ON Semiconductor

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
Generic Copy

30-SEP-2003

SUBJECT: ON Semiconductor Final Product/Process Change Notification #13135

TITLE: Phase#1 Die Design Change (Die Shrink) for Bipolar Power Products

EFFECTIVE DATE: 01-Dec-2003

AFFECTED CHANGE CATEGORY: Design Change

AFFECTED PRODUCT DIVISION: Bipolar Discretes Products Div

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 Dianne Von Borstel <RPDR20@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 Phase#1 of IPCN#12868 located at www.onsemi.com. ON Semiconductor wishes to notify customers that the listed Bipolar Power Transistor devices have received an active area die size reduction. Electrical characterization and qualification data have been completed. Device parametric specifications and ratings have not changed. Samples are available upon request.

ON Seminconductor continues to make substantial investments in both new technologies and improved manufacturing capabilities to provide you the highest quality and reliability in the semiconductor industry.

Final Product/Process Change Notification #13135

RELIABILITY DATA SUMMARY:

TEST	MJE15032				MJE15033			
	Lot A	Lot B	Lot C	Control	Lot A	Lot B	Lot C	Control
HTRB	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
H3TRB	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
IOL	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
TC	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
AC	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
ESD(MM)	>400V	>400V	>400V	>400V	>400V	>400V	>400V	>400V

TEST	MJE340			MJE350		
	Lot A	Lot B	Control	Lot A	Lot B	Control
HTRB	0/77	0/77	0/77	0/77	0/77	0/77
H3TRB	0/77	0/77	0/77	0/77	0/77	0/77
IOL	0/77	0/77	0/77	0/77	0/77	0/77
TC	0/77	0/77	0/77	0/77	0/77	0/77
AC	0/77	0/77	0/77	0/77	0/77	0/77
ESD(MM)	>400V	>400V	>400V	>400V	>400V	>400V

TEST	MJE182	MJE253T4
	Lot A	Lot A
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
ESD(MM)	>400V	>400V

ELECTRICAL CHARACTERISTIC SUMMARY:

					MJE15032			
TEST	**Cond.**	**Limit**	**Unit**	**Stat**	**Lot A**	**Lot B**	**Lot C**	**Control**
Iebo	Veb=5V	<10uA	uA	Avg/Sd	0.36/0.46	0.25/0.02	0.60/1.4	0.50/0.7
Icbo	Vcb=250V	<10uA	uA	Avg/Sd	11.3/1.9	10.7/0.2	12.1/5.1	10.9/0.3
Iceo	Vce=255V	<1mA	uA	Avg/Sd	4.6/2.6	3.7/2.9	5.3/2.9	5.3/6.5
hFE	0.5A/5V	>50		Avg/Sd	100.1/13.4	97.4/18.5	105.8/18.3	150.9/31.3
hFE	1A/5V	>50		Avg/Sd	99.9/13.2	97.3/18.3	105.9/18.2	151.0/31.0
hFE	2A/5V	>10		Avg/Sd	84.5/10	83.0/13.8	90.2/13.8	122.4/20.7
VCE (sat)	1A/0.1A	<0.5V	mVolt	Avg/Sd	86.3/1.7	84.5/1.9	84.8/2.0	76.9/1.6
VBE (on)	1A/2V	<1.0V	mVolt	Avg/Sd	758/4.6	759/6.3	753/6.3	729/6.0

					MJE15033			
TEST	**Cond.**	**Limit**	**Unit**	**Stat**	**Lot A**	**Lot B**	**Lot C**	**Control**
Iebo	Veb=5V	<10uA	nA	Avg/Sd	0.27/0.18	0.31/0.18	0.19/0.14	0.15/0.19
Icbo	Vcb=250V	<10uA	nA	Avg/Sd	12.1/0.91	15.9/2.17	11.7/0.35	13.4/0.49
Iceo	Vce=255V	<1mA	uA	Avg/Sd	0.35/0.08	0.35/0.14	0.26/0.12	0.450/0.39
hFE	0.5A/5V	>50		Avg/Sd	121.6/3.3	124.2/2.8	125.6/3.2	138.2/4.7
hFE	1A/5V	>50		Avg/Sd	114.3/2.9	116.3/2.7	117.9/2.9	129.6/4.1
hFE	2A/5V	>10		Avg/Sd	61.8/1.4	60.8/3.8	67.6/3.6	70.4/1.2
VCE (sat)	1A/0.1A	<0.5V	mVolt	Avg/Sd	150.0/3.1	160.8/4.2	155.7/5.5	138.1/3.0
VBE (on)	1A/2V	<1.0V	mVolt	Avg/Sd	758.0/0.57	757.6/1.68	755.8/1.69	738.3/1.06

Final Product/Process Change Notification #13135

					MJE340		MJE350	
TEST	**Cond.**	**Limit**	**Unit**	**Stat**	**Lot A**	**Control**	**Lot A**	**Control**
Iebo	Veb=5V	<100uA	pA	Avg/Sd	106/71	91/39	97.2/35.3	131/34.1
Icbo	Vcb=300V	<100uA	nA	Avg/Sd	0.42/0.20	0.53/0.2	1.17/0.31	1.88/0.99
BVceo	Ic=1mA	>300V	Vlts	Avg/Sd	413.4/31.3	410.8/10.8	431.2/3.8	405.9/2.2
BVcbo	Ic=100uA	>300V	Vlts	Avg/Sd	485.6/4.3	492.6/4.5	496.8/4.3	477.8/3.2
hFE	50mA/10V	40 - 240		Avg/Sd	160.7/61.3	121.7/21.6	127.9/4.9	116.1/1.6

					MJE182		MJD253T4	
TEST	**Cond.**	**Limit**	**Unit**	**Stat**	**Lot A**	**Control**	**Lot A**	**Control**
Iebo	Veb=5V	<100nA	pA	Avg/Sd	79.7/165	446/280	43/24	48/35
Icbo	Vcb=100V	<100nA	nA	Avg/Sd	0.13/0.08	0.27/0.12	0.24/0.04	0.37/0.07
BVceo	Ic=10mA	>80V	Vlts	Avg/Sd	97.8/0.5	126.8/5.7	165.2/14.5	161.9/4.5
BVceo	Ic=10mA	>100V	Vlts	Avg/Sd				
hFE	0.1A/1V	50 - 250		Avg/Sd	117.2/11.2	100.4/24.3		
hFE	0.2A/1V	40 - 180		Avg/Sd			111.9/1.9	122.9/1.3
hFE	0.5A/1V	>30		Avg/Sd	97.5/9.4	78.3/16.4		
hFE	1A/1V	>15		Avg/Sd			28.6/5.8	25.7/1.4
hFE	1.5A/1V	>12		Avg/Sd	51.1/4.5	78.3/16.4		
Vce (sat)	0.5A/50mA	<0.3V	Vlts	Avg/Sd	.095/.003	.095/.005	.202/.003	.177/.004
Vce (sat)	1A/0.1A	<0.6A	Vlts	Avg/Sd			.348/0.01	.297/.006
Vce (sat)	1.5A/0.15A	<0.9V	Vlts	Avg/Sd	.249/.006	.212/.007		
Vbe (sat)	1.5A/0.15A	<1.5V	Vlts	Avg/Sd	.997/.005	.947/.007		
Vbe (sat)	2A/0.2A	<1.8V	Vlts	Avg/Sd			1.180/.011	1.092/.002
Vbe (on)	0.5A/1V	<1.2V	Vlts	Avg/Sd	.807/.005	.800/.009	.828/.003	.805/.002

CHANGED PART IDENTIFICATION:
Product marked with date code 0348 and newer may have new die design.

AFFECTED DEVICE LIST (WITHOUT SPECIALS):

PART

2N5655
2N5657
BD135
BD136
BD137
BD138
BD139
BD140
BD159
BD787
BD788
BU406
BU407
BUV26
BUV27

D44H11
D44H8
D44VH10
D45H11
D45H8
D45VH10
MJB44H11
MJB44H11T4
MJB45H11
MJB45H11T4
MJD200
MJD200RL
MJD200T4
MJD210
MJD210RL
MJD210T4
MJD243
MJD243T4
MJD253T4
MJD340
MJD340RL
MJD340T4
MJD350
MJD350T4
MJE15028
MJE15029
MJE15030
MJE15031
MJE15032
MJE15033
MJE170
MJE171
MJE172
MJE180
MJE181
MJE182
MJE200
MJE210
MJE210T
MJE243
MJE253
MJE340
MJE3439
MJE344
MJE350
MJEC15030WP
MJEC15031WP
MJEC340WP
MJEC350WP
MJEC44H11WP
MJF15030
MJF15031
MJF44H11
MJF45H11
MMJT350T1
SJE2894