



FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
Generic Copy

03-MAR-2004

SUBJECT: ON Semiconductor Final Product/Process Change Notification #13326

TITLE: Phase 1 Qualification of Schottky Rectifier Wafer Production in LiON Microelectronics, LLC

EFFECTIVE DATE: 03-May-2004

AFFECTED CHANGE CATEGORY: Subcontractor Fab Site

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 Dianne Von Borstel <RPDR20@onsemi.com>

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:
Contact Sales Office or Louis Tsai <FFNT6M@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:

In order to provide additional capacity to service our customers' increasing demand for our Schottky Rectifier products, ON Semiconductor is qualifying a new wafer fabrication facility, LiON Microelectronics, located in Hangzhou, China.

LiON Microelectronics will be using an ON Semiconductor supplied equipment set with the same process technology flow as the current wafer fab. Qualifications and ramp up of LiON Microelectronics is being managed by ON Semiconductor personnel.

There will be no change in electrical performance with products from the new wafer fab.

This is the final PCN for Phase 1 of two phases of the initial PCN #13211.



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RELIABILITY DATA SUMMARY:

Six different qualification vehicles have been carefully selected to address all critical variables and interactions of wafer design features, process considerations, mechanical construction, and electrical characteristics.

ON Part Number	Rated Voltage	Package
MBR2545CT	45V	TO-220
MBR20200CT	200V	TO-220
MBR1100	100V	DO-41
MBR0530T1	30V	SOD-123
MBRS130LT3	30V	SMB
MBRP400100CTL	100V	TO-218

Results for three of these qualification vehicles are presented in this PCN, and they are MBR2545CT, MBR20200CT, and MBR1100. Results for qualification vehicles MBR0530T1, MBRS130LT3, and MBRP400100CTL will be presented in the Phase 2 PCN projected for release on 04/14/2004.

Reliability Results for Devices MBR2545CT, MBR20200CT and MBR1100:

Test	Conditions	Interval	Sample Size 3 Lots (each device) 77pc/lot
A/clave	Ta=121C, P=15psig, RH=100%	96 hrs	0/231
H3TRB	85C/85%RH, Bias 80% rated voltage	1008 hrs	0/231
HTB	Ta=Device specific	1008 hrs**	0/231
HTRB	Ta=Device specific Bias 80% rated voltage	1008 hrs	0/231
IOL	Ta=25C, delta Tjmax 100C	1008 hrs*	0/231
Temp Cycle	Ta= -65 to +150C	1000 cyc	0/231
RSH	Ta=260C, 10 sec dip	Readout	0/90
* Cycles differ based on package size			
** HTB MBR2545CT (only)		504 hrs	0/231

ELECTRICAL CHARACTERISTIC SUMMARY:

Electrical characterization has been completed on the designated qualification devices. These devices are representative of the entire family and will qualify the process. Datasheet specifications and electrical performance of the devices will remain unchanged.

Characterization summary results:

Device: MBR2545CT DC Test Results

Lot	Temp		Ir @ 45V	Vr @ 0.2mA	Vf @ 30A
Existing	25	MIN	1.93E-05	50.58	0.6804
Fab		MAX	3.06E-05	53.50	0.7119
		MEDIAN	2.22E-05	52.90	0.7007
		AVERAGE	2.27E-05	52.73	0.6988
		STDEV	2.80E-06	0.67	0.0068
		USL	2.00E-04		0.820
		LSL		45	
		CPK	21.14	3.84	5.92



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Lot	Temp		Ir @ 45V	Vr @ 0.2mA	Vf @ 30A
New Fab Grp 1	25	MIN	1.37E-05	50.73	0.6968
		MAX	2.01E-05	52.37	0.7106
		MEDIAN	1.73E-05	51.77	0.7022
		AVERAGE	1.68E-05	51.77	0.7025
		STDEV	2.13E-06	0.33	0.0048
		USL	2.00E-04		0.820
		LSL		45	
		CPK	28.70	6.76	8.17
New Fab Grp 2	25	MIN	2.20E-05	50.02	0.6870
		MAX	2.52E-05	51.10	0.7012
		MEDIAN	2.35E-05	50.74	0.6907
		AVERAGE	2.35E-05	50.74	0.6913
		STDEV	8.20E-07	0.24	0.0034
		USL	2.00E-04		0.820
		LSL		45	
		CPK	71.77	7.82	12.73
New Fab Grp 3	25	MIN	8.41E-06	54.82	0.7407
		MAX	1.35E-05	55.99	0.7572
		MEDIAN	1.02E-05	55.68	0.7490
		AVERAGE	1.05E-05	55.60	0.7490
		STDEV	1.21E-06	0.30	0.0038
		USL	2.00E-04		0.820
		LSL		45	
		CPK	52.07	11.62	6.29

Device: MBR20200CT DC Test Results

Lot	Temp		Ir @ 200V	Vr @ 1mA	Vf @ 10A	Vf @ 20A
Existing Fab	25	MIN	3.55E-08	254.80	0.7782	0.8518
		MAX	8.53E-08	265.50	0.7827	0.8593
		MEDIAN	3.63E-08	263.95	0.7800	0.8541
		AVERAGE	4.16E-08	263.59	0.7802	0.8546
		STDEV	1.22E-08	1.92	0.0010	0.0016
		USL	1.00E-03		0.900	1.000
		LSL		200		
		CPK	27366.40	11.02	40.47	29.81
New Fab Grp 1	25	MIN	4.14E-08	224.20	0.7762	0.8523
		MAX	1.10E-07	259.70	0.7839	0.8625
		MEDIAN	5.07E-08	247.25	0.7806	0.8563
		AVERAGE	5.76E-08	247.60	0.7801	0.8562
		STDEV	1.81E-08	10.36	0.0020	0.0022
		USL	1.00E-03		0.900	1.000
		LSL		200		
		CPK	18408.61	1.53	20.45	21.54
New Fab Grp 2	25	MIN	5.87E-08	241.20	0.7743	0.8505
		MAX	5.27E-06	255.70	0.7797	0.8604
		MEDIAN	6.29E-08	247.90	0.7766	0.8540
		AVERAGE	2.58E-07	249.64	0.7766	0.8544
		STDEV	1.00E-06	4.10	0.0010	0.0019
		USL	1.00E-03		0.900	1.000
		LSL		200		
		CPK	332.75	4.04	42.53	24.98



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Lot	Temp		Ir @ 200V	Vr @ 1mA	Vf @ 10A	Vf @ 20A
New Fab	25	MIN	5.53E-08	213.00	0.7738	0.8477
Grp 3		MAX	3.47E-07	256.60	0.7814	0.8591
		MEDIAN	6.84E-08	244.10	0.7754	0.8514
		AVERAGE	9.22E-08	245.97	0.7759	0.8517
		STDEV	6.49E-08	8.65	0.0018	0.0026
		USL	1.00E-03		0.900	1.000
		LSL		200		
		CPK	5132.89	1.77	23.27	18.78

Device: MBR1100 DC Test Results

Lot	Temp		Ir @ 100V	Vr @ 0.5mA	Vf @ 1A
Existing	25	MIN	1.42E-06	104.90	0.6399
Fab		MAX	4.44E-06	120.00	0.6679
		MEDIAN	1.54E-06	118.70	0.6626
		AVERAGE	1.74E-06	117.00	0.6599
		STDEV	6.14E-07	3.79	0.0070
		USL	5.00E-04		0.790
		LSL		100	
		CPK	270.58	1.49	6.22
New Fab	25	MIN	1.64E-06	114.40	0.6327
Grp 1		MAX	2.22E-06	118.60	0.6574
		MEDIAN	1.92E-06	116.35	0.6450
		AVERAGE	1.91E-06	116.53	0.6451
		STDEV	1.32E-07	1.09	0.0046
		USL	5.00E-04		0.790
		LSL		100	
		CPK	1259.42	5.05	10.48
New Fab	25	MIN	1.71E-06	115.50	0.6386
Grp 2		MAX	2.75E-06	126.30	0.6774
		MEDIAN	2.23E-06	123.15	0.6699
		AVERAGE	2.23E-06	123.02	0.6688
		STDEV	2.18E-07	1.93	0.0067
		USL	5.00E-04		0.790
		LSL		100	
		CPK	760.65	3.97	6.01
New Fab	25	MIN	1.88E-06	120.30	0.6575
Grp 3		MAX	5.91E-06	124.50	0.6727
		MEDIAN	2.21E-06	123.00	0.6656
		AVERAGE	2.36E-06	122.80	0.6654
		STDEV	7.07E-07	1.31	0.0038
		USL	5.00E-04		0.790
		LSL		100	
		CPK	234.69	5.81	11.01

Full characterization reports are available upon request.

CHANGED PART IDENTIFICATION:

Products with date code 0418 (May 3, 2004) and forward may be from the new wafer fab.



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AFFECTED DEVICE LIST (WITHOUT SPECIALS):

PART

MBR0540T1
MBR0540T1G
MBR0540T3
MBR0540T3G
MBR10100
MBR1035
MBR1045
MBR1060
MBR1060G
MBR1080
MBR1090
MBR1100
MBR1100RL
MBR150
MBR150RL
MBR1535CT
MBR1535CTG
MBR1545CT
MBR1545CTG
MBR1545CTP
MBR160
MBR160RL
MBR16100CT
MBR16100CTG
MBR1635
MBR1645
MBR20100CT
MBR20100CTG
MBR20200CT
MBR20200CTG
MBR2030CTL
MBR2045CT
MBR2045CTG
MBR2045CTP
MBR2060CT
MBR2080CT
MBR2090CT
MBR2090CTLFAJ
MBR20H100CT
MBR2535CT
MBR2535CTG
MBR2545CT
MBR2545CTG
MBR3045PT
MBR3045WT
MBR3060
MBR3060RL
MBR3100
MBR3100RL
MBR340
MBR340RL
MBR350RL



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MBR360
MBR360RL
MBR4045PT
MBR4045WT
MBR6045PT
MBR6045WT
MBR7030WT
MBR735
MBR735G
MBR745
MBRB1045
MBRB1045T4
MBRB1545CT
MBRB1545CTT4
MBRB1545CTT4G
MBRB20100CT
MBRB20100CTT4
MBRB20200CT
MBRB20200CTT4
MBRB20200CTT4G
MBRB2060CT
MBRB2060CTT4
MBRB20H100CT
MBRB20H100CTT4
MBRB2545CT
MBRB2545CTT4
MBRB2545CTT4G
MBRB3030CT
MBRB3030CTT4
MBRB4030
MBRB4030T4
MBRC1045WP
MBRC1060WP
MBRC1645WP
MBRC20200CTWP
MBRD320
MBRD320RL
MBRD320T4
MBRD330
MBRD330RL
MBRD330T4
MBRD340
MBRD340G
MBRD340RL
MBRD340T4
MBRD340T4G
MBRD350
MBRD350RL
MBRD350T4
MBRD360
MBRD360RL
MBRD360T4
MBRD360T4G
MBRD620CTT4
MBRD620CTT4G
MBRD630CTT4



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MBRD640CT
MBRD640CTG
MBRD640CTT4
MBRD640CTT4G
MBRD650CT
MBRD650CT1
MBRD650CTT4
MBRD660CT
MBRD660CTRL
MBRD660CTT4
MBRD660CTT4G
MBRF20100CT
MBRF20200CT
MBRF2060CT
MBRF2545CT
MBRF2545CTG
MBRP20030CTL
MBRP40045CTL
MBRP60035CTL
MBRS1100T3
MBRS1100T3G
MBRS190T3
MBRS1H100T3
MBRS1H90T3
MBRS3100T3
MBRS3200T3
MBRS360T3
MBRS360T3G
NRVB0540T1
NRVB0540T3
NRVB10100
NRVB2545CT
NRVB745
SBR360RL
SBR5571-002
SBR81045
SBR820100CT
SBRB1545CT
SBRB1545CTT4
SBRB20100CT
SBRB20100CTT4
SBRB20200CTT4
SBRB2545CTT4
SBRB3030CTT4
SBRD8340T4
SBRD8360T4
SBRS81100T3
SBRS81100T3G
SBRS8190T3
SS16T3
SS16T3G