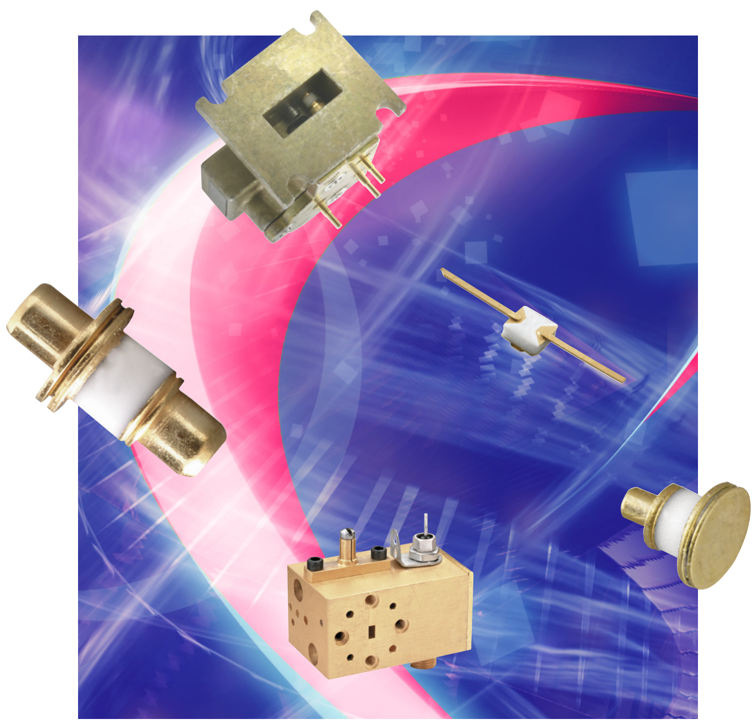
SELECTION GUIDE

Microsemi Corporation



SENSORS

SEMICONDUCTOR DIODES

Microsemi is a leading custom designer and manufacturer of advanced devices, components and subsystems for:

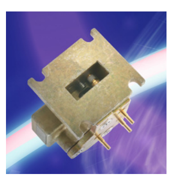
avionics, radar, missile, satellite, telecommunications, wireless, automotive, security, safety, industrial processing, and traffic management applications.

Our Semiconductor Diode Group manufactures a range of GaAs & Si diodes including Varactors, Hyperabrupt Varactors, PIN's, Gunns, Schottky's and IMPATTs. They are available in chip form and beam lead, or in a number of different package styles.

The Sensors Group produces a wide range of Doppler transceivers, Gunn oscillators, isolators and many specially designed sub-systems and multi function assemblies, that enable our customers to reduce cost and improve performance of their own systems.

Our Control components group includes PIN diode based products in multithrow configurations, with and with out integral drivers Limiter based products, handling RF incident power. These components are available in SMA connectorized or drop in module format.

We welcome you as either an existing or a new customer, and we are sure that we will have a very successful business relationship for years to come.



Varactor Diodes — GaAs (MV20000 and MV30000 Series)

Capacitance ± 10% @ -4 V (pF)	Abrupt Junction Tuning Varactors V_{BR} @ 10 µA = 30 V Min. (0–30 V Tuning Range)	Hyperabrupt Junction Tuning Varactors V_{BR} @ 10 µA = 22 V Min. (2–20 V Tuning Range)		
	Gamma = 0.50	Gamma = 0.75	Gamma = 1.00	Gamma = 1.25
0.3	**MV21001** CT0/CT30 = 2.8, Q = 8000			
0.4	**MV21002** CT0/CT30 = 3.1, Q = 7500			
0.5	**MV21003** CT0/CT30 = 3.4, Q = 7000			**MV31011** CT2/CT20 = 5.5, Q = 4000
0.6	**MV21004** CT0/CT30 = 3.6, Q = 6500	**MV32001** CT2/CT20 = 2.8, Q = 4000	**MV30011** CT2/CT20 = 3.9, Q = 4000	
0.7				**MV31012** CT2/CT20 = 6.5, Q = 4000
0.8	**MV21005** CT0/CT30 = 3.8, Q = 6000			
1.0	**MV21006** CT0/CT30 = 4.0, Q = 5700	**MV32002** CT2/CT20 = 3.1, Q = 3000	**MV30012** CT2/CT20 = 4.6, Q = 3000	**MV31013** CT2/CT20 = 7.7, Q = 3000
1.2	**MV21007** CT0/CT30 = 4.2, Q = 5000	**MV32003** CT2/CT20 = 3.2, Q = 3000	**MV30013** CT2/CT20 = 4.9, Q = 3000	**MV31014** CT2/CT20 = 8.3, Q = 3000
1.5	**MV21008** CT0/CT30 = 4.3, Q = 5000	**MV32004** CT2/CT20 = 3.3, Q = 3000	**MV30014** CT2/CT20 = 5.2, Q = 3000	**MV31015** CT2/CT20 = 9.1, Q = 3000
1.8	**MV21009** CT0/CT30 = 4.5, Q = 5000	**MV32005** CT2/CT20 = 3.4, Q = 3000	**MV30015** CT2/CT20 = 5.4, Q = 3000	**MV31016** CT2/CT20 = 9.6, Q = 3000
2.0				**MV31017** CT2/CT20 = 9.9, Q = 3000
2.2	**MV21010** CT0/CT30 = 4.6, Q = 4000	**MV32006** CT2/CT20 = 3.5, Q = 3000	**MV30016** CT2/CT20 = 5.6, Q = 3000	**MV31018** CT2/CT20 = 10.2, Q = 3000
2.5		**MV32007** CT2/CT20 = 3.6, Q = 2500	**MV30017** CT2/CT20 = 5.8, Q = 2500	
2.7				**MV31019** CT2/CT20 = 10.8, Q = 2000
3.0		**MV32008** CT2/CT20 = 3.6, Q = 2500	**MV30018** CT2/CT20 = 6.0, Q = 2500	
3.3				**MV31020** CT2/CT20 = 11.3, Q = 2000
3.6		**MV32009** CT2/CT20 = 3.7, Q = 2000	**MV30019** CT2/CT20 = 6.1, Q = 2000	
3.7				**MV31021** CT2/CT20 = 11.5, Q = 2000
4.5		**MV32010** CT2/CT20 = 3.8, Q = 1500	**MV30020** CT2/CT20 = 6.3, Q = 1500	
4.7				**MV31022** CT2/CT20 = 12.0, Q = 1500
5.6				**MV31023** CT2/CT20 = 12.3, Q = 1500
6.8				**MV31024** CT2/CT20 = 12.6, Q = 1500
8.2				**MV31025** CT2/CT20 = 12.9, Q = 1500
10.0				**MV31026** CT2/CT20 = 13.1, Q = 1500

Various packages available upon request.
Tightened capacitance tolerances available upon request.
Q measured at -4 V, referenced to 50 MHz.

Capacitance ± 10% @ -4 V (pF)	V_{BR} @ 10 µA = 15 V Min. (0–15 V Tuning Range)	V_{BR} @ 10 µA = 15 V Min. (2–12 V Tuning Range)		
	Gamma = 0.50	Gamma = 1.00	Gamma = 1.25	Gamma = 1.50
0.3	**MV20001** CT0/CT15 = 2.4, Q = 8000			
0.4	**MV20002** CT0/CT15 = 2.6, Q = 7500			
0.5	**MV20003** CT0/CT15 = 2.8, Q = 7000			**MV34001** CT2/CT12 = 4.5, Q = 3000
0.6	**MV20004** CT0/CT15 = 2.9, Q = 6500	**MV30001** CT2/CT12 = 3.2, Q = 4000	**MV31001** CT2/CT12 = 4.2, Q = 4000	
0.8	**MV20005** CT0/CT15 = 3.0, Q = 6000			
1.0	**MV20006** CT0/CT15 = 3.1, Q = 5700	**MV30002** CT2/CT12 = 3.7, Q = 3000	**MV31002** CT2/CT12 = 5.1, Q = 4000	**MV34002** CT2/CT12 = 5.9, Q = 2500
1.2	**MV20007** CT0/CT15 = 3.2, Q = 5000	**MV30003** CT2/CT12 = 3.8, Q = 3000	**MV31003** CT2/CT12 = 5.4, Q = 3000	
1.5	**MV20008** CT0/CT15 = 3.3, Q = 5000	**MV30004** CT2/CT12 = 4.0, Q = 3000	**MV31004** CT2/CT12 = 5.7, Q = 3000	
1.8	**MV20009** CT0/CT15 = 3.4, Q = 5000	**MV30005** CT2/CT12 = 4.1, Q = 3000	**MV31005** CT2/CT12 = 5.9, Q = 3000	**MV34003** CT2/CT12 = 7.1, Q = 2500
2.0				**MV34004** CT2/CT12 = 7.3, Q = 2500
2.2	**MV20010** CT0/CT15 = 3.4, Q = 4000	**MV30006** CT2/CT12 = 4.2, Q = 3000	**MV31006** CT2/CT12 = 6.2, Q = 3000	**MV34005** CT2/CT12 = 7.4, Q = 1800
2.5		**MV30007** CT2/CT12 = 4.3, Q = 2500	**MV31007** CT2/CT12 = 6.3, Q = 3000	**MV34006** CT2/CT12 = 7.6, Q = 1800
3.0		**MV30008** CT2/CT12 = 4.4, Q = 2500	**MV31008** CT2/CT12 = 6.5, Q = 3000	**MV34007** CT2/CT12 = 7.9, Q = 1800
3.6		**MV30009** CT2/CT12 = 4.5, Q = 2000	**MV31009** CT2/CT12 = 6.7, Q = 2000	
3.8				**MV34008** CT2/CT12 = 8.1, Q = 1800
4.5		**MV30010** CT2/CT12 = 4.5, Q = 1500	**MV31010** CT2/CT12 = 6.8, Q = 2000	**MV34009** CT2/CT12 = 8.3, Q = 1200
10.0				**MV34010** CT2/CT12 = 8.9, Q = 1200

Various packages available upon request.
Tightened capacitance tolerances available upon request.
Q measured at -4 V, referenced to 50 MHz.

Specifications @ 25°C.
Specifications subject to change without notice.

GaAs PIN Diodes

Part Number[1]	Max. C_J @ -10 V Max. (pf)	Min V_{BR} (V)	Max. R_S @ 20 mA (Ω)	Typ. Switching Speed (ns)	Typ. Minority Carrier Lifetime (ns)[2]
MP61001	0.03	200	3.0	20.0	50
MP61002	0.04	200	3.0	20.0	50
MP61003	0.05	200	3.0	20.0	50
MP61004	0.06	100	2.0	9.0	15
MP61005	0.07	100	2.0	9.0	15
MP61006	0.08	100	2.0	9.0	15
MP61007	0.10	75	2.0	6.0	10
MP61008	0.12	75	2.0	6.0	10
MP61009	0.15	50	1.0	3.5	5
MP61010	0.18	50	1.0	3.5	5
MP61011	0.23	50	0.8	3.5	5
MP61012	0.35	50	0.8	3.5	5

[1] Suffix of the model number indicates the package style. Suggested package styles are M11, M14, M21, M26, M36, M40, M46 and chip P10. (For example MP61001-26).
[2] Minority carrier lifetime is inferred from stored charge measurement with a forward current of 10 mA.
Note: All GaAs PIN diodes are passivated with Silicon Nitride with a minimum bonding area diameter of 50 microns.

Silicon Chip Capacitors

Part Number	Capacitance (pF)	Voltage Rating (V)	Nominal Chip Size (mils)	Minimum Contact Pad Size (mils)	(µm)
MC0R8K100	0.8	100	12 x 12	1.5 x 1.5	38.1 x 38.1
MC1R0K100	1.0	100	12 x 12	1.5 x 1.5	38.1 x 38.1
MC1R2K100	1.2	100	12 x 12	1.5 x 1.5	38.1 x 38.1
MC1R8K100	1.8	100	12 x 12	1.5 x 1.5	38.1 x 38.1
MC2R6K100	2.6	100	12 x 12	3 x 3	76.2 x 76.2
MC3R8K100	3.8	100	12 x 12	3 x 3	76.2 x 76.2
MC4R7K100	4.7	100	12 x 12	3 x 3	76.2 x 76.2
MC6R8K100	6.8	100	12 x 12	5 x 5	127 x 127
MC8R2K100	8.2	100	12 x 12	5 x 5	127 x 127
MC10R0K100	10.0	100	25 x 25	7 x 7	177 x 177
MC15R0K100	15.0	100	25 x 25	9 x 9	230 x 230
MC22R0K100	22.0	100	25 x 25	11 x 11	281 x 281
MC33R0K100	33.0	100	25 x 25	14 x 14	356 x 356
MC47R0K100	47.0	100	25 x 25	17 x 17	432 x 432

Miniature Ferrite Isolators

Frequency, W/G, Flange	Bandwidth (%)	Isolation (dB)	Insertion Loss	VSWR (In & Out)	Average Power Forward (W)	Reverse (W)
18.0-26.5GHZ, WR-42, UG595/U	10	20	0.3	1.30	40	1
26.5-40.0GHz, WR-28, UG599/U	10	20	0.4	1.30	30	1
33.0-50.0GHz, WR-22, UG599/U-M	8	20	0.5	1.30	20	0.8
40.0-60.0GHz, WR-19, UG599/U-M	7	18	0.6	1.35	5	0.5
75.0-110.0GHz, WR-10, UG599/U-M	2	18	0.7	1.30	0.2	0.2

Operating Temperature range -10 to +60 deg C but for WR-10 units OP. Temp. is -10 to +50 deg C.

Ordering information	MMI	28	599	T
	↑	↑	↑	↑
	Model	W/G Size	Flange	Tapped Flange

Specifications @ 25°C.
Specifications subject to change without notice.

Gunn Diodes

Discrete Frequency: Cathode Ground (CW EPI-Down)

Minimum Power (mW)	C (5.4–6.9) GHz	X (8.0–12.4) GHz	Ku (12.4–18.0) GHz	K (18.0–26.5) GHz	Ka (26.5–40.0) GHz	U (40.0–60.0) GHz	(60.5–85.0) GHz	(85.0–95.0) GHz
10							**MG1036-16** V_{OP} = 4.5 V @ I_{OP} = 900 mA	**MG1024-16** V_{OP} = 4.5 V @ I_{OP} = 1100 mA
20								**MG1025-16** V_{OP} = 4.5 V @ I_{OP} = 1000 mA
50	**MG1001-11** V_{OP} = 12 V @ I_{OP} = 400 mA	**MG1005-11** V_{OP} = 10 V @ I_{OP} = 400 mA	**MG1009-11** V_{OP} = 8 V @ I_{OP} = 500 mA	**MG1013-16** V_{OP} = 6 V @ I_{OP} = 600 mA	**MG1017-16** V_{OP} = 4.5 V @ I_{OP} = 700 mA	**MG1021-16** V_{OP} = 4 V @ I_{OP} = 800 mA	**MG1037-16** V_{OP} = 5 V @ I_{OP} = 1100 mA	**MG1038-16** V_{OP} = 5 V @ I_{OP} = 1200 mA
100	**MG1002-11** V_{OP} = 12 V @ I_{OP} = 600 mA	**MG1006-11** V_{OP} = 10 V @ I_{OP} = 700 mA	**MG1010-11** V_{OP} = 8 V @ I_{OP} = 800 mA	**MG1014-16** V_{OP} = 6 V @ I_{OP} = 1000 mA	**MG1018-16** V_{OP} = 4.5 V @ I_{OP} = 1100 mA	**MG1022-16** V_{OP} = 4 V @ I_{OP} = 1200 mA		
150						**MG1023-16** V_{OP} = 4 V @ I_{OP} = 1600 mA (40–50 GHz)		
200				**MG1015-16** V_{OP} = 6 V @ I_{OP} = 1400 mA	**MG1019-16** V_{OP} = 5 V @ I_{OP} = 1400 mA			
250	**MG1003-15** V_{OP} = 12 V @ I_{OP} = 1100 mA	**MG1007-15** V_{OP} = 10 V @ I_{OP} = 1200 mA	**MG1011-15** V_{OP} = 8 V @ I_{OP} = 1200 mA		**MG1020-16** V_{OP} = 5.5 V @ I_{OP} = 1600 mA			
300					**MG1039-16** V_{OP} = 5.5 V @ I_{OP} = 1700 mA (26.5–35 GHz)			
350					**MG1040-16** V_{OP} = 5.5 V @ I_{OP} = 1800 mA (26.5–35 GHz)			
400				**MG1016-17** V_{OP} = 6 V @ I_{OP} = 1700 mA (18.0–23.0 GHz)				
500	**MG1004-15** V_{OP} = 12 V @ I_{OP} = 1300 mA	**MG1008-15** V_{OP} = 10 V @ I_{OP} = 1600 mA	**MG1012-15** V_{OP} = 8 V @ I_{OP} = 1700 mA					

Polarity: anode is the cap and cathode is the heat-sink.

Discrete Frequency: Anode Ground (CW EPI-Up)

Minimum Power (mW)	X (9.5–11.5) GHz	K (23.0–25.0) GHz	Ka (33.5–35.5) GHz	Package Outline
5		**MG1054-11** V_{OP} = 5 V @ I_{OP} = 200 mA	**MG1059-11** V_{OP} = 5 V @ I_{OP} = 300 mA	M11
10	**MG1052-11** V_{OP} = 8 V @ I_{OP} = 140 mA	**MG1058-11** V_{OP} = 5 V @ I_{OP} = 300 mA		M11
20	**MG1056-11** V_{OP} = 8 V @ I_{OP} = 200 mA			M11

Polarity: cathode is the cap and anode is the heat-sink.

Operation over a narrow band around a specific center frequency.
Other frequencies available upon request. Call factory.
Operating voltage (V_{OP}) typ. Operating current (I_{OP}) max.
Power measured with diode inserted in a critically coupled cavity.
Specifications @ 25°C.
Specifications subject to change without notice.

Discrete Frequency: Anode Ground (Pulsed EPI-Up)

Minimum Power (mW)	X (9.5–11.5) GHz	K (23.0–25.0) GHz	Package Outline GHz
5		**MG1044-11** V_{OP} = 8 V @ I_{OP} = 120 mA	M11
10	**MG1041-11** V_{OP} = 9 V @ I_{OP} = 110 mA	**MG1045-11** V_{OP} = 8 V @ I_{OP} =150 mA	M11
20	**MG1042-11** V_{OP} = 9 V @ I_{OP} = 140 mA	**MG1046-11** V_{OP} = 8 V @ I_{OP} = 200 mA	M11
30	**MG1043-11** V_{OP} = 10 V @ I_{OP} = 180 mA		M11

Polarity: cathode is the cap and anode is the heat-sink.
Pulse width = 1 µsec. Duty factor = 1% typ.
Alternative pulse width and duty factors can be specified by customer.

Impatts

CW IMPATT Diodes

Part Number	FOP (GHz)	Min. PO (W)	V_{BR} @ 1 mA (V)	Typ. C_T (0 V) (pF)	Typ. V_{OP} (V)	Typ. I_{OP} (A)	Min. Eff. (%)	Max. θ (°C/W)	Pkg. Style
MI5022	9.5 - 10.2	3.5	30	20	50	0.43	20	12.0	M18

Pulsed IMPATT Diodes

Part Number	FOP (GHz)	Min. PO (W)	V_{BR} @ 1 mA (V)	Typ. C_T (0 V) (pF)	Typ. V_{OP} (V)	Typ. I_{OP} (A)	Min. Eff. (%)	Max. θ (°C/W)	Pkg. Style
MI5001	5.1 - 5.4	10[1]	70	80	95	1.2	13	8.0	M 15
MI5003	9.1 - 9.6	15[1]	45	75	65	1.8	15	9.5	M 18
MI5004	9.1 - 9.5	12[2]	35	42	58	1.2	18	9.5	M 18

[1] Pulse width 0.5 - 10 µS; duty cycle: 0.5–5%.
[2] Pulse width 1 - 2 µS; duty cycle: 20–30%.

Notes:
Power output is measured in a critically coupled cavity at the customer-specified frequency—FOP.
Total capacitance is measured at 1 MHz.
Test procedure for measuring thermal resistance is available on request.
Breakdown Voltage is measured at 1 mA.

High Cut-off GaAs Frequency Multiplier Diodes

Part Number	C_{J0} ± 10% (pF)[1, 3, 4]	Typ. C_{T0}/C_{TVBR}[5]	V_{BR} @ 10 µA (V)	Typical Q @ -4 V[2]
MV71001	0.2	2.1	15	8000
MV71002	0.3	2.4	15	8000
MV71003	0.4	2.6	15	7500
MV71004	0.5	2.8	15	7000
MV71005	0.3	2.8	30	8000
MV71006	0.4	3.1	30	7500
MV71007	0.5	3.4	30	7000
MV71008	0.6	3.6	30	6500
MV71009	0.7	3.7	30	6000
MV71010	0.8	3.8	30	6000
MV71011	0.9	3.9	30	5700
MV71012	1.0	4.0	30	5700
MV71013	1.2	4.2	30	5000

[1] Capacitance is measured at 1 MHz using a shielded fixture.
[2] Measured by DeLoach Technique and referenced to 50 MHz.
[3] Tightened tolerances available upon request.
[4] Package parasitics are not included in above specifications. The contributions of package capacitance add to the overall total capacitance and will vary depending upon package style selected. The values for package capacitance, C_P, can be made available upon request.
[5] The capacitance ratio is calculated using C_P = 0.15 pF. Ratios will vary depending upon case style selection.

2 Stack ISIS Diodes— Breakdown Voltage: 55V min

Part Number	C_J @ 0v (pF)	Min. Cut-off Frequency (GHz)[1]	Package Capacitance (pF)
MIV41001-21	0.1 - 0.3	1000	0.15
MIV41002-21	0.3 - 0.5	700	0.15
MIV41003-21	0.5 - 1.0	600	0.15
MIV41001-29	0.1 - 0.3	1000	0.01
MIV41002-29	0.3 - 0.5	700	0.01
MIV41003-29	0.5 - 1.0	600	0.01

[1] Cut-off frequency measured at 6 volts.
Other package styles are available on request.
Different breakdown voltages are available on request.

3 Stack ISIS Diodes— Breakdown Voltage: 75V min

Part Number	C_J @ 0v (pF)	Min. Cut-off Frequency (GHz)[1]	Package Capacitance (pF)
MIV41011-21	0.1 - 0.3	1000	0.15
MIV41012-21	0.3 - 0.5	700	0.15
MIV41013-21	0.5 - 1.0	600	0.15
MIV41011-29	0.1 - 0.3	1000	0.01
MIV41012-29	0.3 - 0.5	700	0.01
MIV41013-29	0.5 - 1.0	600	0.01

Specifications @ 25°C.
Specifications subject to change without notice.

GaAs Schottky Barrier Diodes

Part Number[1]	Typ. C_J (pF)[2]	Min./Max. R_S (Ω)[3]	LO Test Freq. (GHz)	Typ. Noise Figure (dB)[4]	Min./Max. IF Impedance (Ω)	Min. V_{BR} @ 10µA(V)
MS8001	0.10	3–6	9.375	5.6	250/500	5
MS8002	0.10	3–6	16.000	5.6	250/500	5
MS8003	0.07	3–6	24.000	6.5	250/500	5
MS8004	0.06	3–6	36.000	6.5	250/500	5

Si Schottky Barrier Diodes

Part Number	Typ. C_T (pF)[2]	Typ. R_S (Ω)[3]	Max I_R @ 1 v (nA)	Max V_F @ 1 mA (mV)	Min. V_B @ 10 µA (V)
MS8520-48	0.02	8	100	390	3

1 Suffix of the model number indicates the package style. Suggested package styles are M22, M26, M38, M39, M46 and M48 as well as in chip form P10. (For example MS8002-38)
2 Capacitance C_J is measured at zero bias with a 1 MHz signal.
3 Series resistance, R_S, is calculated by subtracting the barrier resistance R_D = kT/qI from the measured total resistance R_T at 10 mA: $R_S = R_T - R_D$:
k = Boltzmann Constant, T = diode temperature in degrees K, q = electronic charge, I = rectified current.
4 The quoted noise figure (NF) is a single side band NF measured at LO power of 6 dBm for a single, and 10 dBm for a balanced mixer with a 30 MHz IF amplifier of minimum NF of 1.5 dB.

GaAs Schottky Flip Chip Diodes

Part Number	Max. C_T @ 0 V (pF)	Max. R_S @ 10 mA (Ω)	Min. V_{BR} @ 10 µA (V)	Min/Max V_F @ 1 mA (mV)	Configuration
MS8150	0.08	7	3	650 - 750	Single
MS8151	0.06	9	3	600 - 800	Single
MS8250	0.08[1]	7	3	650 - 750	Anti-parallel
MS8251	0.06[1]	9	3	600 - 800	Anti-parallel
MS8350	0.08[1]	7	3	650 - 750	Series Pair
MS8351	0.06[1]	9	3	600 - 800	Series Pair

1 Capacitance value is for individual diode and not for complete device.

GaAs PIN Flip Chip Diodes

Part Number	Max. C_T @ 0 V, 1 MHz (pF)	Min. V_{BR} @ 10 µA (V)	Max. V_F @ 10 mA (V)	Max. R_S @ 10 mA, 2 GHz (Ω)	Typ. Switching Speed (nsec)
MP6250	0.055	40	1.45	7	2

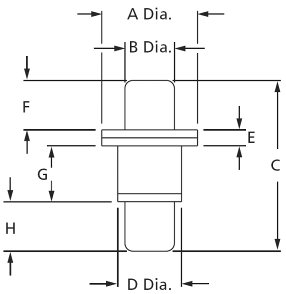
GaAs Hyperabrupt Varactor Flip Chip Diodes

Part Number	Max. C_T @ -4 V, 1 MHz (pF)	Min. V_{BR} @ 10 µA (V)	Cap. ratio C_T-2V/C_T-12V	Gamma
MV39001	0.40-0.60	18	3.3-4.1	1.0
MV39002	0.25-0.40	18	4.3-5.3	1.25
MV39003	0.40-0.60	18	4.5-5.6	1.25

Specifications @ 25°C.
Specifications subject to change without notice.

Package Outlines

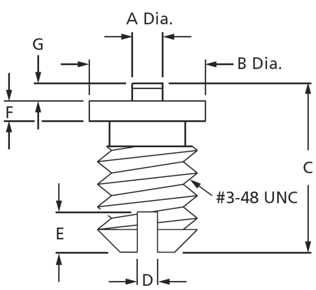
M11



	Dimensions (Inches) Min.	Max.
A	0.119	0.127
B	0.060	0.064
C	0.205	0.2252
D	0.079	0.083
E	0.016	0.024
F	0.060	0.0643
G	0.069	0.073
H	0.060	0.064

LP = 0.40 nH typ.
CP = 0.17 pF typ.

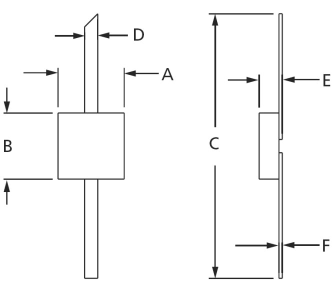
M16



	Dimensions (Inches) Min.	Max.
A	0.027	0.034
B	0.113	0.118
C	0.156	0.164
D	0.015	0.025
E	0.025	0.045
F	0.018	0.022
G	0.016	0.019

LP = 0.10 nH typ.
CP = 0.15 pF typ.

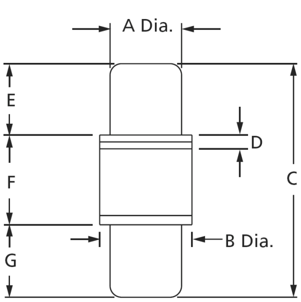
M26



	Dimensions (Inches) Min.	Max.
A	0.092	0.108
B	0.092	0.108
C	0.452	0.570
D	0.017	0.023
E	0.028	0.052
F	0.003	0.007

LP = 0.40 nH typ.
CP = 0.10 pF typ.

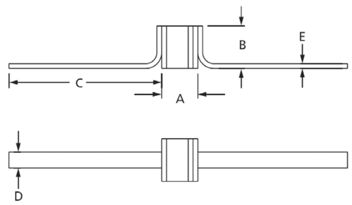
M38



	Dimensions (Inches) Min.	Max.
A	0.059	0.064
B	0.076	0.084
C	0.190	0.210
D	0.007	0.015
E	0.059	0.065
F	0.069	0.087
G	0.059	0.065

LP = 0.50 nH typ.
CP = 0.15 pF typ.

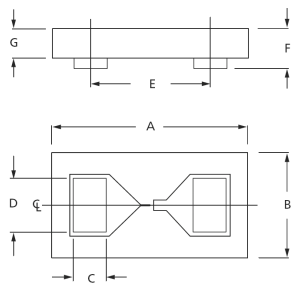
M39



	Dimensions (Inches) Min.	Max.
A	0.040	0.050
B	0.051	0.055
C	0.200	-
D	0.019	0.021
E	-	0.005

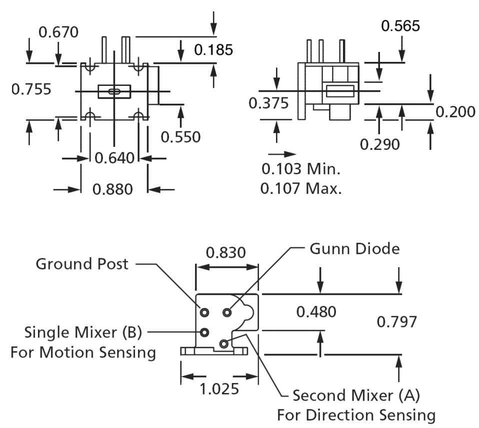
LP = 0.40 nH typ.
CP = 0.14 pF typ.

P2613



	Dimensions (Inches) Min.	Max.
A	0.0255	0.0265
B	0.0125	0.0135
C	0.0046	0.0056
D	0.0075	0.0085
E	0.0170	0.0180
F	0.0050	0.0060
G	0.0045	0.0055

MO9062



Many other packages available.
Specifications @ 25°C.
Specifications subject to change without notice.

Transceivers

Fixed Frequency Gunn Transceivers

Part Number	Description	Frequency (GHz)	Mixer Phasing (Degrees)	Min. Output Power (mW)	Min. Sensitivity (dBc)	Operating Voltage (V)[2]	Max. Operating Current (mA)
M086728	X Band Transceiver	10.525	na	5	-95	+7.5 to +8.5	150
M086735	Dual IF Output, X Band Transceiver	10.525	75 to 105	5	-95	+8.5	200
M09061	K Band Transceiver	24.125	na	5	-92	+5.0	100
M09062	Dual IF Output, K Band Transceiver	24.125	50 to 130	5	-92	+5.0	100
M09081[1]	Pulsed DC, K Band Transceiver	24.125	na	10 to 20	-90	+6.0 to +8.0	100
M09082[1]	Pulsed DC, Dual IF Output, K Band Transceiver	24.125	50 to 130	10 to 20	-90	+6.0 to +8.0	100
M09300	K Band Transceiver	24.125	na	2 to 5	-90	+4.0 to +6.0	250
M09062-22	Dual IF Output, K Band Transceiver	24.125	75 to 105	5	-90	+5.0	250
M09096	Dual IF Output, K Band Transceiver w/Planar Antenna	24.125	60 to 120	8.0	-90	+3.5 to +6.5	220
M09402	Ka Band Stereo Transceiver	35.5	75 to 105	5	-90	3.5 - 6.0	300

[1] M09081 and M09082 pulse width = 10 microseconds, duty factor = 50%.
[2] Actual operating voltage specified with product.
Other pulse widths and duty factors available upon request.
Other frequencies and power levels available upon request.

Voltage Controlled Gunn Transceivers

Part Number	Description	Frequency (GHz)	Min. Electronic Tuning (MHz)	Min. Output Power (mW)	Min. Sensitivity (dBc)	Operating Voltage (V)[1]	Max. Operating Current (mA)
M087127-1	X Band VCO Transceiver	10.300	40 (+1 to +20 V)	10	-110	+8.0 to +10.0	200
M087127-2	X Band VCO Transceiver	10.300	40 (+1 to +20 V)	20	-110	+8.0 to +10.0	600
M087127-3	X Band VCO Transceiver	10.300	40 (+1 to +20 V)	35	-110	+8.0 to +10.0	600
M09071	K Band VCO Transceiver	24.125	50 (+1 to +20 V)	5	-90	+5.0	150
M09072	Dual IF Output, K Band VCO Transceiver	24.125	50 (+1 to +20 V)	5	-90	+5.0	150
M087849	K Band VCO Transceiver	24.125	150 (+0.5 to +20 V)	5	-95	+5.0 to +8.0	400
M087930	K Band VCO Transceiver	24.125	350 (0 to +9 V)	5 to 10	-95	+5.0 to +8.0	400
M09410-1	Ka Band VCO Transceiver	35.5	100 (+1 to +20 V)	7.5	-90	3.5 - 6.0	350
M09410-2	Ka Band VCO Transceiver	34.7	100 (+1 to +20 V)	7.5	-90	3.5 - 6.0	350
M09410-3	Ka Band VCO Transceiver	33.8	100 (+1 to +20 V)	7.5	-90	3.5 - 6.0	350

[1] Actual operating voltage specified with product.

RF Modulators

Part Number	Description	Fequency (GHz)	Modulation Rate (Hz)	Typical Modulation Depth	Drive Voltage (V)	Typ. Drive Current (mA)
M09207	K Band Waveguide Modulator	24.125	1Hz - 100,000 Hz	>90%	1.3	20

Specifications @ 25°C.
Specifications subject to change without notice.

Oscillators

Fixed Frequency Gunn Oscillators

Part Number	Description	Frequency (GHz)	Min. Output Power (mW)	Operating Voltage (V)	Max Operating Current (mA)
M086751A	X Band Oscillator	10.525	10	+8.5	200
M086751B	X Band Oscillator	10.525	25	+9.0 to +10.0	500
M086751C	X Band Oscillator	10.525	50	+9.0 to +10.0	600
M086751D	X Band Oscillator	10.525	100	+9.0 to +10.0	800
M09060	K Band Oscillator	24.125	5	+5.0	100
M09080[1]	K Band Oscillator (Pulsed)	24.125	11–20 Peak	+6.0 to +7.0	300 Peak
M086790	K Band Oscillator	24.150	10–20	+3.5 to +6.5	250
M086791	K Band Oscillator	24.150	40–100	+5.0 to +8.0	1000
M086797	Ka Band Oscillator	35.500	15–25	+3.0 to +6.0	450
M09205	Ka Band Oscillator	35.500	15–30	+5.0	400

[1] M09080 pulse width = 10 microseconds, duty factor = 50%. Other pulse widths and duty factors available upon request.
Other frequencies and power levels available upon request.

Voltage Controlled Gunn Oscillators

Part Number	Description	Frequency (GHz)	Min. Electronic Tuning (MHz)	Min. Output Power (mW)	Tuning Voltage (V)	Operating Voltage (V)	Max. Operating Current(mA)
M087108-1	X Band Oscillator	10.300	40	15	+1 to +20	+8.0 to +10.0	200
M087108-2	X Band Oscillator	10.300	40	25	+1 to +20	+8.0 to +10.0	600
M087108-3	X Band Oscillator	10.300	40	40	+1 to +20	+8.0 to +10.0	600
M087603B	X Band Oscillator	9.405	60	7	0 to +13	+10.5	200
M09070	K Band Oscillator	24.125	25	3	+2 to +10	+5.0	100
M087828-1	K Band Oscillator	21.500	40	10	0 to +15	+5.0 to +8.0	400
M087828-2	K Band Oscillator	22.100	40	10	0 to +15	+5.0 to +8.0	400
M087828-3	K Band Oscillator	22.700	40	10	0 to +15	+5.0 to +8.0	400
M087828-4	K Band Oscillator	23.300	40	10	0 to +15	+5.0 to +8.0	400
M087827-1	K Band Oscillator	21.500	30	60	0 to +10	+5.0 to +8.0	1400
M087827-2	K Band Oscillator	22.100	30	60	0 to +10	+5.0 to +8.0	1400
M087827-3	K Band Oscillator	22.700	30	60	0 to +10	+5.0 to +8.0	1400
M087827-4	K Band Oscillator	23.300	30	60	0 to +10	+5.0 to +8.0	1400
M09405-1	Ka Band Oscillator	34.0	100	15	+1 to +20	+4.0 to +6.0	400

Other frequencies available upon request.

Horn Antennas

Part Number	Description	Center Frequency (GHz)	Usable Frequency Range (GHz)	Antenna 3dB Beamwidth E Plane (deg)	Antenna 3dB Beamwidth H Plane (deg)	Nominal Gain (dB)
MDT86552	K Band Pyramidal Horn Antenna	24.150	18.0 to 26.5	20	27	17
MDT86554	X Band Pyramidal Horn Antenna	10.525	8.0 to 12.0	70	30	12
MDT5864	K Band Planar Array Antenna	24.125	24.0 to 24.25	14	14	18
MHA4200	V Band Pyramidal Horn Antenna	77.000	76.0 to 78.0	20	15	20
MDT6386	K Band Pyramidal Horn Antenna	24.150	18.0 to 26.5	17	26	18

MDT6386 has an integrated harmonic filter.

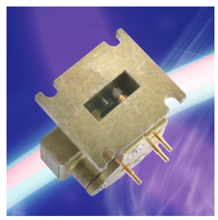
Specifications @ 25°C.
Specifications subject to change without notice.

Waveguide Detectors

Part Number	Description	Center Frequency (GHz)	Minimum Detectable Signal (dBm)[1]	RF Bandwidth (MHz)
MO86561	K Band Detector, Waveguide Mount	24.125	-45	300
MO86571	X Band Detector, Waveguide Mount	10.525	-45	300

[1] Video bandwidth = 1 MHz; N.F. = 2 dB.
Other frequencies available upon request.

Specifications @ 25°C.
Specifications subject to change without notice.



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