ON Semiconductor

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
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30-MAY-2003

SUBJECT: ON Semiconductor Final Product/Process Change Notification #12940

TITLE: Schottky Die Shrink

EFFECTIVE DATE: 30-Jul-2003

AFFECTED CHANGE CATEGORY: Die Shrink

AFFECTED PRODUCT DIVISION: Bipolar Discretes Products Div

ADDITIONAL RELIABILITY DATA: Available
Contact your local ON Semiconductor Sales Representative or Laura Rivers <S20636@onsemi.com>

SAMPLES: Contact your local ON Semiconductor Sales Representative
or Dianne Von Borstel <RPDR20@onsemi.com>

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:
Contact Sales Representative or Leon Gross <RXJK20@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:
On Semiconductor is qualifying a reduction in die size for these Schottky Rectifier devices. The new die design will continue to be processed the same as the previous design. The new design uses the same design rules as the previous design. The new design will meet the same data sheet specifications as the previous design. This is the final PCN for phase 1 of Initial PCN #12687.

RELIABILITY DATA SUMMARY:
MBRM120ET3
3 shrink lots passed:
HTRB - 1008 hours
IOL - 15000 cycles
Temp Cycle - 1000 cycles

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TEST	CONDITIONS	INTERVAL	SIZE	FAILURES
A/clave	Ta = 121 deg C,	0 hrs	252	0/252
	P =15 psig, RH = 100%	96 hrs	252	0/252
HTRB	Ta = 150 deg C, VR = 0.8V	0 hrs	252	0/252
		504 hrs	252	0/252
		1008 hrs	252	0/252
IOL	Ta = 25 deg C, delta	0 cycles	252	0/252
	Tj => 100 deg C,	7500 cycles	252	0/252
	2 minutes on/off	15000 cycles	252	0/252
TC	Air to Air;	0 cycles	252	0/252
	65 deg C to 150 deg C	500 cycles	252	0/252
		1000 cycles	252	0/252
Electro Static Discharge	Human Body Model	N/A	24	Class 3 >16kV
	Machine Model	N/A	24	Class C ->400V

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: MBRA120ET3 DC Test Results

Lot	Temp	Ir @ 5V	Ir @ 10V	Ir @ 20V	Vr	Vf @ 100mA	Vf @ 1A	Vf @ 2A
CONTROL	25 Min	4.53E-08	7.83E-08	3.13E-07	31.13	0.409	0.485	0.517
	Average	4.81E-08	8.48E-08	3.37E-07	31.84	0.411	0.487	0.519
	Max	5.75E-08	1.48E-07	5.53E-07	32.85	0.412	0.488	0.521
	STDEV	2.41E-09	1.26E-08	4.30E-08	0.38	0.002	0.002	0.002
	USL	5.00E-05	1.00E-04	2.00E-04		0.455	0.530	0.595
	LSL				20.00			
	CPK	6.90E+03	2.65E+03	1.55E+03	10.39	9.561	9.406	15.123
ENG1	25 Min	4.53E-08	7.59E-08	2.62E-07	34.15	0.409	0.486	0.519
	Average	5.53E-08	9.28E-08	3.25E-07	35.46	0.412	0.489	0.523
	Max	6.60E-08	1.11E-07	4.42E-07	36.08	0.415	0.492	0.525
	STDEV	5.78E-09	9.88E-09	4.30E-08	0.49	0.002	0.002	0.002
	USL	5.00E-05	1.00E-04	2.00E-04		0.455	0.530	0.595
	LSL				20.00			
	CPK	2.88E+03	3.37E+03	1.55E+03	10.52	8.327	8.179	13.798
ENG2	25 Min	4.62E-08	7.83E-08	2.85E-07	32.17	0.409	0.485	0.519
	Average	5.08E-08	8.59E-08	3.10E-07	32.93	0.410	0.487	0.520
	Max	5.51E-08	9.31E-08	3.35E-07	34.12	0.412	0.488	0.522
	STDEV	2.66E-09	4.42E-09	1.54E-08	0.49	0.001	0.001	0.001
	USL	5.00E-05	1.00E-04	2.00E-04		0.455	0.530	0.595
	LSL				20.00			
	CPK	6.25E+03	7.53E+03	4.32E+03	8.86	18.498	20.243	33.310

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Lot	Temp	Ir @ 5V	Ir @ 10V	Ir @ 20V	Vr	Vf @ 100mA	Vf @ 1A	Vf @ 2A
ENG3	25 Min	4.31E-08	7.42E-08	2.86E-07	31.24	0.408	0.484	0.518
	Average	4.60E-08	7.91E-08	3.14E-07	32.08	0.412	0.488	0.521
	Max	5.29E-08	9.18E-08	3.65E-07	32.76	0.413	0.489	0.522
	STDEV	2.05E-09	3.52E-09	1.49E-08	0.36	0.001	0.001	0.001
	USL	5.00E-05	1.00E-04	2.00E-04		0.455	0.530	0.595
	LSL				20.00			
	CPK	8.10E+03	9.47E+03	4.48E+03	11.17	16.976	17.252	28.545

Device: MBRM120ET3 DC Test Results

Lot	Temp	Ir @ 5V	Ir @ 10V	Vr	Vf @ 100 mA	Vf @ 1 A	Vf @ 2 A	Vf @ 4 A
CONTROL	25 Min	5.66E-08	9.66E-08	31.29	0.402	0.480	0.514	0.563
	Average	7.26E-08	1.29E-07	32.43	0.405	0.483	0.517	0.566
	Max	1.01E-07	2.04E-07	33.69	0.409	0.485	0.519	0.569
	StdDev	8.95E-09	2.20E-08	0.55	0.001	0.001	0.001	0.002
	USL	1.00E-06	1.00E-05		0.455	0.530	0.595	0.700
	LSL			20.00				
	CPK	34.53	1.50E+02	7.55	13.053	13.235	21.182	29.755
ENG1	25 Min	4.74E-08	8.08E-08	31.13	0.408	0.486	0.520	0.568
	Average	5.16E-08	9.02E-08	33.13	0.410	0.487	0.522	0.571
	Max	5.93E-08	1.14E-07	34.69	0.412	0.489	0.524	0.575
	StdDev	3.24E-09	8.57E-09	0.77	0.001	0.001	0.001	0.001
	USL	1.00E-06	1.00E-05		0.455	0.530	0.595	0.700
	LSL			20.00				
	CPK	97.44	3.85E+02	5.65	17.131	16.075	23.962	29.072
ENG2	25 Min	4.79E-08	8.57E-08	31.19	0.408	0.485	0.518	0.566
	Average	5.55E-08	1.04E-07	32.48	0.410	0.487	0.521	0.569
	Max	6.81E-08	1.41E-07	33.21	0.413	0.490	0.524	0.572
	StdDev	4.42E-09	1.38E-08	0.45	0.001	0.001	0.001	0.001
	USL	1.00E-06	1.00E-05		0.455	0.530	0.595	0.700
	LSL			20.00				
	CPK	71.15	2.39E+02	9.28	12.465	12.420	20.491	29.937
ENG3	25 Min	6.12E-08	1.03E-07	4.06	0.405	0.484	0.518	0.568
	Average	7.17E-08	1.26E-07	35.52	0.409	0.487	0.522	0.572
	Max	8.32E-08	1.58E-07	36.08	0.411	0.489	0.524	0.575
	StdDev	6.54E-09	1.43E-08	0.48	0.001	0.001	0.001	0.002
	USL	1.00E-06	1.00E-05		0.455	0.530	0.595	0.700
	LSL			20.00				
	CPK	47.34	2.30E+02	10.68	10.456	10.493	16.661	22.205

Additional data on UIS, IFSM, and ESD available on request.

CHANGED PART IDENTIFICATION:
There will be no changes to device marking, case outline, and package functionality. Change will be tracked by date code.

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AFFECTED DEVICE LIST (WITHOUT SPECIALS):

PART
MBRA120ET3
MBRM110ET1
MBRM110ET3
MBRM120ET1
MBRM120ET3