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PRODUCT / PROCESS CHANGE NOTIFICATION
Generic Copy

24-OCT-2000

SUBJECT: Product/Process Change Notification 10340

TITLE: SEEFULL CHINA FAB/ASSY SITE QUAL FOR GEN. PURPOSE RECTIFIERS

EFFECTIVE DATE: 03-Feb-2001

AFFECTED CHANGE CATEGORY(S)

SUBCONTRACTOR ASSEMBLY SITE
SUBCONTRACTOR FAB SITE

AFFECTED PRODUCT DIVISION(S)

BIPOLAR DISCRETES PRODUCTS DIVISION

ADDITIONAL RELIABILITY DATA: Available
Contact (George Dorman, <R23125@onsemi.com>)

SAMPLES: Available
Contact (Mike Schager, <RMF150@onsemi.com>)

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:
Contact (Mike Schager, <RMF150@onsemi.com>)

DISCLAIMER:

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 pleased to announce that it has qualified our Subcontractor Lite-On's Seefull China facility for the Wafer Fab and Assembly of General Purpose Axial-Lead products; 1N4001-series, 1N4933-series, 1N5400-series, and MR852-series.

Lite-On has been a subcontractor to ON Semiconductor for over 10 (ten) years and is certified to QS-9000, ISO-9001, and ISO-14000. There will be no change to the function of the devices. Device parameters will continue to meet all Data Book specifications, and reliability will continue to meet or exceed ON Semiconductor standards.

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QUALIFICATION PLAN: (PER AEC-Q101 GUIDELINES)

TEST*	CONDITIONS	EXCEPTIONS
HTRB	Vr=80% rated, Ta=150 degC , 1000 hrs.	
Temp Cycle	Air to Air, -65 to +150 degC, 1000 cycles	
Autoclave	Ta=121 degC, RH= 100%, PSIg=15, 96 hrs.	
H3TRB	Vr=80% rated, Ta=85 degC, RH= 85%, 1000 hrs.	
IOL	Ta=25 degC, delta Tj =>100 degC, 2 minutes on/off, 15000 cycles	
High Temp Storage	150 degC, 1000 hrs.	
D.P.A.	Post H3TRB and Temp Cycle	
Physical Dimension	Per Case Outline Drawing	
Terminal Strength	Force reqd to separate solder joints	Lead Pull
Res. to Solvents	Verify Marking Permanency	
Res. To Solder Heat	270 degC, Td=10s	
Solderability	245 degC Td= 5s	
Thermal Resistance	Measure Rjc	

QUALIFICATION VEHICLE JUSTIFICATION

FAMILY	Io	QUAL. DEVICE	REASON CHOSEN
Standard Recovery	3A	1N5408	Largest Die/Highest Voltage
	1A	1N4007	Largest Die/Highest Voltage
Fast Recovery	3A	MR856	Largest Die/Highest Voltage
	1A	1N4937	Largest Die/Highest Voltage

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RELIABILITY DATA SUMMARY

(INTERIM RELIABILITY TESTS)

RESULTS: STANDARD RECOVERY PRODUCTS

		1N5408		1N4007		
TEST DESCRIP.	INTERVAL	CONTROL ZP05957832	TEST LOT PK60387832	CONTROL ZP05895732	TEST LOT PK60115732	TEST LOT PK51495732
HTRB	500 hrs	0/77	0/77	0/77	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77	0/77	0/77	0/77
Autoclave	96 hrs	0/77	0/77	0/77	0/77	0/77
H3TRB	500 hrs	0/77	0/77	0/77	0/77	0/77
IOL	7500 cyc	0/77	0/77	0/77	0/77	0/77
High Temp. Storage	500 hrs	0/77	0/77	0/77	0/77	0/77
D.P.A.	-	1Nov00	1Nov00	1Nov00	1Nov00	1Nov00
Phys. Dimen.	-	Pass	Pass	Pass	Pass	Pass
Terminal Strength	-	Pass	Pass	Pass	Pass	Pass
Resist. to Solvents	-	Pass	Pass	Pass	Pass	Pass
Res. To Solder Heat	-	Pass	Pass	Pass	Pass	Pass
Solderability	-	Pass	Pass	Pass	Pass	Pass
Thermal Resistance	-	1Nov00	1Nov00	1Nov00	1Nov00	1Nov00

RESULTS: FAST RECOVERY PRODUCTS

		MR856			1N4937	
TEST DESCRIP.	INTERVAL	CONTROL ZP06508632	TEST LOT PK90368632	TEST LOT PK90398632	CONTROL ZP06436732	TEST LOT PK60036732
HTRB	500 hrs	0/77	0/77	0/77	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77	0/77	0/77	0/77
Autoclave	96 hrs	0/77	0/77	0/77	0/77	0/77
H3TRB	500 hrs	0/77	0/77	0/77	0/77	0/77
IOL	7500 cyc	0/77	0/77	0/77	0/77	0/77
High Temp Storage	500 hrs	0/77	0/77	0/77	0/77	0/77
D.P.A.	-	1Nov00	1Nov00	1Nov00	1Nov00	1Nov00
Physical Dimension	-	Pass	Pass	Pass	Pass	Pass
Terminal Strength	-	Pass	Pass	Pass	Pass	Pass
Resist. to Solvents	-	Pass	Pass	Pass	Pass	Pass
Res. to Solder Heat	-	Pass	Pass	Pass	Pass	Pass
Solderability	-	Pass	Pass	Pass	Pass	Pass
Thermal Resistance	-	1Nov00	1Nov00	1Nov00	1Nov00	1Nov00

Reliability Testing Conclusions:
Interim Reliability Test data is consistent with passing ON Semiconductor / AEC-Q101 requirements. A copy of the full Reliability Report will available in November 2000, upon request.

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ELECTRICAL CHARACTERIZATION RESULTS:

STANDARD RECOVERY PRODUCTS Tj = 25 degC

DEVICE NUMBER	1N5408		1N4007		
GROUP	CONTROL	TEST LOT	CONTROL	TEST LOT	TEST LOT
LOT NUMBER	ZP05957832	PK60387832	ZP05895732	PK60115732	PK51495732
Vf (mV)					
Minimum	921	882	899	897	903
Maximum	941	905	929	927	953
Average	929	891	912	911	925
Std. Dev.	4	4	6	6	10
Cpk	5.9	9.1	4.9	4.9	2.5
Ir @ 1000V (uA)					
Minimum	0.147	0.158	0.105	0.103	0.047
Maximum	0.465	0.448	0.210	0.208	0.343
Average	0.308	0.269	0.138	0.136	0.111
Std. Dev.	0.040	0.060	0.021	0.021	0.052
Cpk	80.8	54.1	77.2	77.2	31.3

FAST RECOVERY PRODUCTS Tj = 25 degC

DEVICE NUMBER	MR856			1N4937	
GROUP	CONTROL	TEST LOT	TEST LOT	CONTROL	TEST LOT
LOT NUMBER	ZP06508632	PK90368632	PK90398632	ZP06436732	PK60036732
Vf (mV)					
Minimum	958	974	961	972	1005
Maximum	1102	1171	1187	1176	1156
Average	1016	1037	1048	1054	1052
Std. Dev.	30	38	45	41	25
Cpk	2.6	1.9	1.5	1.2	2.0
Ir @ 600V					
Minimum	0.515	0.110	0.079	0.183	0.172
Maximum	1.170	1.197	1.282	0.708	0.519
Average	0.763	0.765	0.623	0.315	0.270
Std. Dev.	0.147	0.240	0.369	0.103	0.063
Cpk	20.9	12.8	8.5	15.2	25.0
Trr (nS)					
Minimum	82	73	69	73	72
Maximum	98	105	97	94	107
Average	91	84	83	83	84
Std. Dev.	4.4	5.2	7.1	4.3	6.1
Cpk	8.3	7.4	5.5	9.2	6.4

CHANGED PART IDENTIFICATION:

Customers may receive these products manufactured at the Seefull, China site starting with Date Code 0105 or later. The marking on these products will include PK.

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AFFECTED DEVICE LIST:

PART Number
1N4001
1N4001FF
1N4001RL
1N4002
1N4002FF
1N4002RL
1N4003
1N4003FF
1N4003RL
1N4004
1N4004FF
1N4004RL
1N4005
1N4005FF
1N4005RL
1N4006
1N4006FF
1N4006RL
1N4007
1N4007FF
1N4007RL
1N4933
1N4933RL
1N4934
1N4934RL
1N4935
1N4935RL
1N4936
1N4936RL
1N4937
1N4937RL
1N5400
1N5400RL
1N5401
1N5401RL
1N5402
1N5402RL
1N5404
1N5404RL
1N5406
1N5406RL
1N5407
1N5407RL
1N5408
1N5408RL
MR850
MR851
MR851RL
MR852
MR852RL
MR854
MR854RL
MR856
MR856RL