

# Space Qualified Diodes

## ML4000 Series

V2.00

### GaAs Gunn Diodes

Operating Frequency	Minimum Output Power $P_o$ (mW)	Maximum Operating Current $I_{op}$ (mA)	Type No.	ESA/SCC Detail Specification No.	Package Styles
5 to 8GHz	100 to 250 500	500 to 700 1500	ML4901 to ML4902 ML4910	5511/002 5511/002	30, 111, 118, 148, 275
8 to 12.4GHz	100 to 250 500	650 to 1050 1500	ML4903 to ML4904 ML4911	5511/002 5511/002	As Above
12.4 to 18.0GHz	100 to 250	750 to 1050	ML4905 to ML4906	5511/002	As Above
18.0 to 22.0GHz	250 to 50	1700 to 800	ML4921 to ML4923	5511/001	111, 118, 138, 275
22.0 to 27.0GHz	250 to 50	1700 to 800	ML4931 to ML4933	5511/001	As Above
27.0 to 32.0GHz	200 to 50	1700 to 800	ML4941 to ML4943	5511/001	As Above
32.0 to 40.0GHz	150 to 50	1700 to 800	ML4951 to ML4953	5511/001	118, 138, 275
40.0 to 50.0GHz	100 to 50	1700 to 800	ML4961 to ML4963	5511/001	As Above
50.0 to 60.0GHz	60 to 30	1700 to 800	ML4971 to ML4973	5511/001	As Above
90.0 to 100.0GHz	5 to 15	1100 to 1500	ML4981 to ML4983	5511/001	As Above

1. Available in pill packages only.
2. Chart III(a) Category 2 (Power Burn-In only).

### Silicon Abrupt Tuning Varactor Diodes

Breakdown Voltage	Typical Total Capacitance $C_T$ (at -4V) (pf)	Capacitance Ratio (Min)	Type No.	ESA/SCC Detail Specification No.	Package Styles
25V	0.50 to 3.00	2.3 to 4.4	ML4310 to ML4316	5512/003	30, 31, 33, 36, 96, 97, 103, 118, 120, 186, 276
	3.30 to 4.70	4.6 to 4.7	ML4317 to ML4319	5512/003	30, 31, 36, 103, 118, 186
40V	0.70 to 2.15	3.4 to 5.3	ML4331 to ML4335	5512/004	30, 31, 33, 36, 96, 97, 103, 118, 120, 186, 276
	2.70 to 9.95	5.5 to 6.3	ML4336 to ML4343	5512/005	30, 31, 36, 103, 118, 186
60V	0.70 to 1.75	3.4 to 5.5	ML4351 to ML4354	5512/006	30, 31, 33, 36, 96, 97, 103, 118, 120, 186, 276
	2.20 to 6.8	5.8 to 6.9	ML4335 to ML4361	5512/007	30, 31, 36, 103, 118, 186
	8.2 to 15.1	7.0 to 7.3	ML4362 to ML4365	5512/007	30, 31, 36, 103

1. Available in pill, stripline and pill-with-tabs packages.
2. Chart III(a) Category 1 (HTRB only).

Specifications Subject to Change Without Notice.

**M/A-COM, Inc.**

North America: Tel. (800) 366-2266  
Fax (800) 618-8883

■ Asia/Pacific: Tel. +81 (03) 3226-1671  
Fax +81 (03) 3226-1451

■ Europe: Tel. +44 (1344) 869 595  
Fax +44 (1344) 300 020



## GaAs Multiplier Varactor Diodes

Breakdown Voltage	Typical Total Capacitance $C_T$ (at 0V) (pF)	Typical Junction Capacitance $C_T$ (at 0V) (pF)	Type No.	ESA/SCC Detail Specification No.	Package Styles
15V	0.40 to 0.80	0.20 to 0.60	ML48701E to ML48705E	5512/010	30, 31, 36, 94, 95, 96, 97, 118, 120, 138
25V	0.40 to 0.60 0.70 to 0.80	0.20 to 0.40 0.50 to 0.60	ML48706C to ML48708C ML48709B to ML48710B	5512/011 5512/011	As Above.

1. Available in pill, stripline and pill-with-tabs packages.
2. Chart III(a) Category 1 (HTRB only).

## Silicon Pin Diodes (Normal Device Polarity)

Breakdown Voltage	Typical Total Capacitance $C_j$ (at -10V) (pF)	Typical Minority Carrier Lifetime $T_L$ (ns)	Type No.	ESA/SCC Detail Specification No.	Package Styles
15V	0.15	10	ML4610	5513/009	30, 31, 32, 34, 36, 43, 56, 91, 92, 94, 95, 97, 101, 103, 118, 120, 128, 138, 148, 186, 255, 275, 276
40V	0.10 to 0.2	20	ML4611 to ML4612	5513/010	As Above.
70V	0.10 to 0.2	60	ML4614 to ML4615	5513/010	As Above.
100V	0.10 to 0.30	120	ML4617 to ML4619	5513/009	As Above.
150V	0.10 to 0.30	250	ML4622 to ML4624	5513/014	As Above.
200V	0.10 to 0.30	500	ML4627 to ML4629	5513/015	As Above.
300V	0.10 to 0.20	500 to 800	ML4640 to ML4641	5513/012	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.30 to 0.50	1000 to 1000	ML4642 to ML4643	5513/012	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 255
400V	0.1	1000	ML4644	5513/012	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.20 to 0.30	1500 to 2000	ML4645 to ML4646	5513/012	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.5	2000	ML4647	5513/012	36, 43, 56, 101
500V	0.1	1000	ML4648	5513/013	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.20 to 0.30	1500 to 2000	ML4649 to ML4650	5513/013	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.5	2000	ML4651	5513/013	36, 43, 56, 101
600V	0.1	1500	ML4652	5513/013	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.20 to 0.30	2000 to 3000	ML4653 to ML4654	5513/013	30, 31, 32, 34, 36, 43, 56, 91, 92, 101, 103, 186, 255
	0.5	3000	ML4655	5513/013	36, 43, 56, 101

1. Available in pill, stripline and pill-with-tabs packages.
2. Chart III(a) Category 3 (HTRB & Power Burn-In).

Specifications Subject to Change Without Notice.

M/A-COM, Inc.

North America: Tel. (800) 366-2266 ■ Asia/Pacific: Tel. +81 (03) 3226-1671 ■ Europe: Tel. +44 (1344) 869 595  
 Fax (800) 618-8883 Fax +81 (03) 3226-1451 Fax +44 (1344) 300 020

## Silicon Pin Diodes (Reverse Device Polarity)

Breakdown Voltage	Typical Junction Capacitance $C_T$ (at -10V) (pf)	Typical Minority Carrier Lifetime $T_L$ (ns)	Type No.	ESA/SCC Detail Specification No.	Package Styles
15V	0.20	10	ML4609	5513/008	30, 31, 32, 34, 36, 43, 56, 91, 92, 94, 95, 96, 97, 101, 103, 118, 120, 128, 138, 148, 186, 255, 275, 276
40V	0.10 to 0.20 0.20	20 20	ML4611P to ML4612P ML4613	5513/020 5513/008	As Above.
70V	0.10 to 0.20 0.20	60 60	ML4614P to ML4615P ML4616	5513/020 5513/008	As Above.
100V	0.10 to 0.30 0.20 to 0.30	120 120	ML4617P to ML4619P ML4620 to ML4621	5513/002 5513/011	As Above.
150V	0.10 to 0.30 0.20 to 0.30	250 250	ML4622P to ML4624P ML4625 to ML4626	5513/018 5513/011	As Above.
200V	0.10 to 0.30 0.20 to 0.30	400 400	ML4627P to ML4629P ML4630 to ML4631	5513/019 5513/003	As Above.

1. Available in pill, stripline and pill-with-tabs packages.
2. Chart III(a) Category 3 (HTRB & Power Burn-In).

## Silicon Pin Diodes – Glass Encapsulated

Breakdown Voltage	Typical Junction Capacitance $C_j$ (at -10V) (pF)	Typical Minority Carrier Lifetime $T_L$ (ns)	Type No.	ESA/SCC Detail Specification No.	Package Styles
35V	0.10 to 1.05	150	ML4603 to ML4605	5513/004	54
100V	0.10 to 1.05	350	ML4606 to ML4608	5513/004	54

Chart III(a) Category 3 (HTRB & Power Burn-In).

Specifications Subject to Change Without Notice.



## GaAs Schottky Mixer Diodes

Test Frequency	Maximum Total Capacitance $C_T$ (at 0V) (pF) (ODS 119)	Noise Figure N.F. (dB) Typ Max	Type No.	ESA/SCC Detail Specification No.	Package Styles
9.375 GHz	0.31	5.0 to 6.5	ML40461	5513/021	118, 119, 120, 148, 186, 255, 275, 276
16.000 GHz	0.31	5.5 to 7.0	ML40462	5513/021	As Above.
24.000 GHz	0.29	6.5 to 7.5	ML40463	5513/021	As Above.
36.000 GHz	0.28	7.0 to 7.5	ML40464	5513/021	As Above.

1. Available in pill, stripline and pill-with-tabs packages.
2. Chart III(a) Category 3 (HTRB & Power Burn-In).

## Silicon Limiter Diodes

Breakdown Voltage	Typical Junction Capacitance $C_j$ (at 0V) (pF)	Typical Minority Carrier Lifetime $T_L$ (ns)	Type No.	ESA/SCC Detail Specification No.	Package Styles
15V	0.30	15	ML4202	5513/001	30, 31, 32, 34, 36, 43, 56, 91, 92, 94, 95, 96, 97, 101, 103, 118, 120, 128, 138, 148, 186, 255, 275, 276
	0.2	15	ML4204	5513/001	
	0.10	10	ML4206	5513/001	
50V	0.30 to 0.10	20 to 15	ML4207 to ML4209	5513/007	As Above.

1. Available in pill, stripline and pill-with-tabs packages.
2. Chart III(a) Category 3 (HTRB & Power Burn-In).

Specifications Subject to Change Without Notice.