GLASS PACKAGED SCHOTTKY BARRIER DIODES (JAN SWITCHING DIODES)

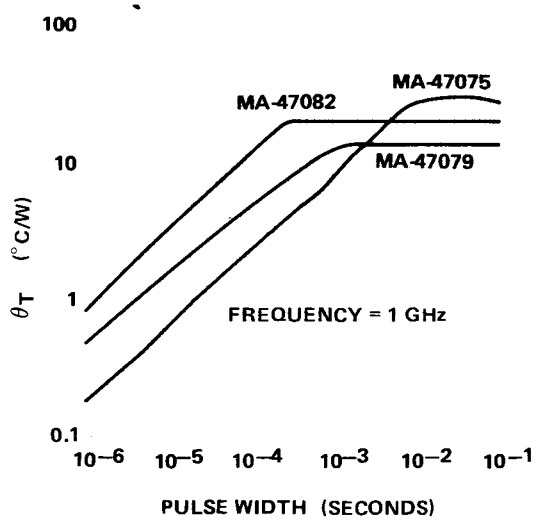
These silicon diodes are packaged in a pico-miniature glass package to mimimize cost. Various applications include detecting, mixing and switching at both high and low power levels. All versions are suitable for commercial switching and control functions particularly in narrow band receivers. They can also be used in low frequency applications such as shaping, sampling and as gates.

MODEL NUMBER [1,2,3]	EQUIVALENT JEDEC PART NUMBER [1,2,3]	MIN. BREAK-DOWN VOLT., V_B [4] (VOLTS)	MAX. FOR. VOLT., V_F @ 1 mA (VOLTS)	MIN. FOR. CURRENT @ V_F = 1V (mA)	MAX. REV. LEAKAGE CURRENT, I_R (nA)	MAX. TOTAL CAP., C_T [5] (pF)
MA-4E2800	1N5711[6]	70	.410	15	200 @ —50V	2.0
MA-4E2305	—	30	.400	75	300 @ —15V	1.0
MA-4E2301	1N5165	30	.400	50	300 @ —15V	1.0
MA-4E2302	1N5166	30	.400	35	300 @ —15V	1.0
MA-4E2303	1N5167	20	.400	35	500 @ —15V	1.0
MA-4E2810	—	20	.410	35	100 @ —15V	1.2
MA-4E2812	1N5712[6]	20	.550	35	150 @ —15V	1.2
MA-4E2811	1N5713	15	.410	20	100 @ — 8V	1.2
MA-4E2835	—	5[7]	.340	10	100 @ — 1V	1.0

NOTES:

1. Effective minority carrier lifetime (T_L) for these diodes is 100 ps maximum measured with the Krakover method at 20 mA except for MA-4E2835, MA-4E2800, MA-4E812, and MA-4E811, which are measured at 5 mA.
2. Diodes may be ordered using either M/A-COM model number or equivalent JEDEC part number.
3. All diodes in this series are housed in case style 54, a pico-miniature axial leaded glass package.
4. Breakdown voltage is measured at 10 μA reverse current except where otherwise stated.
5. Capacitance is measured at 0 volts bias and and 1 MHz.
6. Both the 1N5711 and 1N5712 are available as screened devices to JAN, JAN TX or JAN TXV levels for military applications (MIL-19500F).
7. The breakdown voltage of the MA-4E2835 is measured at 100 μA of reverse current.

TYPICAL PERFORMANCE



TYPICAL TRANSIENT THERMAL RESISTANCE VS PULSE WIDTH

HIGH VOLUME GLASS PACKAGED PIN DIODES

The MA-47000 series of glass packaged, current controlled diodes features a complete line of inexpensive PIN products from M/A-COM Silicon Products, Inc.'s High Volume Device Operation (HVDO). These low and medium power diodes are specially designed for use in switches, duplexers, switchable filters, matched attenuators, TR switches, RF modulators, limiters and AGC circuits from 1 MHz through L-Band.

MODEL NUMBER	CASE STYLE[1]	MIN. BREAK-DOWN VOLT., V_B[2] (VOLTS)	MAX. TOTAL CAP., C_T[3] (pF)	SERIES RESIST., R_S[4] (OHMS) MIN. @ 10 μA	TYP. @ 1 mA	MAX. @ CURRENT SHOWN
MA-4P200	54	35	1.0 @ −20 V	—	1.1	0.5 @ 10 mA
MA-47120[5]	54	35	1.0 @ −20 V	—	2.0	0.94 @ 10 mA
MA-47122[5]	139	35	2.0 @ −20 V	—	2.0	0.94 @ 10 mA
MA-47396	4	100	1.0 @ −100 V	—	—	4.0 @ 100 mA
MA-47100	54	100	0.3 @ −50 V	2000	40	3.5 @ 100 mA
MA-4P201	146	100	2.5 @ −50 V	—	—	0.5 @ 20 mA
MA-4P205	146	100	1.2 @ −50 V	—	—	0.65 @ 100 mA
MA-4P206	139	100	0.45 @ −50 V	2000	40	3.5 @ 100 mA
MA-4P208	139	100	0.4 @ −50 V	4000	100	7.0 @ 100 mA
MA-4P204	54	150	0.4 @ −20 V	—	6.0	1.5 @ 100 mA
MA-47047	54	200	0.3 @ −50 V	—	12.0	1.3 @ 100 mA
MA-47600	54	200	0.35 @ −50 V	1200	25.0	2.0 @ 100 mA
MA-4P207	54	200	0.3 @ −50 V	4000	100	7.0 @ 100 mA
MA-47123	139	200	0.5 @ −50 V	—	12	1.3 @ 100 mA
MA-47110	139	200	0.55 @ −50 V	1500	25	2.5 @ 100 mA
MA-47111	146	200	0.8 @ −100 V	8000	200	8.0 @ 100 mA
MA-47266	146	200	1.5 @ −100 V	—	—	0.6 @ 50 mA

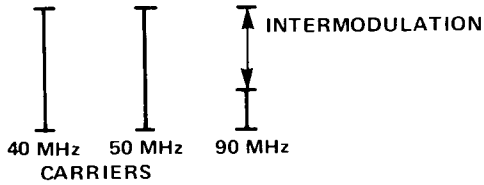
See notes on page 30.

NOTES:

1. All case styles are glass packages with axial leads.
2. Breakdown voltage is measured at a reverse bias current of 10 μA.
3. Total capacitance is measured at 100 MHz.
4. Resistance values are measured at 100 MHz.
5. MA-47120 and MA-47122 have typical reverse recovery times of 12 ns with I_F = 20 mA, I_R = 200 mA and 90% recovery.

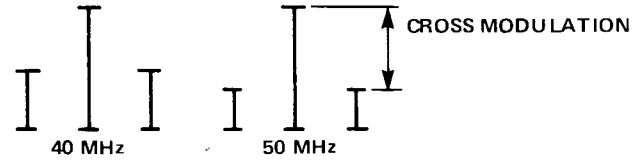
APPLICATION NOTES

Harmonic distortion in PIN diodes is critical for many applications. Second order intermodulation distortion is measured by using two carriers of equal amplitude at 40 and 50 MHz. The intermodulation product is measured at the sum frequency of 90 MHz. The value is specified as the power below either carrier.

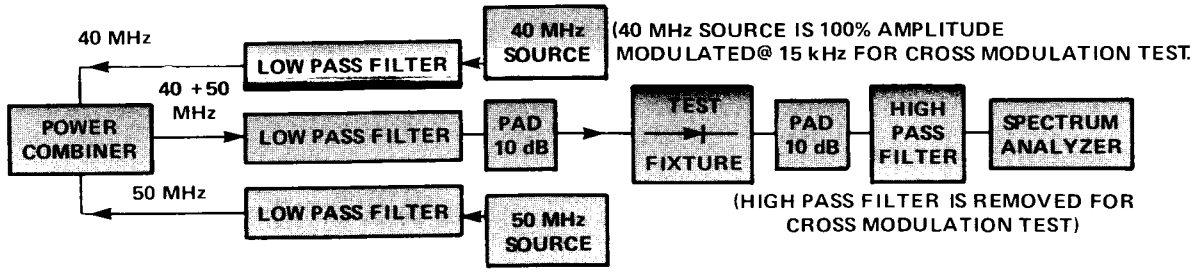


INTERMODULATION

Cross modulation is a third order distortion product. It is measured by using the same two carriers of equal amplitude. The 40 MHz carrier is 100% AM modulated @ 15 kHz. This results in an unwanted modulation of the 50 MHz carrier. This cross modulation is measured as the power in one sideband below the power of the 50 MHz carrier.

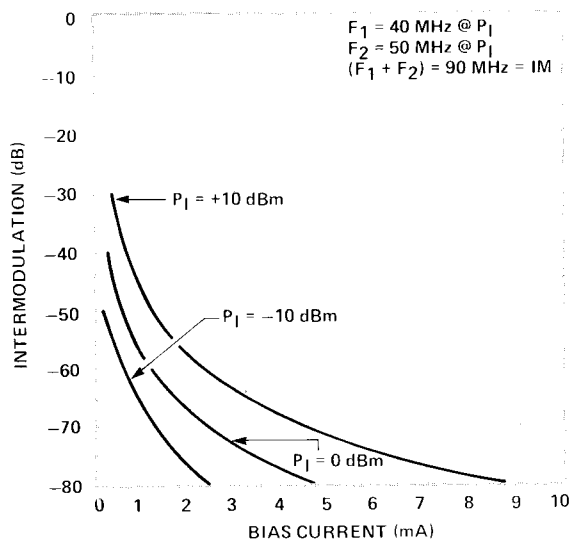


CROSS MODULATION

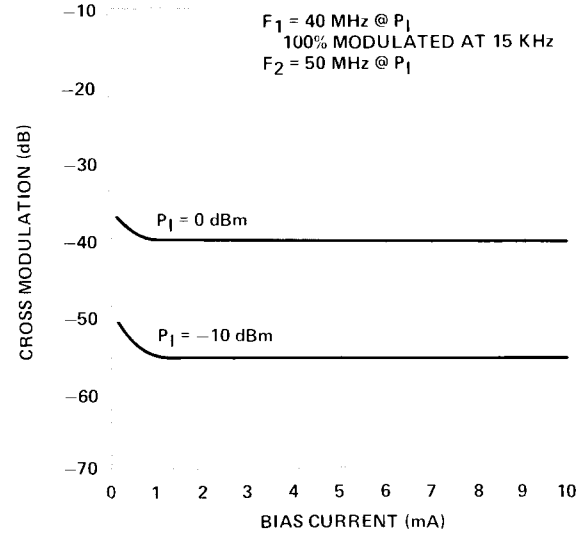


INTERMODULATION AND CROSS MODULATION TEST CIRCUIT

TYPICAL PERFORMANCE FOR MA-47047



INTERMODULATION VS. FORWARD BIAS CURRENT



CROSS MODULATION VS. FORWARD BIAS CURRENT