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**FINAL PRODUCT/PROCESS CHANGE NOTIFICATION**  
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**08-NOV-2001**

**SUBJECT: ON Semiconductor Final Product/Process Change Notification #12040**

**TITLE: Final Notification – Phase#3 - Bipolar Power Wafer Fab Transfer TLS-BP6 to PHX-BP/ZR Fab**

**EFFECTIVE DATE: 07-Jan-2002**

**AFFECTED CHANGE CATEGORY(S): On Semiconductor Fab Site, Subcontractor Fab Site**

**AFFECTED PRODUCT DIVISION: Bipolar Discrete Products**

**ADDITIONAL RELIABILITY DATA:** Available

Contact your local ON Semiconductor Sales Office or Terry Franks <RDMM60@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 Fred Marchesi <RGM520@onsemi.com>

**DISCLAIMER:**

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 3rd 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 Power 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.

**QUALIFICATION PLAN:**

<u>Test*</u>	<u>Conditions</u>	<u>Exceptions</u>
Parametric verification	Per device specification @ 25DegC	
HTRB	1000 hrs Vcb=80% T=150DegC	
Temp Cycle	1K cycles - 65DegC to 150DegC	
IOL	15K cycles Dtj=100DegC	
Thermal Resistance		Delta VBE
Die Shear	Pre & Post process change comp.	
Wire Bond Strength	Pre & Post process change comp.	
Wire Bond Shear	Method 3	



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**Qualification Vehicle Justification:**

<u>Family</u>	<u>Qualification Device</u>	<u>Reason Chosen</u>
PNP	MJ21193	Large Die size, high voltage
NPN	MJ21194	Large Die size, high voltage

**RELIABILITY DATA SUMMARY:**

Reliability Data: Interim Reliability Tests results after completion of 504 hrs. Final Reliability Report available after completion of 1000 hours.

Test Description	Interval	MJ21194			MJ21193 *	
		Control	Lot#1	Lot#2	Control	Lot# 1
HTRB	504 hrs	0/77	0/77	0/77		
IOL	2500 cyc	0/77	0/77	0/77		
Temp Cycle	500 cyc	0/77	0/77	0/77		

\* Reliability Data for device MJ21193 will be available on Nov 30

**ELECTRICAL CHARACTERISTIC SUMMARY:**

<u>MJ21193 Test</u>	<u>IEBO</u>	<u>ICEO</u>	<u>BVCBO</u>	<u>BVCEO</u>	<u>HFE</u>	<u>HFE</u>	<u>VBE(on)</u>	<u>VCE(sat)</u>	
Cond1					Ic=8A	Ic=16A	Ic=8A	Ic=8A	
Group	Cond2 Vbe=5V	Vce=200V	Ic=100ua	Ic=100mA	Vce=5V	Vce=5V	Vce=5V	Ib=0.8A	
	Limit=<100uA	<100uA	>250V	>250V	25-75	>8	<2.2V	<1.4V	
Eval	Mean	1.6E-8	9.6E-7	330.3	325.5	36.8	18.1	1.302	0.515
Lot	StDev	6.1E-8	4.5E-7	13.4	11.0	1.8	0.9	0.019	0.060
	Cpk	546	74	2.0	2.3	2.2	3.7	15.7	4.9
Control	Mean	6.5E-9	4.1E-6	326.4	326.6	32.0	16.6	1.353	0.410
Lot	StDev	6.4E-9	1.4E-6	9.5	7.8	1.6	0.7	0.025	0.053
	Cpk	5208	22	2.7	3.3	1.5	4.1	11.3	6.2

<u>MJ21194 Test</u>	<u>IEBO</u>	<u>ICEO</u>	<u>BVCBO</u>	<u>BVCEO</u>	<u>HFE</u>	<u>HFE</u>	<u>VBE(on)</u>	<u>VCE(sat)</u>	
Cond1					Ic=8A	Ic=16A	Ic=8A	Ic=8A	
Group	Cond2 Vbe=5V	Vce=200V	Ic=100ua	Ic=100mA	Vce=5V	Vce=5V	Vce=5V	Ib=0.8A	
	Limit=<100uA	<100uA	>250V	>250V	25-75	>8	<2.2V	<1.4V	
Eval	Mean	3.6E-8	2.2E-07	763.4	344.8	44.4	20.5	1.347	0.247
Lot	StDev	6.4E-8	7.6E-08	78.7	5.3	2.6	1.1	0.022	0.006
	Cpk	521	438	2.2	6.0	2.5	3.8	12.9	64
Control	Mean	1.9E-8	1.7E-6	713.2	317.1	50.0	19.2	1.452	0.302
Lot	StDev	1.3E-9	3.5E-7	88.5	4.3	3.7	1.9	0.046	0.007
	Cpk	25636	94	1.7	5.2	2.3	2.0	5.4	55

**CHANGED PART IDENTIFICATION:**

Customers may receive Bipolar - Power Base Products with the silicon Chip manufactured at the Phoenix BP/ZR Fab starting with product marked with Date Code 0202.



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**AFFECTED DEVICE LIST(WITHOUT SPECIALS):**

**PART**

2N6609  
MJ11021  
MJ11022  
MJ15003  
MJ15004  
MJ15011  
MJ15012  
MJ15022  
MJ15023  
MJ15024  
MJ15025  
MJ21193  
MJ21194  
MJ21195  
MJ21196  
MJC11021WP  
MJC11022WP  
MJC15003WP  
MJC15004WP  
MJE4343  
MJH11017  
MJH11018  
MJH11019  
MJH11020  
MJH11021  
MJH11022  
MJL1302A  
MJL21193  
MJL21194  
MJL21195  
MJL21196  
MJL3281A  
MJW1302A  
MJW21191  
MJW21192  
MJW21193  
MJW21194  
MJW21195  
MJW21196  
MJW3281A