



FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
Generic Copy

09-JUL-2001

SUBJECT: Product/Process Change Notification #11504

TITLE: Final Notification – Phase#1 - Bipolar Power Wafer Fab Transfer TLS-BP6 to PHX-BP/ZR Fab

EFFECTIVE DATE: 21-Aug-2001

AFFECTED CHANGE CATEGORY: On Semiconductor Fab Site, Subcontractor Fab Site, and Wafer Process

AFFECTED PRODUCT DIVISION: Bipolar Discrete 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 Jose Ramirez <RVEG40@onsemi.com>

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

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

DISCLAIMER:

Initial Product/Process Change Notification (IPCN) - First Notification distributed to customers. Distributed at least 120 days from the effective date of the change.

Final Product/Process Change Notification (FPCN) - Final Notification completing the notification process. Distributed at least 60 days from the effective date 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:

ON Semiconductor wishes to notify its Customers that the 1st Phase of the Bipolar Power Wafer Manufacturing Operation Transfer from Toulouse-France to Phoenix-Arizona is taking place as announced in IPCN # 10863, and Product Lines using the Epi Base Technology will be transferred as indicated. ON Semiconductor 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. We believe these actions will also improve our ability to serve you better in the future.



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QUALIFICATION PLAN:

*Per AEC-Q101 guidelines.

<u>Test*</u>	<u>Conditions</u>	<u>Exceptions</u>
Parametric verification	Per device specification @ 25DegC	
HTRB	1000 hrs Vcb=80% T=150 deg C	
Temp Cycle	1K cycles - 65 to 150 deg C	
Autoclave	96 hrs RH=100% P=15psi Ta=121 deg C	
H3TRB	1000 hrs Vcb=80% RH=85%	
IOL	15K cycles Delta tj=100 deg C	
D.P.A.	Random H3TRB and IOL samples	
Thermal Resistance		Delta VBE
Die Shear	Pre and Post process change comp.	
Wire Bond Strength	Pre and Post process change comp.	
Wire Bond Shear	Method 3	

(Parametric measurements are per device specification @ 25 deg C)

Qualification Vehicle Justification:

<u>Family</u>	<u>Qualification Device</u>	<u>Reason Chosen</u>
PNP	TIP42C	Large Die size, highest voltage
NPN	TIP122	Highest Voltage

RELIABILITY DATA SUMMARY:

Interim Reliability Tests results after completion of 500 hrs.

Final Reliability Report available after completion of 1000 hours.

<u>Test Desc.</u>	<u>Interval</u>	<u>TIP42C</u>				<u>TIP122</u>			
		<u>Lot#1</u>	<u>Lot#2</u>	<u>Lot#3</u>	<u>Control</u>	<u>Lot#1</u>	<u>Lot#2</u>	<u>Lot#3</u>	<u>Control</u>
HTRB	500 hrs	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
H3TRB	500 hrs	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
Autoclave	96 hrs	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
IOL	4286 cyc	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77	0/77	0/77	0/77	0/77	0/77	0/77

ELECTRICAL CHARACTERISTIC SUMMARY:

<u>TIP42C</u>	<u>Test</u>	<u>IEBO</u>	<u>ICEO</u>	<u>ICES</u>	<u>BVCEO</u>	<u>HFE</u>	<u>HFE</u>	<u>VBE(on)</u>	<u>VCE(sat)</u>
	Cond1					Ic=0.3A	Ic=3A	Ic=6A	Ic=6A
Group	Cond2	Vbe=5V	Vce=60V	Vce=100V	Ic=30mA	Vce=4V	Vce=4V	Vce=4V	Ib=0.6A
	Limit=	<1mA	<700uA	<400uA	>100V	>30	15-75	<2.0V	<1.5V
Lot#1	Mean	1.0 E-6	1.1 E-7	9.8 E-8	129.7	235.3	53.8	1.319	1.054
	StDev	5.5 E-14	3.8 E-15	1.4 E-8	1.3	8.7	2.0	0.013	0.042
	Cpk	6.1 E+9	6.1 E+10	9.4 E+3	7.8	9.0	8.9	17.7	3.52
Lot#2	Mean	1.0 E-06	9.8 E-8	9.8 E-8	119.9	207.4	50.2	1.326	1.062
	StDev	5.5 E-14	2.5 E-8	1.4 E-8	2.4	21.1	3.4	0.015	0.066
	Cpk	6.1 E+9	9.5 E+3	9.4 E+3	2.8	3.28	4.9	14.7	2.22
Lot#3	Mean	1.0 E-6	1.0 E-7	9.8 E-8	120.4	232.7	57.4	1.290	1.024
	StDev	2.0 E-7	2.0 E-8	1.4 E-8	1.8	15.2	2.6	0.012	0.040
	Cpk	1.7 E+3	1.2 E+4	9.4 E+3	3.7	5.1	7.3	20.5	3.94
Control	Mean	1.0 E-6	1.1 E-6	1.0 E-7	106.1	322.9	58.7	1.309	0.933
	StDev	5.5 E-14	4.8 E-7	3.8 E-15	6.3	30.2	4.2	0.018	0.087
	Cpk	6.1 E+9	4.9 E+2	3.5 E+10	0.3	3.6	4.6	12.5	2.2



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TIP122 Test	ICBO	IEBO	ICEO	BVCEO	HFE	HFE	VCE(sat)	VCE(sat)	VBE(on)	
Group	Cond1				Ic=0.5A	Ic=3A	Ic=3A	Ic=5A	Ic=3A	
	Cond2	Vcb=100V	Veb=5V	Vce=50V	Ic=0.1A	Vce=3V	Vce=3V	Ib=12mA	Ib=20m	Vce=3V
	Limit	1uA	2mA	1uA	100V	>1000	>1000	<2.0V	<4.0V	<2.5V
Lot#1	Mean	1.0 E-8	8.6 E-4	5.7 E-9	114.9	4395.4	10104	1.041	1.269	1.625
	StDev	2.5 E-9	3.3 E-5	2.6 E-9	2.23	162.0	240	0.004	0.007	0.005
	Cpk	132.2	11.7	127.3	2.22	7.0	12.6	79.9	132.9	52.5
Lot#2	Mean	1.3 E-8	8.2 E-4	7.3 E-9	117.9	4298.7	8800	1.045	1.275	1.634
	StDev	2.7 E-9	7.1 E-5	2.7 E-9	2.79	307.8	734	0.007	0.010	0.006
	Cpk	124.2	5.6	123.7	2.14	3.6	3.5	49.3	88.4	41.7
Lot#3	Mean	1.2 E-8	7.9 E-4	6.5 E-9	114.5	4788.4	10841	1.038	1.266	1.622
	StDev	2.3 E-9	1.4 E-5	2.3 E-9	3.07	92.5	326	0.002	0.004	0.003
	Cpk	146.1	29.1	13.3	1.57	13.6	10.1	132.7	242.5	75.6
Control	Mean	1.2 E-8	1.0 E-3	4.6 E-9	126.1	3883.7	7308	1.164	1.456	1.703
	StDev	1.4 E-8	3.4 E-5	2.2 E-9	0.67	146.1	258	0.006	0.010	0.005
	Cpk	24.2	9.5	14.2	13.0	8.9	8.2	46.2	83.6	49.4

CHANGED PART IDENTIFICATION:

Customers may receive Bipolar Power Epi Base Products with the silicon Chip manufactured at the Phoenix BP/ZR Fab starting with product marked with Date Code 0135.

ADDITIONAL INFORMATION:

Contact(s) at ON Semiconductor :

	<u>Americas</u>	<u>Europe</u>
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Phone	(602) 244 - 4819	33534611194
Country	USA	France

AFFECTED DEVICE LIST(WITHOUT SPECIALS):

- PART
- 2C3773WP
- 2N3055
- 2N3055A
- 2N3055H
- 2N3442
- 2N3771
- 2N3772
- 2N3773
- 2N4918
- 2N4919
- 2N4920
- 2N4921
- 2N4922
- 2N4923
- 2N5190
- 2N5191
- 2N5192
- 2N5194
- 2N5195
- 2N5302
- 2N5631



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**2N5684
2N5686
2N5883
2N5884
2N5885
2N5886
2N6031
2N6034
2N6035
2N6036
2N6038
2N6039
2N6040
2N6042
2N6043
2N6045
2N6052
2N6058
2N6107
2N6109
2N6111
2N6282
2N6284
2N6286
2N6287
2N6288
2N6292
2N6387
2N6388
2N6487
2N6488
2N6490
2N6491
2N6667
2N6668
BD179
BD180
BD234
BD237
BD238
BD241C
BD242B
BD242C
BD243B
BD243C
BD244B
BD244C
BD249C
BD435
BD435T
BD436
BD436T
BD437
BD437T
BD438
BD438T**



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**BD439
BD440
BD441
BD442
BD675
BD675A
BD676
BD676A
BD677
BD677A
BD678
BD678A
BD679
BD679A
BD680
BD680A
BD680T
BD681
BD682
BD682T
BD809
BD810
BDV64B
BDV65B
BDW42
BDW46
BDW47
BDX33B
BDX33C
BDX34B
BDX34C
BDX53B
BDX53C
BDX54B
BDX54C
MJ11012
MJ11015
MJ11016
MJ11028
MJ11029
MJ11030
MJ11032
MJ11033
MJ14001
MJ14002
MJ14003
MJ15001
MJ15002
MJ15015
MJ15016
MJ2955
MJ4502
MJ802
MJB42C
MJB42CT4
MJC11015WP**

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**MJC11016WP
MJC122WP
MJC15015WP
MJC2955WP
MJD112
MJD112-001
MJD112RL
MJD112T4
MJD117
MJD117-001
MJD117T4
MJD122
MJD122T4
MJD127
MJD127T4
MJD128T4
MJD148T4
MJD2955
MJD2955-001
MJD2955T4
MJD3055
MJD3055T4
MJD31C
MJD31C1
MJD31CRL
MJD31CT4
MJD31T4
MJD32C
MJD32C1
MJD32CRL
MJD32CT4
MJD32RL
MJD32T4
MJD41C1
MJD41CRL
MJD41CT4
MJD42C
MJD42C1
MJD42CRL
MJD42CT4
MJD6039T4
MJE2955T
MJE3055T
MJE371
MJE4353
MJE521
MJE700
MJE702
MJE703
MJE800
MJE802
MJE803
MJF122
MJF127
MJF2955
MJF3055**



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**MJF31C
MJF32C
MJF6388
MJF6668
MJH6284
MJH6287
SJB42C
SJB42CT4
SJD31CT4
TE02514LFVK
TEAC3055WP
TIP100
TIP101
TIP102
TIP105
TIP106
TIP107
TIP110
TIP111
TIP112
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TIP146
TIP147
TIP29
TIP2955
TIP29A
TIP29B
TIP29C
TIP30
TIP3055
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TIP30B
TIP30C
TIP31
TIP31A
TIP31B
TIP31C
TIP32
TIP32A
TIP32B**



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**TIP32C
TIP33A
TIP33C
TIP35A
TIP35C
TIP36A
TIP36C
TIP41
TIP41A
TIP41B
TIP41C
TIP42
TIP42A
TIP42B
TIP42C
TIPC122WP
TIPC127WP**