/77	0/77	



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Mask#2

TEST	MJD44H11T4	Qual Lot	Control
HTRB		0/77	0/77
H3TRB		0/77	0/77
IOL		0/77	0/77
TC		0/77	0/77
AC		0/77	0/77

Mask#3

TEST	2N5884	2N5886	Qual Lot	Control
HTRB			0/77	0/77
IOL			0/77	0/77
TC			0/77	0/77

ELECTRICAL CHARACTERISTIC SUMMARY:

Mask#1

Test	Condition	Limit	Unit	Stat	Stat	Stat	Stat	Stat
					MJD45H11 - NPN			
iebo	Veb=5V	<5.00E-5	Amp			QUAL LOT	CONTROL	
						Avg/Sd	1.83E-10 / 6.55E-11	
							1.70E-10 / 4.00E-11	
ices	Vcb=80V	<1.00E-5	Amp			Avg/Sd	7.25E-10 / 5.23E-10	
							6.69E-10 / 2.38E-11	
BVceo	IC=30mA	>80V	Volt			Avg/Sd	106.6 / 2.9	117.8 / 1.1
hFE	2A/1V	>60				Avg/Sd	135.1 / 2.4	117.2 / 0.7
hFE	4A/1V	>40				Avg/Sd	93.9 / 1.8	68.0 / 1.1
hFE	8A/1V	>20				Avg/Sd	38.2 / 2.0	24.5 / 0.6
VCE(sat)	8A/0.8A	<1.0V	Volt			Avg/Sd	0.5135 / 0.0100	
							.5361 / 0.0036	
VBE(sat)	8A/0.8A	<1.5V	Volt			Avg/Sd	1.1438 / 0.0035	
							1.0945 / 0.0017	

Mask#2

Test	Condition	Limit	Unit	Stat	Stat	Stat	Stat	Stat
					MJD44H11 - NPN			
iebo	Veb=5V	<5.00E-5	Amp			QUAL LOT	CONTROL	
						Avg/Sd	1.64E-10 / 2.77E-11	
							2.38E-10 / 2.87E-10	
ices	Vcb=80V	<1.00E-5	Amp			Avg/Sd	3.74E-10 / 4.26E-11	
							4.84E-09 / 5.60E-09	
BVceo	IC=30mA	>80V	Volt			Avg/Sd	114.6 / 2.6	14.3 / 2.9
hFE	2A/1V	>60				Avg/Sd	132.1 / 13.0	115.9 / 12.4
hFE	4A/1V	>40				Avg/Sd	88.2 / 6.4	76.9 / 5.9
hFE	8A/1V	>20				Avg/Sd	44.8 / 2.3	42.4 / 2.1
VCE(sat)	8A/0.8A	<1.0V	Volt			Avg/Sd	0.3962 / 0.0044	
							0.3525 / 0.0059	
VBE(sat)	8A/0.8A	<1.5V	Volt			Avg/Sd	1.1310 / 0.0036	
							1.0718 / 0.0023	



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Mask#3	Test Condition	Limit	Unit	Stat	2N5884 - PNP	QUAL LOT	CONTROL
Iebo	Veb=5V	<1.00E-03	Amp			Avg/Sd	1.03E-09 / 3.51E-10 1.87E-09 / 2.45E-09
Iceo	Vcb=40V	<2.00E-03	Amp			Avg/Sd	6.81E-07 / 3.09E-07 8.51E-08 / 1.13E-07
Icbo	Vcb=80V	<1.00E-03	Amp			Avg/Sd	5.56E-09 / 6.15E-10 5.43E-09 / 1.36E-09
Icex	Vce=80V	<10.0E-03	Amp			Avg/Sd	5.98E-09 / 7.11E-10 5.59E-09 / 8.25E-10
BVceo	IC=50mA	>80V	Volt			Avg/Sd	136.6 / 1.0 159.2 / 9.9
hFE	3A/4V	>35				Avg/Sd	150.4 / 5.0 116.7 / 15.1
hFE	10A/4V	20 - 100				Avg/Sd	60.1 / 2.2 50.3 / 5.0
hFE	25A/4V	>4				Avg/Sd	21.1 / 0.8 18.7 / 1.6
VBE(on)	10A/4V	<1.5V	Volt			Avg/Sd	1.0261 / 0.0090 1.0462 / 0.0117
VBE(sat)	25A/6.25A	<2.5	Volt			Avg/Sd	1.6968 / 0.0095 1.8919 / 0.0294
VCE(sat)	15A/1.5A	<1.0V	Volt			Avg/Sd	0.5396 / 0.0087 0.6638 / 0.0365
VCE(sat)	25A/6.25A	<4.0V	Volt			Avg/Sd	0.8809 / 0.0109 1.0987 / 0.0340

Mask#3	Test Condition	Limit	Unit	Stat	2N5886 - NPN	QUAL LOT	CONTROL
Iebo	Veb=5V	<1.00E-03	Amp			Avg/Sd	2.80E-10 / 4.02E-10 3.06E-10 / 3.04E-10
Iceo	Vcb=40V	<2.00E-03	Amp			Avg/Sd	2.70E-07 / 1.19E-07 1.02E-07 / 2.41E-08
Icbo	Vcb=80V	<1.00E-03	Amp			Avg/Sd	6.10E-09 / 2.04E-09 3.38E-09 / 5.15E-10
Icex	Vce=80V	<10.0E-03	Amp			Avg/Sd	6.88E-09 / 1.91E-09 6.50E-09 / 1.47E-09
BVceo	IC=50mA	>80V	Volt			Avg/Sd	107.5 / 2.4 108.8 / 1.8
hFE	3A/4V	>35				Avg/Sd	157.1 / 9.8 139.9 / 7.5
hFE	10A/4V	20 - 100				Avg/Sd	62.9 / 3.1 62.4 / 2.3
hFE	25A/4V	>4				Avg/Sd	16.6 / 0.9 23.4 / 0.9
VBE(on)	10A/4V	<1.5V	Volt			Avg/Sd	0.9936 / 0.0059 1.0251 / 0.0075
VBE(sat)	25A/6.25A	<2.5	Volt			Avg/Sd	1.6271 / 0.0157 1.8355 / 0.0213
VCE(sat)	15A/1.5A	<1.0V	Volt			Avg/Sd	0.4540 / 0.0089 0.5339 / 0.0116
VCE(sat)	25A/6.25A	<4.0V	Volt			Avg/Sd	0.7859 / 0.0149 0.9796 / 0.0177



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CHANGED PART IDENTIFICATION:

Product marked with date code 0417 and higher may have the new Die design.

AFFECTED DEVICE LIST (WITHOUT SPECIALS):

PART

2N3771
2N5302
2N5684
2N5686
2N5883
2N5884
2N5885
2N5886
BD249C
MJ14001
MJ14002
MJ14003
MJ4502
MJ802
MJD44H11
MJD44H11-001
MJD44H11RL
MJD44H11T4
MJD44H11T5
MJD45H11
MJD45H11-001
MJD45H11RL
MJD45H11T4
SJD44H11
SJD44H11-001
SJD44H11RL
SJD44H11T4
SJD45H11
SJD45H11-001
SJD45H11RL
SJD45H11T4
TIP35A
TIP35C
TIP36A
TIP36C