MMBV105G
MMBV105GL
MV105G

VVC

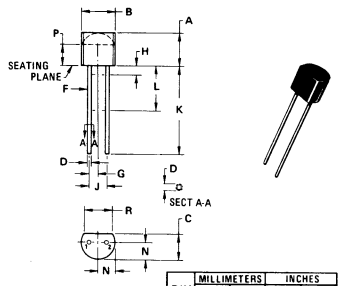
SILICON EPICAP DIODES

. . . designed in the Surface Mount package for general frequency control and tuning applications; providing solid-state reliability in replacement of mechanical tuning methods.

- Controlled and Uniform Tuning Ratio

VOLTAGE VARIABLE CAPACITANCE DIODES

30 VOLTS



DIM	MILLIMETERS MIN	MAX	INCHES MIN	MAX
A	4.32	5.33	0.170	0.210
B	4.45	5.21	0.175	0.205
C	3.18	4.19	0.125	0.165
D	0.356	0.533	0.014	0.021
F	0.407	0.482	0.016	0.019
G	1.27 BSC		0.050 BSC	
H	–	1.27	–	0.050
J	2.54 BSC		0.100 BSC	
K	12.70	–	0.500	–
L	6.35	–	0.250	–
N	2.03	2.66	0.080	0.105
P	2.93	–	0.115	–
R	3.43	–	0.135	–

All JEDEC dimensions and notes apply

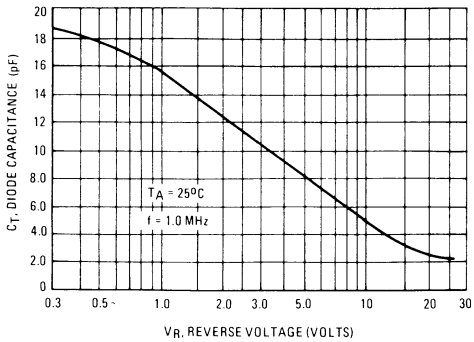
STYLE 1:
PIN 1. ANODE
2. CATHODE

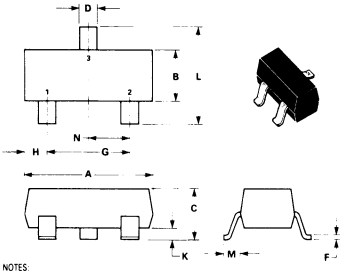
CASE 182-02
TO-226AC

MAXIMUM RATINGS

Rating	Symbol	MV105G	MMBV105G,L	Unit
		Value		
Reverse Voltage	V_R	30		Volts
Forward Current	I_F	200		mA
Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	280 2.8	200 2.0	mW mW/°C
Junction Temperature	T_J	+125		°C
Storage Temperature Range	T_{stg}	−65 to +150		°C

FIGURE 1 – DIODE CAPACITANCE





NOTES:
1. DIMENSIONING AND TOLERANCING PER Y14.5M, 1982
2. CONTROLLING DIMENSION: INCH.

STYLE 8:
PIN 1. ANODE
2. NO CONNECTION
3. CATHODE

DIM	MILLIMETERS MIN	MAX	INCHES MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.85	1.20	0.033	0.0472
D	0.37	0.50	0.0150	0.020
F	0.085	0.130	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.45	0.60	0.0177	0.0236
K	0.10	0.25	0.0040	0.0098
L	2.10	2.50	0.0830	0.0984
M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401
* K	0.013	0.10	0.0005	0.0040

*Low Profile = CASE 318-03 TO-236AB

CASE 318-02
TO-236AA

5

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic-All Types	Symbol	Min	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	30	–	Vdc
Reverse Voltage Leakage Current (VR = 28 V)	I_R	–	50.0	nAdc

Device Type	C_T V_R = 25 Vdc pF		Q f = 100 MHz V_R = 3.0V	C_3/C_{25}	
	Min	Max	Typ	Min	Max
MMBV105G	1.8	2.8	150	4.0	6

FIGURE 2 – FIGURE OF MERIT

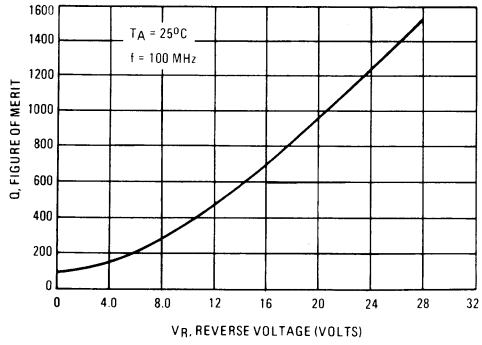
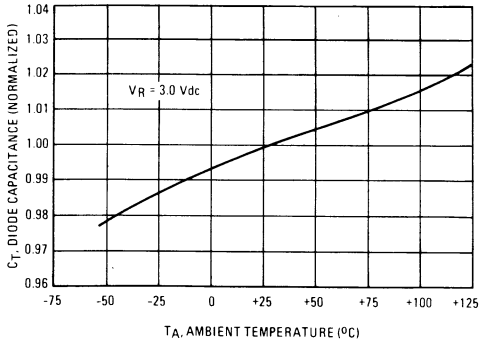


FIGURE 3 – DIODE CAPACITANCE



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MMBV109
MMBV109L
MV209

VVC

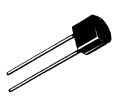
VOLTAGE VARIABLE CAPACITANCE DIODE

26-32 pF

SILICON EPICAP DIODE

. . . designed for general frequency control and tuning applications; providing solid-state reliability in replacement of mechanical tuning methods.

- High Q with Guaranteed Minimum Values at VHF Frequencies
- Controlled and Uniform Tuning Ratio
- Available in Surface Mount Package



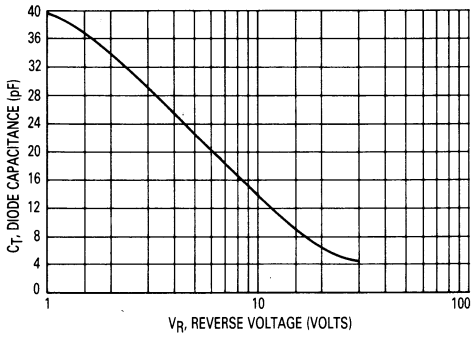
CASE 182-02
TO-226AC

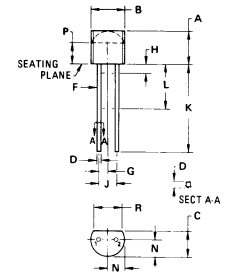
CASE 318-02
TO-236AA
SOT-23

MAXIMUM RATINGS

Rating	Symbol	MV209	MMBV209,L	Unit
		Value		
Reverse Voltage	V_R	30		Volts
Forward Current	I_F	200		mA
Forward Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	280 2.8	200 2.0	mW mW/°C
Junction Temperature	T_J	+125		°C
Storage Temperature Range	T_{stg}	−65 to +150		°C

FIGURE 1 — DIODE CAPACITANCE



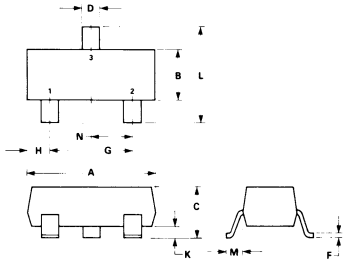


DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	4.32	5.33	0.170	0.210
B	4.45	5.21	0.175	0.205
C	3.18	4.19	0.125	0.165
D	0.356	0.533	0.014	0.021
F	0.407	0.482	0.016	0.019
G	1.27 BSC		0.050 BSC	
H	–	1.27	–	0.050
J	2.54 BSC		0.100 BSC	
K	12.70	–	0.500	–
L	6.35	–	0.250	–
N	2.03	2.66	0.080	0.105
P	2.93	–	0.115	–
R	3.43	–	0.135	–

All JEDEC dimensions and notes apply

STYLE 1:
PIN 1. ANODE
2. CATHODE

CASE 182-02
TO-226AC



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.85	1.20	0.033	0.0472
D	0.37	0.50	0.0150	0.020
F	0.085	0.130	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.45	0.60	0.0177	0.0236
K	0.10	0.25	0.0040	0.0098
L	2.10	2.50	0.0830	0.0984
M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401
* K	0.013	0.10	0.0005	0.0040

*Low Profile = CASE 318-03 TO-236AB

STYLE 8:
PIN 1. ANODE
2. NO CONNECTION
3. CATHODE

CASE 318-02
TO-236AA
SOT-23

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic – All Types	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	30	–	–	Vdc
Reverse Voltage Leakage Current (V_R = 25 Vdc)	I_R	–	–	0.1	μAdc
Diode Capacitance Temperature Coefficient (V_R = 3.0 Vdc, f = 1.0 MHz)	TC_C	–	300	—	ppm/°C

	C_t, Diode Capacitance V_R = 3.0 Vdc, f = 1.0 MHz pF			Q, Figure of Merit V_R = 3.0 Vdc f = 50 MHz (Note 1)	C_R, Capacitance Ratio C_3/C_{25} f = 1.0 MHz (Note 2)	
Device	Min	Nom	Max	Min	Min	Max
MMBV109,L/MV209	26	29	32	200	5.0	6.5

FIGURE 2 – FIGURE OF MERIT

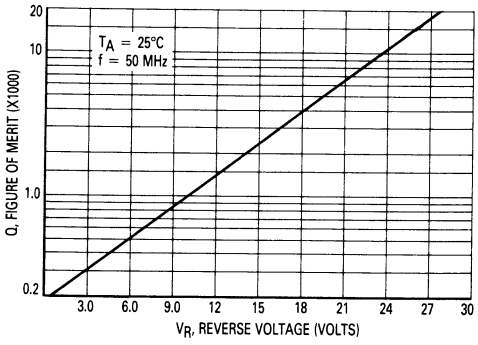


FIGURE 3 – LEAKAGE CURRENT

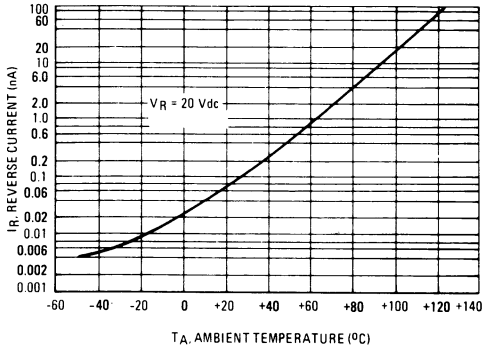
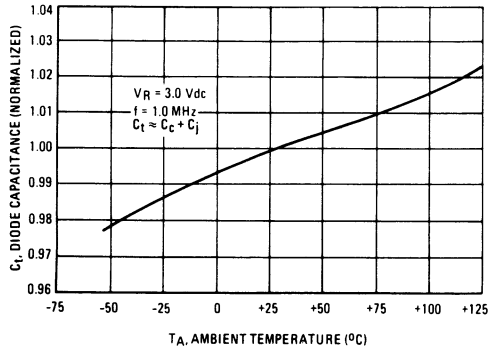


FIGURE 4 – DIODE CAPACITANCE



NOTES ON TESTING AND SPECIFICATIONS

1. Q is calculated by taking the G and C readings of an admittance bridge, such as Boonton Electronics Model 33AS8, at the specified frequency and substituting in the following equation:

$$Q = \frac{2\pi fC}{G}$$

2. C_R is the ratio of C_t measured at 3.0 Vdc divided by C_t measured at 25 Vdc.

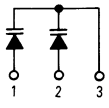
Silicon Epicap Diodes

MMBV432L

. . . designed for FM tuning, general frequency control and tuning, or any top-of-the-line application requiring back-to-back diode configuration for minimum signal distortion and detuning. This device is supplied in the SOT-23 plastic package for high volume, pick and place assembly requirements.

- High Figure of Merit — Q = 100 (Typ) @ V_R = 2 Vdc, f = 100 MHz
- Guaranteed Capacitance Range
- Dual Diodes — Save Space and Reduce Cost
- Surface Mount Package
- Available in 8 mm Tape and Reel
- Monolithic Chip Provides Improved Matching — Guaranteed ±1% (Max) Over Specified Tuning Range

DUAL VOLTAGE-VARIABLE CAPACITANCE DIODE



CASE 318-03
(TO-236AB)
Low-Profile

MAXIMUM RATINGS (Each Diode)

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	14	Volts
Forward Current	I_F	200	mA
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	350 2.8	mW mW/°C
Junction Temperature	T_J	+125	°C
Storage Temperature Range	T_{stg}	−65 to +125	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	14	—	—	Vdc
Reverse Voltage Leakage Current (V_R = 30 Vdc)	I_R	—	—	100	nAdc
Diode Capacitance (V_R = 2 Vdc, f = 1 MHz)	C_T	43	—	48.1	pF
Capacitance Ratio C3/C8 (f = 1 MHz)	C_R	1.5	—	2	—
Figure of Merit* (V_R = 2 Vdc, f = 100 MHz)	Q	75	100	—	—

* $Q = \frac{1}{2\pi f C_T R_S}$

5

TYPICAL CHARACTERISTICS (Each Diode)

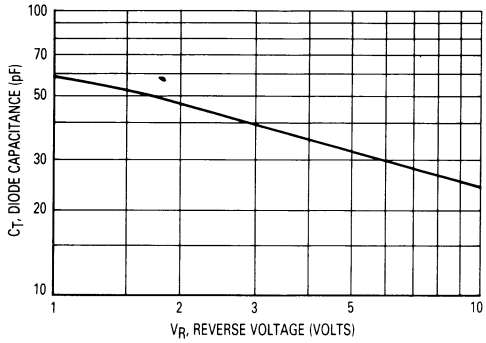


Figure 1. Diode Capacitance (Each Diode)

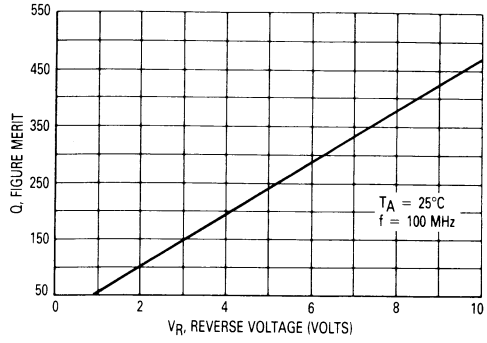


Figure 2. Figure of Merit versus Voltage

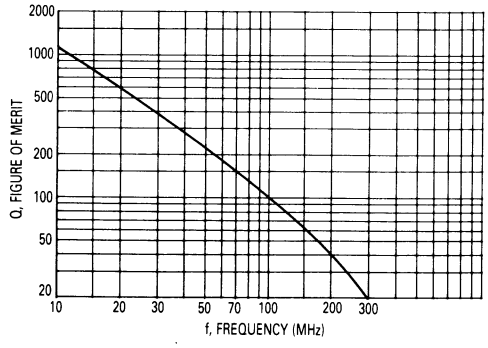


Figure 3. Figure of Merit versus Frequency

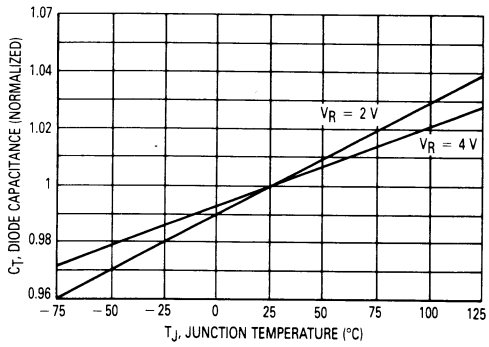


Figure 4. Diode Capacitance versus Temperature

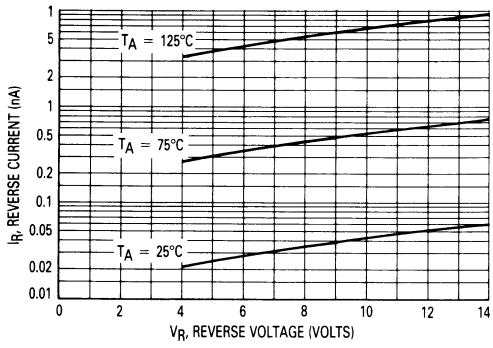


Figure 5. Reverse Current versus Reverse Voltage

OUTLINE DIMENSIONS

CASE 318-03
(TO-236AB)
Low-Profile

NOTES:
1. DIMENSIONING AND TOLERANCING PER Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.85	1.20	0.033	0.0472
D	0.37	0.50	0.0150	0.020
F	0.085	0.130	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.45	0.60	0.0177	0.0236
K	0.10	0.25	0.0040	0.0098
L	2.10	2.50	0.0830	0.0984
M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401
K	0.013	0.10	0.0005	0.0040

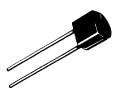
STYLE 9:
PIN 1. ANODE
2. ANODE
3. CATHODE

MMBV2101, L thru MMBV2109, L
MV2101 thru MV2115

VVC

VOLTAGE-VARIABLE CAPACITANCE DIODES

6.8–100 pF
30 VOLTS



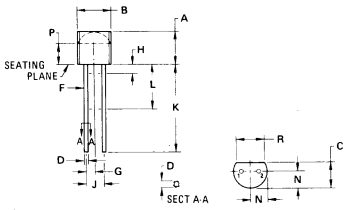
CASE 182-02

CASE 318-02
TO-236AA
SOT-23

SILICON EPICAP DIODES

. . . designed in the popular PLASTIC PACKAGE for high volume requirements of FM Radio and TV tuning and AFC, general frequency control and tuning applications; providing solid-state reliability in replacement of mechanical tuning methods.
Also available in Surface Mount package up to 33 pF.

- High Q with Guaranteed Minimum Values
- Controlled and Uniform Tuning Ratio
- Standard Capacitance Tolerance — 10%
- Complete Typical Design Curves

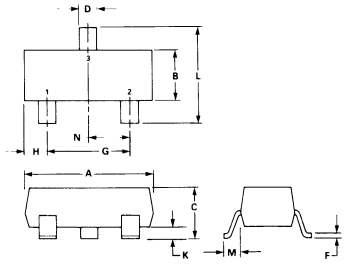


STYLE 1:
PIN 1. ANODE
2. CATHODE

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	4.32	5.33	0.170	0.210
B	4.45	5.21	0.175	0.205
C	3.18	4.19	0.125	0.165
D	0.356	0.533	0.014	0.021
F	0.407	0.482	0.016	0.019
G	1.27 BSC		0.050 BSC	
H	–	1.27	–	0.050
J	2.54 BSC		0.100 BSC	
K	12.70	–	0.500	–
L	6.35	–	0.250	–
N	2.03	2.66	0.080	0.105
P	2.93	–	0.115	–
R	3.43	–	0.135	–

All JEDEC dimensions and notes apply

CASE 182-02



STYLE 8:
PIN 1. ANODE
2. NO CONNECTION
3. CATHODE

CASE 318-02
TO-236AA
SOT-23

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.85	1.20	0.033	0.0472
D	0.37	0.50	0.0150	0.020
F	0.085	0.130	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.45	0.60	0.0177	0.0236
K	0.10	0.25	0.0040	0.0098
L	2.10	2.50	0.0830	0.0984
M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401
* K	0.013	0.10	0.0005	0.0040

*Low Profile = CASE 318-03 TO-236AB

MAXIMUM RATINGS

Rating	Symbol	MV2101 thru MV2115	MMBV2101,L thru MMBV2109,L	Unit
Reverse Voltage	V_R	30		Volts
Forward Current	I_F	200		mA
Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	280 2.8	200 2.0	mW mW/°C
Junction Temperature	T_J	+125		°C
Storage Temperature Range	T_{stg}	−65 to +150		°C

5

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic—All Types	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	30	–	–	Vdc
Reverse Voltage Leakage Current (V_R = 25 Vdc, T_A = 25°C)	I_R	–	–	0.10	μAdc
Diode Capacitance Temperature Coefficient (V_R = 4.0 Vdc, f = 1.0 MHz)	TC_C	–	280	—	ppm/°C

	C_T, Diode Capacitance V_R = 4.0 Vdc, f = 1.0 MHz pF			Q, Figure of Merit V_R = 4.0 Vdc, f = 50 MHz	TR, Tuning Ratio C_2/C_{30} f = 1.0 MHz		
Device	Min	Nom	Max	Typ	Min	Typ	Max
MMBV2101, L/MV2101	6.1	6.8	7.5	450	2.5	2.7	3.2
MMBV2102, L/MV2102	7.4	8.2	9.0	450	2.5	2.8	3.2
MMBV2103, L/MV2103	9.0	10.0	11.0	400	2.5	2.9	3.2
MMBV2104, L/MV2104	10.8	12.0	13.2	400	2.5	2.9	3.2
MMBV2105, L/MV2105	13.5	15.0	16.5	400	2.5	2.9	3.2
MMBV2106, L/MV2106	16.2	18.0	19.8	350	2.5	2.9	3.2
MMBV2107, L/MV2107	19.8	22.0	24.2	350	2.5	2.9	3.2
MMBV2108, L/MV2108	24.3	27.0	29.7	300	2.5	3.0	3.2
MMBV2109, L/MV2109	29.7	33.0	36.3	200	2.5	3.0	3.2
MV2110	35.1	39.0	42.9	150	2.5	3.0	3.2
MV2111	42.3	47.0	51.7	150	2.5	3.0	3.2
MV2112	50.4	56.0	61.6	150	2.6	3.0	3.3
MV2113	61.2	68.0	74.8	150	2.6	3.0	3.3
MV2114	73.8	82.0	90.2	100	2.6	3.0	3.3
MV2115	90.0	100.0	110.0	100	2.6	3.0	3.3

PARAMETER TEST METHODS

1. C_T, DIODE CAPACITANCE

(C_T = C_C + C_J). C_T is measured at 1.0 MHz using a capacitance bridge (Boonton Electronics Model 75A or equivalent).

2. TR, TUNING RATIO

TR is the ratio of C_T measured at 2.0 Vdc divided by C_T measured at 30 Vdc.

3. Q, FIGURE OF MERIT

Q is calculated by taking the G and C readings of an admittance bridge at the specified frequency and substituting in the following equations:

$$Q = \frac{2\pi fC}{G}$$

(Boonton Electronics Model 33AS8). Use Lead Length ≈1/16".

4. TC_C, DIODE CAPACITANCE TEMPERATURE COEFFICIENT

TC_C is guaranteed by comparing C_T at V_R = 4.0 Vdc, f = 1.0 MHz, T_A = -65°C with C_T at V_R = 4.0 Vdc, f = 1.0 MHz, T_A = +85°C in the following equation which defines TC_C:

$$TC_C = \frac{C_T(+85^\circ C) - C_T(-65^\circ C)}{85 + 65} \cdot \frac{10^6}{C_R(25^\circ C)}$$

Accuracy limited by measurement of C_T to ± 0.1 pF.

TYPICAL DEVICE PERFORMANCE

FIGURE 1 – DIODE CAPACITANCE versus REVERSE VOLTAGE

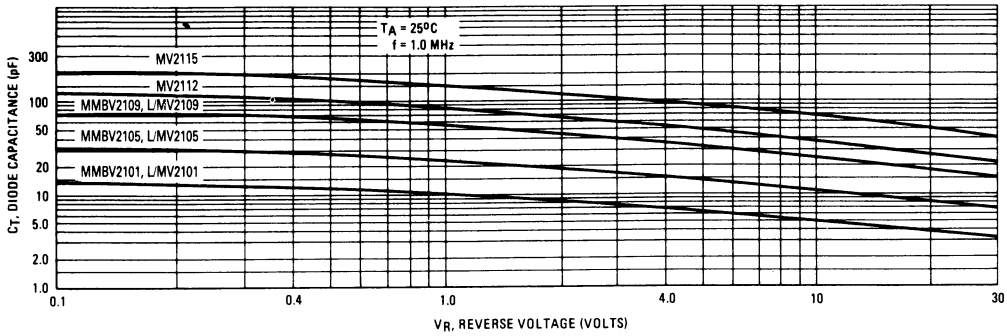


FIGURE 2 – NORMALIZED DIODE CAPACITANCE versus JUNCTION TEMPERATURE

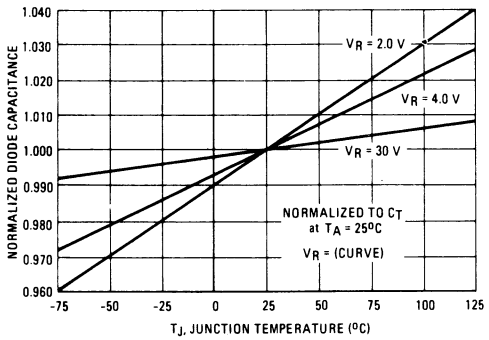


FIGURE 3 – REVERSE CURRENT versus REVERSE BIAS VOLTAGE

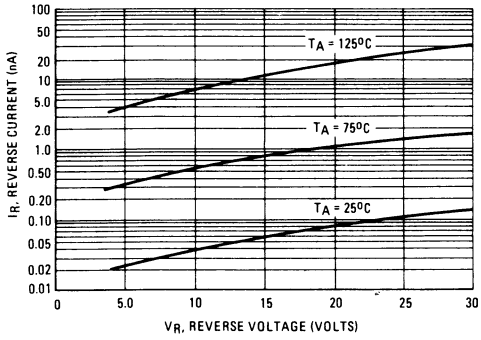


FIGURE 4 – FIGURE OF MERIT versus REVERSE VOLTAGE

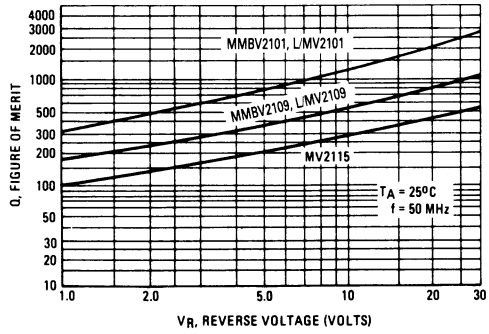
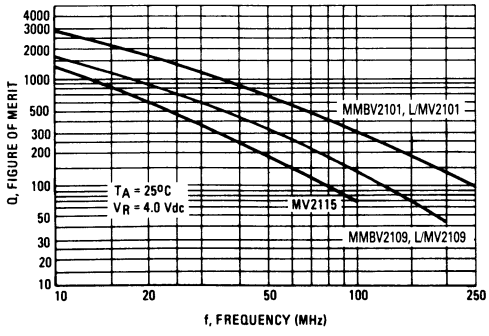


FIGURE 5 – FIGURE OF MERIT versus FREQUENCY



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MMBV3102
MMBV3102L

VVC

VOLTAGE VARIABLE
CAPACITANCE DIODES

22 pF (Nominal)
30 VOLTS

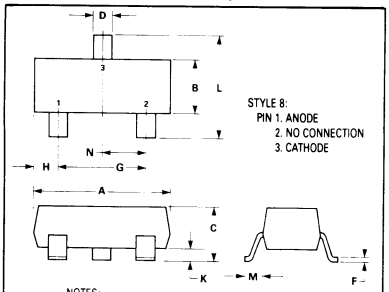
SILICON EPICAP DIODES

. . . designed in the Surface Mount package for general frequency control and tuning applications; providing solid-state reliability in replacement of mechanical tuning methods.

- High Q with Guaranteed Minimum Values at VHF Frequencies
- Controlled and Uniform Tuning Ratio

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	30	Volts
Forward Current	I_F	200	mA
Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	200 2.0	mW mW/°C
Junction Temperature	T_J	+125	°C
Storage Temperature Range	T_{stg}	-65 to +150	°C



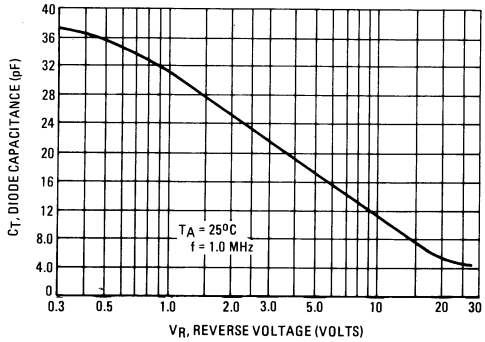
NOTES:
1. DIMENSIONING AND TOLERANCING PER Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.85	1.20	0.033	0.0472
D	0.37	0.50	0.0150	0.020
F	0.085	0.130	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.45	0.60	0.0177	0.0236
K	0.10	0.25	0.0040	0.0098
L	2.10	2.50	0.0830	0.0984
M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401
* K	0.013	0.10	0.0005	0.0040

*Low Profile = CASE 318-03 TO-236AB

CASE 318-02
TO-236AA

FIGURE 1 – DIODE CAPACITANCE



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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic—All Types	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	30	–	–	Vdc
Reverse Voltage Leakage Current (V_R = 25 Vdc, T_A = 25°C)	I_R	–	–	0.1	μAdc
Diode Capacitance Temperature Coefficient (V_R = 3.0 Vdc, f = 1.0 MHz)	TC_C	–	300	–	ppm/°C

	C_T, Diode Capacitance V_R = 3.0 Vdc, f = 1.0 MHz pF			Q, Figure of Merit V_R = 3.0 Vdc f = 50 MHz	C_R, Capacitance Ratio C_3/C_{25} f = 1.0 MHz	
Device	Min	Nom	Max	Min	Min	Typ
MV3102	20	22	25	200	4.5	4.8

FIGURE 2 – FIGURE OF MERIT

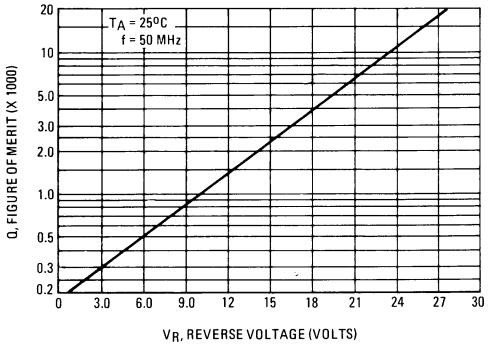


FIGURE 3 – LEAKAGE CURRENT

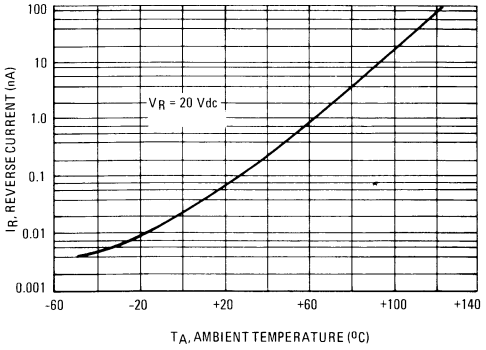
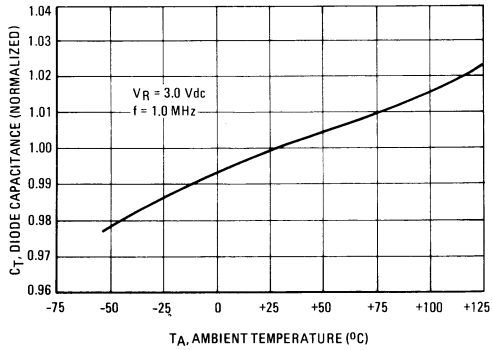


FIGURE 4 – DIODE CAPACITANCE



NOTES ON TESTING AND SPECIFICATIONS

1. L_S is measured on a package having a short instead of a die, using an impedance bridge (Boonton Radio Model 250A RX Meter).
2. C_C is measured on a package without a die, using a capacitance bridge (Boonton Electronics Model 75A or equivalent).
3. Q is calculated by taking the G and C readings of an admittance bridge, such as Boonton Electronics Model 33AS8, at the specified frequency and substituting in the following equation:

$$Q = \frac{2\pi fC}{G}$$

4. C_R is the ratio of C_T measured at 3.0 Vdc divided by C_T measured at 25 Vdc.

5

MMBV3401
MMBV3401L

SILICON PIN SWITCHING DIODE

SILICON PIN DIODE

. . . designed primarily for VHF band switching applications but also suitable for use in general-purpose switching and attenuator circuits. Supplied in a Surface Mount package.

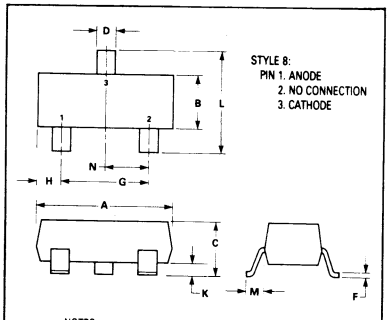
- Rugged PIN Structure Coupled with Wirebond Construction for Optimum Reliability
- Low Capacitance — 0.7 pF Typ at V_R = 20 V
- Very Low Series Resistance at 100 MHz — 0.34 Ohms (Typ) @ I_F = 10 mAdc

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	20	Volts
Forward Power Dissipation @ T_A = 25°C Derate above 25°C	P_F	200 2.8	mW mW/°C
Junction Temperature	T_J	+125	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μA)	$V_{(BR)R}$	35	—	—	Volts
Diode Capacitance V_R = 20 V	C_T	—	—	1.0	pF
Series Resistance (Figure 5) (I_F = 10 mA) f = 100 MHz	R_S	—	—	0.7	Ohms
Reverse Leakage Current (V_R = 25 V)	I_R	—	—	0.1	μA



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M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401
* K	0.013	0.10	0.0005	0.0040

*Low Profile = CASE 318-03 TO-236AB

CASE 318-02
TO-236AA

TYPICAL ELECTRICAL CHARACTERISTICS

FIGURE 1 – SERIES RESISTANCE

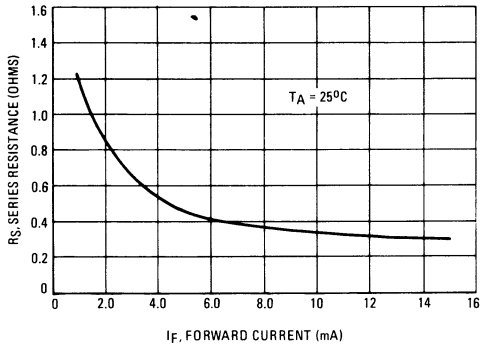


FIGURE 2 – FORWARD VOLTAGE

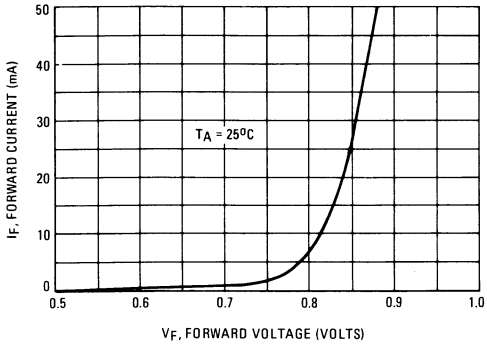


FIGURE 3 – DIODE CAPACITANCE

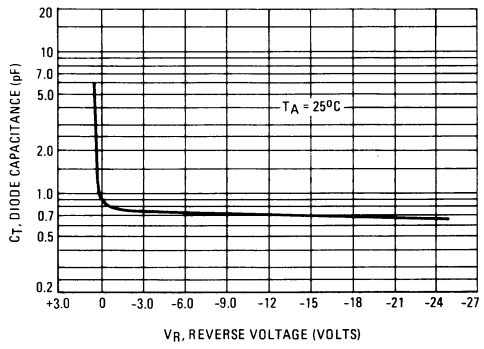


FIGURE 4 – LEAKAGE CURRENT

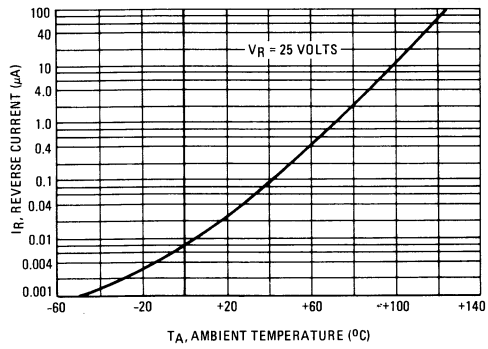
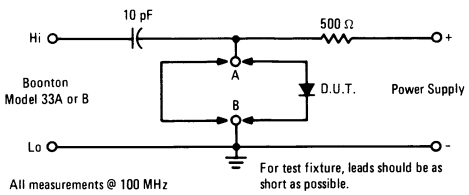


FIGURE 5 – FORWARD SERIES RESISTANCE TEST METHOD



To measure series resistance, a 10 pF capacitor is used to reduce the forward capacitance of the circuit and to prevent shorting of the external power supply through the bridge. The small signal from the bridge is prevented from shorting through the power supply by the 500-ohm resistor. The resistance of the 10 pF capacitor can be considered negligible for this measurement.

1. The RF Admittance Bridge (Boonton 33A or B) must be initially balanced, with the test circuit connected to the bridge test terminals. The conductance scale will be set at zero and the capacitance scale will be set at 120 pF, as required when using the 100 MHz test coil.
2. Use a short length of wire to short the test circuit from point "A" to "B". Then connect the power supply providing 10 mA of bias current to the test circuit.
3. Adjust the capacitance scale arm of the bridge and the "G" zero control for a minimum null on the "null meter". The null occurs at approximately 130 pF.
4. Replace the wire short with the device to be tested. Bias the device to a forward conductance state of 10 mA.
5. Obtain a minimum null on the "null meter", with the capacitance and conductance scale adjustment arms.
6. Read conductance (G) direct from the scale. Now read the capacitance value from the scale (≈ 130 pF) and subtract 120 pF which yields capacitance (C). The forward resistance (R_S) can now be calculated from:

$$R_S = \frac{2.533\,G}{C^2}$$

Where:
G – in micromhos,
C – in pF,
R_S – in ohms

5