



Final Product/Process Change Notification
Generic Copy

05-APR-2002

SUBJECT: ON Semiconductor Final Product Change Notification #12398

TITLE: Qualification of Subcontractor for Thyristor Wafer Fabrication

EFFECTIVE DATE: 08-JUN-2002

AFFECTED CHANGE CATEGORY: ON Semiconductor Fab Site

AFFECTED PRODUCT DIVISION: Bipolar Discretes Products Div

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
Barbara Matteson, <RM2230@onsemi.com>

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

Contact Sales Office or Shahin Badiee <RA5032@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 is pleased to announce the qualification of our subcontractor, Lite-On's Keelung, Taiwan facility for the wafer fabrication of our Thyristor products. Lite-On has been a subcontractor to ON Semiconductor for over 10 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.

Reliability Data can be found at the following URL.

For Electrical Data, go to this URL:

Changed Part Identification:

Product Marked with date codes 0224 (year 2002, workweek 24) or later, may contain die fabricated in Lite-On.

Supporting Information:

Qualification Plan (Per AEC-Q101 guidelines)

Test	Conditions	Exceptions
HTRB	Vr=80% rated, Ta=150degC , 1000 hrs.	
Temp Cycle	Air to Air, -65 to +150 C, 1000 cycles	
Autoclave	Ta=121 C, RH= 100%, PSlg=15, 96 hrs.	
H3TRB	Vr=80% rated (100V max), Ta=85 C, RH=85%, 1000 hrs.	
IOL	Ta=25 C, delta Tj =>100 C,	SSOVP, SIDAC
D.P.A.	Post H3TRB and Temp Cycle	
Res. To Solder Heat	260 C, Td=10s	
Electrical Characterization	Tri-Temperatures (Including surge)	
ESD	MM, HBM	
Wire Pull	If applicable	
Wirebond Shear	If applicable	
Die Push-Off	If applicable	

Qualification Vehicle Justification

Family	Package	Qualification Device	# of Lots	Reason Chosen
Triac	TO220 Wire Bond	MAC15N	2	Largest Die/Highest Voltage
SCR	TO220 Wire Bond	MCR25N	1	Largest Die/Highest Voltage
TRIAC	TO-92	MAC97A8	2	Largest Die/Highest Voltage
SCR	TO-92	MCR100-8	1	Largest Die/Highest Voltage
TRIAC	TO220 Clip	MAC212A10	3	Largest Die/Highest Voltage
SSOVP	SMB	MMT10B310T3	3	Largest Die/Highest Voltage
SIDAC	3A Axial-Lead	MKP3V240	3	Largest Die/Highest Voltage

Reliability Tests Results :**Device: TL816 MAC15N TO220**

Test	Interval	Control	Test Lot A	Test Lot B
HTRB	500 hrs	0/77	0/77	0/77
HTFB	500 hrs	0/77	0/77	0/77
H3TRB	500 hrs	0/77	0/77	0/77
IOL	4284 to 8568	0/77	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77	0/77
Autoclave	96 hrs	0/77	0/77	0/77
Res. To Solder Heat	-	0/10	0/10	0/10

Device: TL625-MCR25N TO220

Test	Interval	Control	Test Lot A
HTRB	500 hrs	0/77	0/77
HTFB	500 hrs	0/77	0/77
H3TRB	500 hrs	0/77	0/77
IOL	4284 to 8568	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77
Autoclave	96 hrs	0/77	0/77
Res. To Solder Heat	-	0/10	0/10

Device: TL267 MCR-100-8 TO92

Test	Interval	Control	Test Lot A
HTRB	500 hrs	0/77	0/77
HTFB	500 hrs	0/77	0/77
H3TRB	500 hrs	0/77	0/77
IOL	4284 to 8568	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77
Autoclave	96 hrs	0/77	0/77
Res. To Solder Heat	-	0/10	0/10

Device: TL986A-MAC212A10 TO220

Test	Interval	Control	Test Lot A	Test Lot B	Test Lot C
HTRB	500 hrs	0/77	0/77	0/77	0/77
H3TRB	500 hrs	0/77	0/77	0/77	0/77
HTFB	500 hrs	0/77	0/77	0/77	0/77
IOL	4284 to 8568	0/77	0/77	0/77	0/77
Temp Cycle	500 cyc	0/77	0/77	0/77	0/77
Autoclave	96 hrs	0/77	0/77	0/77	0/77
Res. To Solder Heat	-	0/10	0/10	0/10	0/10

Device: TLL1311 SMT10B310T3 SMB

Test	Interval	Control	Test Lot A	Test Lot B	Test Lot C
HTRB	500 hrs	0/77	0/77	0/77	0/77
HTFB		NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
H3TRB	500 hrs	0/77	0/77	0/77	0/77
IOL		NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
Temp Cycle	500 cyc	0/77	0/77	0/77	0/77
Autoclave	96 hrs	0/77	0/77	0/77	0/77
Res. To Solder Heat	-	0/10	0/10	0/10	0/10

MAC15N Lite On Transfer Eval DC @ 25 C

TL816		IDRM	IDRM	IGTF	IGTS	IGTF	VGTF	VGTS	VGTF	HVTM	HVTM	IH	IH	ILF	ILS	ILF
MAC15N	Max Limit	1.00E-05	1.00E-05	3.50E-02	3.50E-02	3.50E-02	1.50E+00	1.50E+00	1.50E+00	1.60E+00	1.60E+00	4.00E-02	4.00E-02	5.00E-02	8.00E-02	5.00E-02
	Min Limit	0.00E+00	0.00E+00	5.00E-03	5.00E-03	5.00E-03	5.00E-01	5.00E-01	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control Lot CG53273.1t	Max	5.54E-07	5.68E-07	1.14E-02	1.39E-02	1.78E-02	7.88E-01	7.03E-01	7.84E-01	1.24E+00	1.28E+00	1.52E-02	1.39E-02	2.02E-02	2.89E-02	1.78E-02
	Min	3.35E-07	3.13E-07	1.10E-02	1.30E-02	1.49E-02	7.64E-01	6.91E-01	7.61E-01	1.21E+00	1.23E+00	1.25E-02	1.04E-02	1.54E-02	2.58E-02	1.21E-02
	Average	4.54E-07	3.48E-07	1.12E-02	1.34E-02	1.54E-02	7.71E-01	6.96E-01	7.66E-01	1.22E+00	1.24E+00	1.38E-02	1.25E-02	1.88E-02	2.72E-02	1.61E-02
	Stdev	4.67E-08	4.87E-08	1.16E-04	2.46E-04	5.28E-04	5.55E-03	3.33E-03	4.97E-03	5.07E-03	8.96E-03	7.22E-04	8.60E-04	9.96E-04	9.92E-04	1.17E-03
	Cpk (U)	68.16	66.12	68.33	29.33	12.34	43.76	80.48	49.22	24.98	13.44	12.11	10.66	10.44	17.73	9.70
Qual Lot CG15210	Max	3.23E-07	3.79E-07	1.22E-02	1.53E-02	2.02E-02	8.02E-01	7.14E-01	8.01E-01	1.26E+00	1.29E+00	1.82E-02	1.65E-02	2.32E-02	2.98E-02	2.08E-02
	Min	1.41E-07	1.61E-07	1.12E-02	1.39E-02	1.51E-02	7.77E-01	7.03E-01	7.67E-01	1.21E+00	1.23E+00	1.56E-02	1.28E-02	1.83E-02	2.85E-02	1.50E-02
	Average	2.22E-07	2.46E-07	1.16E-02	1.45E-02	1.67E-02	7.88E-01	7.08E-01	7.77E-01	1.22E+00	1.24E+00	1.70E-02	1.46E-02	2.09E-02	2.92E-02	1.81E-02
	Stdev	3.87E-08	5.83E-08	2.74E-04	3.72E-04	1.21E-03	7.49E-03	3.44E-03	7.69E-03	9.58E-03	1.32E-02	9.29E-04	9.95E-04	1.34E-03	3.55E-04	1.52E-03
	Cpk (U)	84.24	55.81	28.49	18.38	5.05	31.71	76.77	31.36	13.09	9.01	8.26	8.50	7.21	47.73	6.99
Qual Lot CG4014Q4	Max	4.23E-07	5.95E-07	1.19E-02	1.39E-02	1.71E-02	7.93E-01	7.07E-01	7.82E-01	1.25E+00	1.28E+00	1.76E-02	1.46E-02	2.23E-02	2.93E-02	1.90E-02
	Min	1.12E-07	1.55E-07	1.10E-02	1.32E-02	1.40E-02	7.77E-01	6.98E-01	7.59E-01	1.20E+00	1.23E+00	1.34E-02	1.04E-02	1.66E-02	2.65E-02	1.26E-02
	Average	2.02E-07	2.51E-07	1.15E-02	1.36E-02	1.53E-02	7.85E-01	7.03E-01	7.68E-01	1.22E+00	1.24E+00	1.55E-02	1.29E-02	2.02E-02	2.80E-02	1.67E-02
	Stdev	8.92E-08	9.29E-08	1.72E-04	1.94E-04	6.76E-04	4.10E-03	2.63E-03	5.38E-03	1.14E-02	1.13E-02	1.23E-03	1.02E-03	1.68E-03	8.46E-04	1.65E-03
	Cpk (U)	36.61	34.97	45.74	36.69	9.75	58.15	101.19	45.40	11.18	10.66	6.66	8.86	5.91	20.47	6.74

	Control Rej/SS	Qual A Rej/SS	Qual B Rej/SS	Qual C Rej/SS	Remarks
VDRM	0/30	0/30	0/30	0/30	Pass
DV/DT	0/10	0/10	0/10	0/10	Pass
ITSM	0/10	0/10	0/10	0/10	Pass

MAC15N Lite On Transfer Eval DC @ 125 C

TL816 MAC15N		IDRM	IRRM
	Max Limit	2.00E-03	2.00E-03
	Min Limit	0.00E+00	0.00E+00
Control Lot	Max	9.72E-04	9.30E-04
CG53273.1t	Min	6.51E-04	5.90E-04
	Average	7.99E-04	7.96E-04
	Stdev	6.71E-05	7.91E-05
	Cpk	5.97	5.07
Qual Lot	Max	1.48E-03	1.47E-03
CG15210	Min	6.21E-04	2.15E-04
	Average	9.41E-04	8.90E-04
	Stdev	1.90E-04	3.09E-04
	Cpk	1.86	1.20
Qual Lot	Max	1.54E-03	1.90E-03
CG15212	Min	3.26E-04	2.06E-04
	Average	8.35E-04	1.09E-03
	Stdev	3.63E-04	4.49E-04
	Cpk	1.07	0.68
Qual Lot	Max	1.17E-03	1.44E-03
CG4014Q4	Min	7.69E-04	7.71E-04
	Average	9.39E-04	1.08E-03
	Stdev	1.15E-04	1.89E-04
	Cpk	3.08	1.63

MCR25N Lite On Transfer Eval DC @ 25 C

TL625 MCR25N		IDRM	IRRM	IGTF	VGTF	IH	IL	VTM
	Max Limit	1.00E-05	1.00E-05	3.00E-02	1.00E+00	4.00E-02	5.00E-02	1.80E+00
	Min Limit	0.00E+00	0.00E+00	4.00E-03	5.00E-01	5.00E-03	0.00E+00	0.00E+00
Control Lot CG543851	Max	1.22E-06	9.83E-07	1.15E-02	6.55E-01	1.34E-02	3.69E-02	1.29E+00
	Min	5.40E-07	5.30E-07	9.04E-03	6.45E-01	8.10E-03	2.47E-02	1.26E+00
	Average	9.60E-07	7.13E-07	1.05E-02	6.49E-01	1.18E-02	3.31E-02	1.26E+00
	Stdev	1.59E-07	1.27E-07	6.29E-04	2.61E-03	1.46E-03	3.12E-03	7.74E-03
	Cpk	19.00	24.29	10.31	44.70	6.43	1.81	23.07
Qual Lot CG5432Q4	Max	1.46E-06	5.39E-07	1.03E-02	6.53E-01	1.31E-02	3.40E-02	1.33E+00
	Min	3.23E-07	2.24E-07	7.64E-03	6.29E-01	6.40E-03	1.90E-02	1.26E+00
	Average	6.79E-07	3.33E-07	9.64E-03	6.45E-01	1.03E-02	3.01E-02	1.27E+00
	Stdev	2.15E-07	7.06E-08	6.38E-04	4.33E-03	1.66E-03	3.44E-03	1.60E-02
	Cpk	14.43	45.67	10.64	27.38	5.97	1.92	11.04

	Control Rej/SS	Qual A Rej/SS	Qual B Rej/SS	Qual C Rej/SS	Remarks
VDRM	0/30	0/30	0/30	0/30	Pass
Di/Dt	0/10	0/10	0/10	0/10	Pass
ITSM	0/10	0/10	0/10	0/10	Pass

MCR100-8 Lite On Transfer Eval DC

25 C

TL267		IDRM	IRRM	IGT (min)	IGT (max)	VGT	IH	VTM	ILF
MCR100-8	Max Limit	1.00E-05	1.00E-05	5.00E-06	1.20E-04	8.00E-01	5.00E-03	1.70E+00	1.00E-02
Control Lot	Max	6.43E-08	2.62E-07	3.22E-05	3.24E-05	6.34E-01	1.90E-03	1.41E+00	3.22E-04
C0565081	Min	3.12E-08	4.57E-08	1.58E-05	1.59E-05	6.17E-01	1.66E-03	1.17E+00	1.95E-04
	Average	3.89E-08	1.01E-07	2.10E-05	2.11E-05	6.27E-01	1.76E-03	1.19E+00	2.44E-04
	Stdev	7.35E-09	4.67E-08	3.77E-06	3.79E-06	3.55E-03	6.32E-05	4.30E-02	2.98E-05
	Cpk	451.74	70.65	1.42	8.69	16.24	17.07	3.98	109.14
Qual Lot	Max	8.74E-08	2.31E-07	5.77E-05	5.78E-05	6.35E-01	2.41E-03	1.26E+00	5.63E-04
C051638	Min	6.48E-08	1.02E-07	3.77E-05	3.79E-05	6.21E-01	1.80E-03	1.17E+00	3.37E-04
	Average	7.38E-08	1.43E-07	4.79E-05	4.80E-05	6.27E-01	1.97E-03	1.18E+00	4.19E-04
	Stdev	5.11E-09	3.06E-08	5.36E-06	5.38E-06	3.36E-03	1.28E-04	1.88E-02	5.05E-05
	Cpk	648.08	107.37	2.66	4.46	17.18	7.89	9.15	63.30

110 C

IDRM	IRRM
1.00E-04	1.00E-04
7.22E-06	2.66E-05
4.62E-06	1.03E-05
5.78E-06	1.61E-05
7.28E-07	4.12E-06
43.16	6.79
1.16E-05	2.39E-05
7.31E-06	1.11E-05
9.15E-06	1.68E-05
9.89E-07	3.88E-06
30.61	7.16

	Control Rej/SS	Qual A Rej/SS	Qual B Rej/SS	Qual C Rej/SS	Remarks
VDRM	0/30	0/30	0/30	0/30	Pass
DV/DT	0/10	0/10	0/10	0/10	Pass
ITSM	0/10	0/10	0/10	0/10	Pass

MAC212A10 Lite On Transfer Eval DC @ 25 C

TL986		IDRM	IRRM	IGT Q1	IGT Q2	IGT Q3	IGT Q4	VGT Q1	VGT Q2	VGT Q3	VGT Q4	VGD Q1	VGD Q2	VGD Q3	VGD Q4	IH Q1	IH Q3	VTM Q1	VTM Q3
MAC212A10	Max Limit	1.00E-05	1.00E-05	5.00E-02	5.00E-02	5.00E-02	7.50E-02	2.00E+00	2.00E+00	2.00E+00	2.50E+00					5.00E-02	5.00E-02	1.75E+00	1.75E+00
	Min Limit											2.00E-01	2.00E-01	2.00E-01	2.00E-01				
Control Lot ZMAC-D	Max	1.79E-06	1.89E-06	7.29E-03	9.95E-03	1.61E-02	6.02E-02	1.35E+00	7.15E-01	9.02E-01	1.99E+00	1.35E+00	7.15E-01	9.01E-01	1.99E+00	7.60E-03	1.09E-02	1.47E+00	1.45E+00
	Min	6.36E-07	6.60E-07	6.02E-03	6.40E-03	1.01E-02	4.49E-02	1.31E+00	6.96E-01	8.30E-01	1.78E+00	1.31E+00	6.96E-01	8.30E-01	1.78E+00	6.30E-03	9.20E-03	1.39E+00	1.37E+00
	Average	9.68E-07	1.08E-06	6.83E-03	7.03E-03	1.26E-02	5.31E-02	1.34E+00	7.07E-01	8.55E-01	1.85E+00	1.34E+00	7.07E-01	8.55E-01	1.85E+00	7.14E-03	1.01E-02	1.41E+00	1.39E+00
	Stdev	2.50E-07	2.95E-07	3.05E-04	7.39E-04	1.56E-03	4.66E-03	1.10E-02	4.86E-03	1.83E-02	5.86E-02	1.08E-02	4.79E-03	1.82E-02	5.85E-02	3.65E-04	4.53E-04	2.07E-02	1.97E-02
	Cpk (U)	12.05	10.08	47.21	19.38	7.99	1.56	20.14	88.62	20.86	3.71	41.25	49.19	15.69	10.54	39.09	29.40	5.46	6.08
Qual Lot ZMAC-A	Max	3.44E-07	1.51E-06	6.47E-03	9.72E-03	2.07E-02	5.24E-02	1.32E+00	7.11E-01	1.02E+00	2.10E+00	1.32E+00	7.12E-01	1.02E+00	2.10E+00	6.90E-03	9.60E-03	1.57E+00	1.55E+00
	Min	1.94E-07	2.52E-07	5.10E-03	5.80E-03	1.04E-02	3.44E-02	1.28E+00	6.96E-01	8.25E-01	1.59E+00	1.28E+00	6.96E-01	8.25E-01	1.59E+00	4.90E-03	6.10E-03	1.39E+00	1.37E+00
	Average	2.50E-07	6.14E-07	5.87E-03	6.42E-03	1.27E-02	3.94E-02	1.30E+00	7.02E-01	8.67E-01	1.73E+00	1.30E+00	7.02E-01	8.67E-01	1.73E+00	6.05E-03	8.28E-03	1.43E+00	1.41E+00
	Stdev	3.93E-08	2.78E-07	3.55E-04	8.89E-04	2.68E-03	4.90E-03	1.05E-02	3.47E-03	4.90E-02	1.40E-01	1.05E-02	3.53E-03	4.91E-02	1.40E-01	5.60E-04	1.19E-03	5.41E-02	5.04E-02
	Cpk	82.66	11.27	41.43	16.34	4.64	2.42	22.21	124.63	7.71	1.83	34.91	47.46	4.53	3.66	26.16	11.64	1.96	2.24
Qual Lot ZMAC-B	Max	2.50E-07	1.20E-06	6.15E-03	9.84E-03	1.69E-02	5.45E-02	1.36E+00	7.09E-01	9.80E-01	2.13E+00	1.36E+00	7.09E-01	9.80E-01	2.13E+00	7.00E-03	9.90E-03	1.53E+00	1.49E+00
	Min	1.95E-07	2.28E-07	5.45E-03	5.70E-03	9.01E-03	3.61E-02	1.32E+00	6.97E-01	8.15E-01	1.66E+00	1.32E+00	6.97E-01	8.16E-01	1.66E+00	5.40E-03	6.50E-03	1.37E+00	1.35E+00
	Average	2.26E-07	5.19E-07	5.85E-03	6.86E-03	1.11E-02	3.98E-02	1.34E+00	7.02E-01	8.50E-01	1.76E+00	1.34E+00	7.02E-01	8.50E-01	1.76E+00	6.31E-03	8.62E-03	1.41E+00	1.39E+00
	Stdev	1.63E-08	2.52E-07	2.44E-04	1.58E-03	2.10E-03	4.02E-03	1.44E-02	2.97E-03	3.78E-02	1.10E-01	1.44E-02	2.89E-03	3.77E-02	1.10E-01	5.57E-04	1.13E-03	4.44E-02	3.70E-02
	Cpk (U)	199.30	12.52	60.39	9.09	6.19	2.92	15.24	145.60	10.16	2.22	26.42	57.81	5.74	4.73	26.15	12.22	2.53	3.25
Qual Lot ZMAC-C	Max	2.55E-07	5.02E-07	6.60E-03	9.93E-03	1.66E-02	5.21E-02	1.36E+00	7.14E-01	9.34E-01	2.07E+00	1.36E+00	7.15E-01	9.34E-01	2.07E+00	7.50E-03	1.10E-02	1.52E+00	1.48E+00
	Min	2.13E-07	1.95E-07	5.44E-03	5.80E-03	1.01E-02	3.80E-02	1.32E+00	7.05E-01	8.25E-01	1.65E+00	1.32E+00	7.04E-01	8.25E-01	1.65E+00	5.30E-03	6.50E-03	1.37E+00	1.35E+00
	Average	2.32E-07	2.29E-07	6.24E-03	7.18E-03	1.10E-02	4.21E-02	1.34E+00	7.09E-01	8.41E-01	1.71E+00	1.34E+00	7.09E-01	8.41E-01	1.71E+00	6.79E-03	9.71E-03	1.40E+00	1.37E+00
	Stdev	7.50E-09	6.08E-08	3.23E-04	1.44E-03	1.38E-03	2.64E-03	8.19E-03	2.21E-03	2.44E-02	9.02E-02	8.94E-03	2.40E-03	2.43E-02	9.05E-02	6.38E-04	1.17E-03	3.31E-02	2.74E-02
	Cpk (U)	434.38	53.53	45.21	9.94	9.39	4.16	27.04	194.77	15.83	2.91	42.34	70.67	8.81	5.57	22.58	11.50	3.57	4.56

	Control Rej/SS	Qual A Rej/SS	Qual B Rej/SS	Qual C Rej/SS	Remarks
VDRM	0/30	0/30	0/30	0/30	Pass
DV/DT	0/10	0/10	0/10	0/10	Pass
ITSM	0/10	0/10	0/10	0/10	Pass

MAC212A10 Lite On Transfer EvalDC @ 125 C

TL986		IDRM	IRRM
MAC212A10	Max Limit	2.00E-03	2.00E-03
Control Lot	Max	6.59E-04	6.65E-04
ZMAC-D	Min	3.24E-04	3.82E-04
	Average	4.69E-04	5.26E-04
	Stdev	7.76E-05	7.12E-05
	Cpk	6.57	6.90
Qual Lot	Max	2.77E-04	4.21E-04
ZMAC-A	Min	2.02E-04	2.27E-04
	Average	2.36E-04	3.00E-04
	Stdev	1.98E-05	5.46E-05
	Cpk	29.66	10.37
Qual Lot	Max	3.01E-04	3.48E-04
ZMAC-B	Min	2.18E-04	2.00E-04
	Average	2.62E-04	2.50E-04
	Stdev	2.11E-05	3.56E-05
	Cpk	27.42	16.37
Qual Lot	Max	2.31E-04	2.27E-04
ZMAC-C	Min	1.77E-04	1.62E-04
	Average	2.09E-04	1.79E-04
	Stdev	1.34E-05	1.23E-05
	Cpk	44.62	49.40

SMT10B310T3 Lite On Transfer Eval DC @ 25 C

Lot C14311-4															
Control	IR (50V)	IR (-50V)	IR (275V)	IR (-275V)	VZS (1mA)	VZS (-1mA)	VBO (0.9A)	VBO (-0.9A)	IHS (7V)	IHS(-7V)	VTP(1mA)	VTP (-1mA)	VZS (10uA)	VZS (-10uA)	
Max Limit	2.00E-06	2.00E-06	5.00E-06	-5.00E-06	3.65E+02	-3.65E+02	4.00E+02	-4.00E+02	4.40E-01	-4.40E-01	5.00E+00	5.00E+00	4.30E+02	-4.30E+02	
Min Limit									1.75E-01	-1.75E-01					
Max	4.05E-08	-2.15E-08	2.17E-07	-5.66E-08	3.39E+02	-3.07E+02	3.35E+02	-3.03E+02	3.69E-01	-2.27E-01	1.83E+00	-1.36E+00	3.35E+02	-3.02E+02	
Min	2.20E-08	-4.07E-08	5.53E-08	-1.83E-07	3.05E+02	-3.32E+02	3.02E+02	-3.29E+02	2.11E-01	-3.59E-01	1.35E+00	-1.82E+00	2.83E+02	-3.29E+02	
Average	3.08E-08	-3.07E-08	9.71E-08	-9.78E-08	3.19E+02	-3.17E+02	3.15E+02	-3.14E+02	2.82E-01	-2.79E-01	1.55E+00	-1.55E+00	3.13E+02	-3.12E+02	
Stdev	5.41E-09	5.78E-09	3.07E-08	2.87E-08	6.83E+00	5.93E+00	7.18E+00	6.36E+00	4.53E-02	4.11E-02	1.35E-01	1.37E-01	8.73E+00	6.33E+00	
Cpk	121.36	117.20	53.30	57.00	2.26	2.71	3.96	4.52	0.79	0.84	8.53	15.91	4.46	6.21	
LOT Q14311-1															
Max	4.15E-08	-2.51E-08	1.19E-07	-6.86E-08	3.26E+02	-2.94E+02	3.25E+02	-2.94E+02	3.47E-01	-2.20E-01	2.01E+00	-1.47E+00	3.23E+02	-2.85E+02	
Min	2.54E-08	-4.07E-08	6.92E-08	-1.21E-07	2.96E+02	-3.25E+02	2.93E+02	-3.23E+02	2.34E-01	-3.13E-01	1.48E+00	-1.93E+00	2.86E+02	-3.22E+02	
Average	3.33E-08	-3.33E-08	9.35E-08	-9.42E-08	3.14E+02	-3.14E+02	3.11E+02	-3.11E+02	2.76E-01	-2.62E-01	1.66E+00	-1.64E+00	3.09E+02	-3.08E+02	
Stdev	4.27E-09	4.34E-09	1.44E-08	1.48E-08	7.49E+00	7.45E+00	7.15E+00	6.71E+00	2.71E-02	2.31E-02	1.32E-01	1.25E-01	8.31E+00	8.25E+00	
Cpk	153.48	156.21	113.20	110.13	2.26	2.30	4.15	4.41	1.24	1.25	8.42	17.75	4.85	4.92	
LOT Q14311-2															
Max	3.93E-08	-1.52E-08	1.08E-07	-3.79E-08	3.32E+02	-2.99E+02	3.28E+02	-2.96E+02	3.88E-01	-2.33E-01	1.84E+00	-1.41E+00	3.28E+02	-2.93E+02	
Min	1.66E-08	-3.59E-08	4.24E-08	-1.04E-07	2.99E+02	-3.28E+02	2.95E+02	-3.29E+02	2.25E-01	-3.59E-01	1.35E+00	-1.97E+00	2.90E+02	-3.24E+02	
Average	2.48E-08	-2.45E-08	6.71E-08	-6.70E-08	3.17E+02	-3.17E+02	3.14E+02	-3.15E+02	2.87E-01	-2.83E-01	1.55E+00	-1.57E+00	3.11E+02	-3.12E+02	
Stdev	6.80E-09	6.57E-09	2.05E-08	2.18E-08	8.33E+00	6.72E+00	7.60E+00	7.03E+00	4.77E-02	4.22E-02	1.50E-01	1.43E-01	9.06E+00	7.73E+00	
Cpk	96.76	102.72	80.22	75.27	1.93	2.38	3.78	4.03	0.79	0.86	7.65	15.33	4.37	5.09	
LOT Q14311-3															
Max	2.68E-08	-1.64E-08	1.77E-07	-4.52E-08	3.45E+02	-3.05E+02	3.41E+02	-3.03E+02	3.65E-01	-2.47E-01	1.73E+00	-1.37E+00	3.40E+02	-2.94E+02	
Min	1.65E-08	-2.40E-08	4.38E-08	-1.35E-07	7.42E+01	-3.27E+02	3.03E+02	-3.23E+02	2.52E-01	-3.59E-01	1.41E+00	-1.80E+00	3.01E+02	-3.23E+02	
Average	2.13E-08	-2.01E-08	5.67E-08	-5.53E-08	3.11E+02	-3.18E+02	3.15E+02	-3.14E+02	2.97E-01	-2.94E-01	1.55E+00	-1.54E+00	3.14E+02	-3.13E+02	
Stdev	2.35E-09	1.89E-09	2.34E-08	1.63E-08	4.54E+01	5.77E+00	8.52E+00	5.51E+00	3.26E-02	3.38E-02	8.90E-02	9.21E-02	8.33E+00	7.01E+00	
Cpk	281.08	355.92	70.34	100.85	0.40	2.73	3.34	5.21	1.46	1.44	12.94	23.68	4.64	5.58	

	Control Rej/SS	Qual A Rej/SS	Qual B Rej/SS	Qual C Rej/SS	Remarks
Cap	0/30	0/30	0/30	0/30	Pass
DV/DT	0/10	0/10	0/10	0/10	Pass

**AFFECTED DEVICE LIST:****PART**

2N5060
2N5060RL1
2N5060RLRA
2N5060RLRM
2N5061
2N5061RLRA
2N5062
2N5062RLRA
2N5064
2N5064RLRA
2N5064RLRM
2N6027
2N6027RL1
2N6027RLRA
2N6028
2N6028RLRA
2N6028RLRM
2N6028RLRP
2N6070A
2N6071A
2N6071B
2N6071BT
2N6073A
2N6073B
2N6075
2N6075A
2N6075B
2N6240
2N6344
2N6344A
2N6348A
2N6349
2N6349A
2N6394
2N6395
2N6397
2N6397T
2N6399
2N6400
2N6401
2N6402
2N6403
2N6404
2N6405
2N6504
2N6505
2N6505T
2N6507
2N6507T
2N6508
2N6508T
2N6509
2N6509T
C106B
C106D



C106D1
C106M
C106M1
C106M1T
C122B1
C122F1
C122F1T
LMAC94A4
MAC08BT1
MAC08MT1
MAC12D
MAC12HCD
MAC12HCM
MAC12HCN
MAC12M
MAC12N
MAC12SM
MAC12SN
MAC15-008
MAC15-010
MAC15A10
MAC15A6
MAC15A8
MAC15M
MAC15N
MAC15SD
MAC15SM
MAC15SN
MAC16CD
MAC16CM
MAC16CN
MAC16D
MAC16HCD
MAC16HCM
MAC16HCN
MAC16M
MAC16N
MAC210A10
MAC210A8
MAC212A10
MAC212A8
MAC218A8
MAC223A6
MAC224A8
MAC228A10
MAC228A4
MAC228A6
MAC228A8
MAC3030-008
MAC4DCM-001
MAC4DCMT4
MAC4DCN-001
MAC4DCNT4
MAC4DHM-001
MAC4DHMT4
MAC4DLM-001
MAC4DLMT4
MAC4DSM-001



MAC4DSMT4
MAC4DSN-001
MAC4DSNT4
MAC4M
MAC4N
MAC4SM
MAC4SN
MAC8D
MAC8M
MAC8N
MAC8SD
MAC8SM
MAC8SN
MAC97-008
MAC97A-8RLRM
MAC97A-8RLRP
MAC97A4
MAC97A6
MAC97A6RL1
MAC97A6RLRF
MAC97A6RLRP
MAC97A8
MAC97A8RL1
MAC97A8RLRM
MAC97A8RLRP
MAC997A6
MAC997A6RL1
MAC997A6RLRP
MAC997A8
MAC997A8RL1
MAC997A8RLRP
MAC997B6
MAC997B6RL1
MAC997B6RLRP
MAC997B8
MAC997B8RL1
MAC997B8RLRP
MAC9D
MAC9M
MAC9N
MCR08BT1
MCR08MT1
MCR100-003
MCR100-004
MCR100-006
MCR100-008
MCR100-3RL
MCR100-6RL
MCR100-6RLRA
MCR100-6RLRM
MCR100-6ZL1
MCR100-8RL
MCR106-006
MCR106-008
MCR12D
MCR12DCMT4
MCR12DCN-001
MCR12DCNT4



MCR12DSMT4
MCR12DSN-001
MCR12DSNT4
MCR12LD
MCR12LM
MCR12LN
MCR12M
MCR12N
MCR16N
MCR218-002
MCR218-004
MCR218-006
MCR218-6T
MCR22-006
MCR22-008
MCR22-2RL1
MCR22-6RLRA
MCR22-6RLRP
MCR22-8RL1
MCR22-8ZL1
MCR25D
MCR25M
MCR25N
MCR310-010
MCR506-002
MCR68-002
MCR69-002
MCR69-003
MCR703ARL
MCR703AT4
MCR704ARL
MCR704AT4
MCR706ARL
MCR706AT4
MCR708A
MCR708A1
MCR708AT4
MCR716T4
MCR718RL
MCR718T4
MCR72-003
MCR72-006
MCR72-008
MCR72-6T
MCR72-8T
MCR8DCMT4
MCR8DCNT4
MCR8DSMT4
MCR8DSNT4
MCR8N
MCR8SD
MCR8SM
MCR8SN
MCRC16MWP
MKP1V120RL
MKP1V130RL
MKP1V160
MKP1V160RL



MKP1V240
MKP1V240RL
MKP3V120
MKP3V120RL
MKP3V240
MKP3V240RL
MKP9V160RL
MMT05A230T3
MMT05A260T3
MMT05A310T3
MMT05B064T3
MMT05B230T3
MMT05B260T3
MMT05B310T3
MMT10B230T3
MMT10B260T3
MMT10B310T3
MMT10B350T3
MMT10V260
MMT300V400
NCR169D
NCR169DRLRA
NCR169DRLRM
NCR169DRLRP
SAC847-008
SC141D
SC146D
STC585WP
STC586WP
STC600WP
T2322B
T2500D
T2800D
TP00247ZL1
TPA0233
TPA0234
TPA0239ZL1