

High Power Common Anode SP2T PIN Diode Switch Modules



MASW-8334xx Series
Rev. V1

Features

- SP2T Series Diode Designs
- Operating Frequency, 30 - 550 MHz
- High Average Power, 158 W
- Low Insertion Loss, <0.1 dB
- High Isolation, >30 dB
- RoHS Compliant

Applications

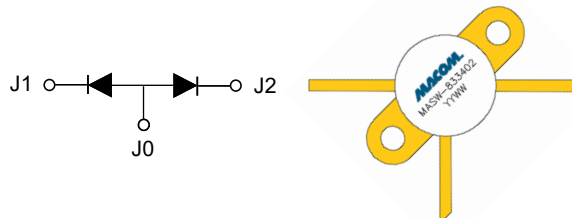
- Military Radio

Description

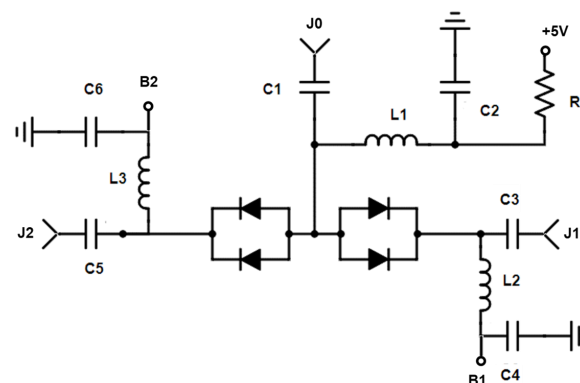
The MASW-8334xx series of SP2T high power switch modules are designed to function with CW input power of 158 W, CW, with a nominal source and load VSWR <1.2:1. They are constructed using advanced hybrid technology and utilize PIN diode chips that have been optimized for low loss and high reliability. These modules make use of MACOM's high voltage, CERMACHIP™ PIN diode chip distinguished by its low thermal resistance and low intermodulation distortion.

Applications for the MASW-8334xx include 100 W incident power T/R antenna and diversity switches. Typical bias conditions for nominal switch operation are 250 mA to 500 mA @ 1 V for the low loss condition and 150 V @ 0 mA for isolation.

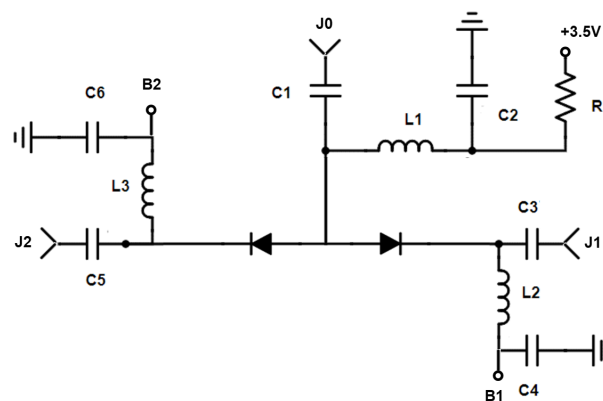
Internal Wiring Diagram



Circuit for Common Anode Biasing



Suggested Bias Circuit for MA833402



Suggested Bias Circuit for MA833401

C1, C3, C5 = 270 pF
C2, C4, C6 = 1000 pF
L = 520 nH
R = 10 Ω

Recommended DC Bias:
Low Loss: 250 mA @ 1 V, Isolation: 150 V @ 0 mA

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Electrical Specifications: Freq. = 30 - 200 MHz, Diode Voltage Rating = 1000 V, T_A = +25°C

Model Number	Case Style	Minimum Isolation ^{1,2} (dB)	Maximum Insertion Loss ^{1,2,3} (dB)	Maximum ^{1,2} CW Input Power (W)	Nominal Carrier Lifetime ⁴ (μs)
MASW-833401-0844B0	844-003	30	0.06	100	8
MASW-833402-0844B0	844-003	25	0.05	158	8

1. For (MASW-833401) 100 W CW High Power conditions, the “ON “ port is forward biased @ 250 mA, +1 V and the “OFF” port is reverse biased at +150 V, 0 mA, @ 30 MHz with maximum 1.2:1 source and maximum 1.2:1 load VSWR.
2. For (MASW-833402) 100 W CW High Power conditions, the “ON “ port is forward biased @ 500 mA, +1 V and the “OFF” port is reverse biased at +150 V, 0 mA, @ 30 MHz with maximum 1.2:1 source and maximum 1.2:1 load VSWR.
3. Nominal thermal resistance for each insertion loss diode is 9°C/W.
4. Minority Carrier Lifetime pulsed bias conditions +10 mA / -6 mA.

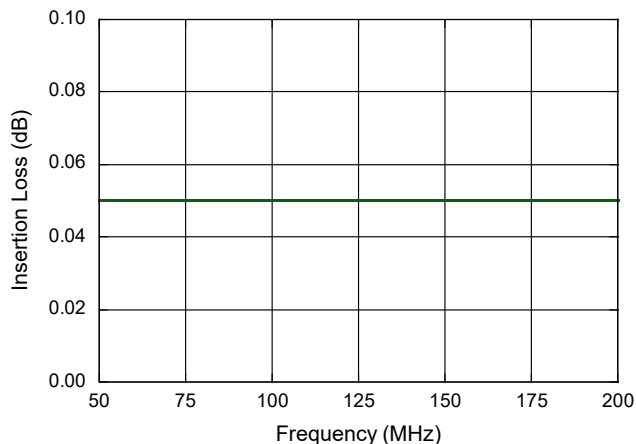
Absolute Maximum Ratings⁵

Parameter	Absolute Maximum
DC Reverse Voltage	200 V
Forward Current	500 mA
RF & DC Power Dissipation	11 W @ +25°C derated to 0 W @ +125°C
Junction Temperature	+175°C
Operating Temperature	-65°C to +125°C
Storage Temperature	-65°C to +150°C

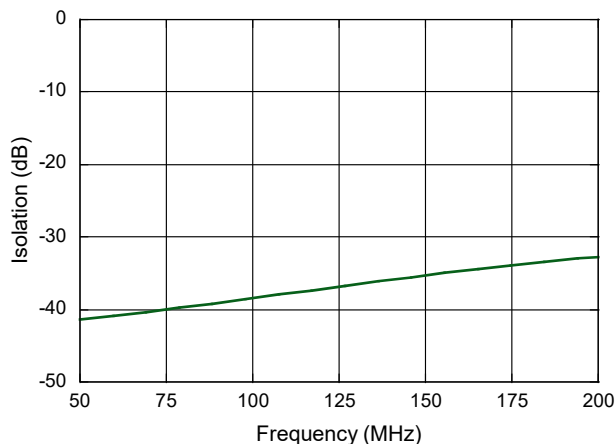
5. Operation of this device above any one of these parameters may cause permanent damage.

Typical Performance Curves

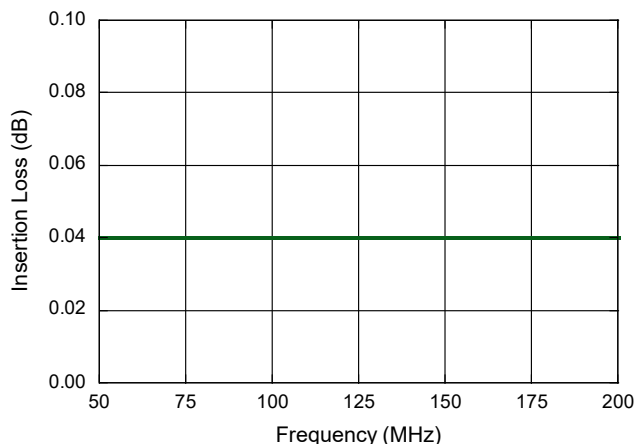
Insertion Loss (MASW-833401-0844B0)



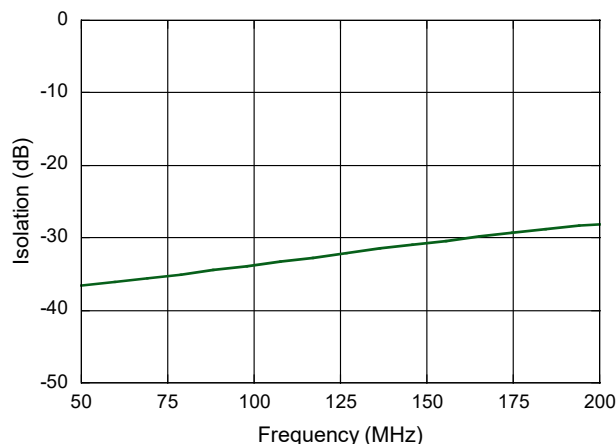
Isolation (MASW-833401-0844B0)



Insertion Loss (MASW-833402-0844B0)

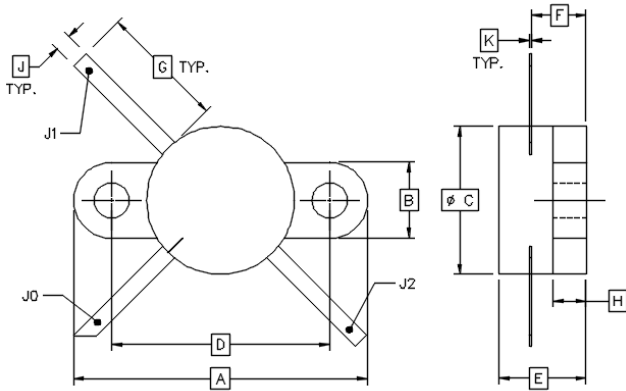


Isolation (MASW-833402-0844B0)



Case Dimensions

Case style 844-003



Dim.	Inches		mm	
	Min.	Max.	Min.	Max.
A	0.970	0.980	24.6	24.9
B	0.245	0.255	6.22	6.48
C	0.485	0.495	12.3	12.6
D	0.720	0.730	18.3	18.5
E	0.250	0.292	6.35	7.42
F	0.155	0.182	3.94	4.62
G	0.400	0.420	10.2	10.7
H	0.090	0.110	2.29	2.79
J	0.045	0.055	1.14	1.40
K	0.005	0.007	0.127	0.178

Mounting holes are 0.118 +/- 0.010 mil

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