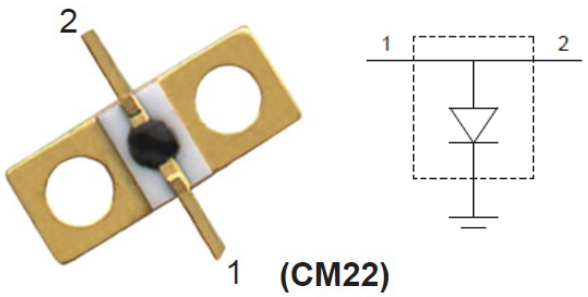
MSWSH-100-30

PIN Diode Shunt Switch Element

Rev. V1

Features

- Supports up to 100 W when hot switched
- Supports up to 300 W when cold switched
- Low Insertion Loss: 0.15 dB up to 2.7 GHz
- High Isolation: 31 dB up to 2.7 GHz
- RoHS* Compliant



Description

A broadband, high linearity, high power shunt switch element in a 10 x 4 mm bolt channel metal package.

This device is designed for WiMax, Wibro, WLAN, TD-SCDMA and other wireless infrastructure applications. It is also suited for 0.1 ~ 6 GHz applications with up to 100 watts of power.

Electrical Specifications: T_A = +25°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Breakdown Voltage (V_B)	I_R = 10 µA	V	700	—	—
Forward Voltage (V_F)	I_F = 100 mA	mV	—	850	—
Junction Capacitance (C_J)	V_R = -50 V, 1 MHz	pF	—	0.4	—
Series Resistance (R_S)	I_F = 100 mA, 500 MHz	Ω	—	0.4	0.6
I-Region (W)	I-Layer	µm	—	80	—
Insertion Loss (I_L)	V_R = 50 V 2.3 ~ 2.7 GHz <6.0 GHz	dB	—	0.15 0.35	0.25 0.45
Isolation (I_{SO})	I_F = 100 mA 2.3 ~ 2.7 GHz 6.0 GHz	dB	28 23	31 26	—
Input Return Loss (R_L)	V_R = 50 V 2.3 ~ 2.7 GHz 6.0 GHz	dB	15 10	22 15	—
Minority Carrier Lifetime (T_L)	I_F = 10 mA, I_R = 6 mA, @ 50%	ns	—	3400	—

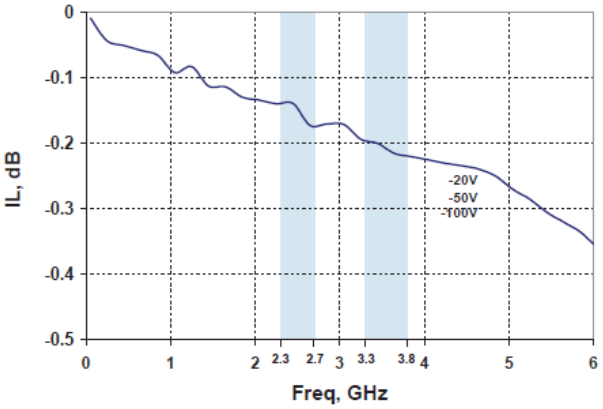
Absolute Maximum Ratings

Parameter	Absolute Maximum
Peak Current	1 A
Thermal Resistance	5°C/W
Junction Temperature	+175°C
Storage Temperature	-65°C to +150°C
Solder Temperature	+230°C for 30 seconds

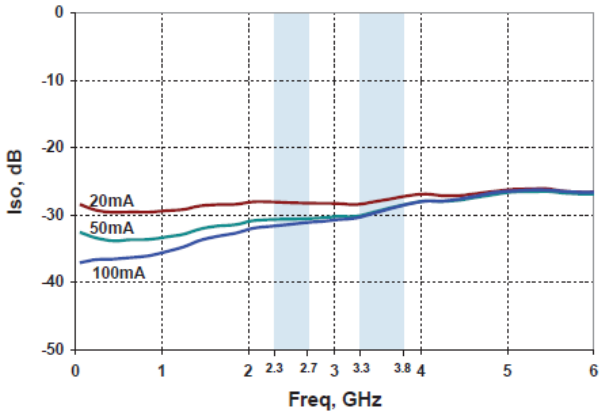
* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

Typical RF Performance: Production Test Board
T_A = 25°C, Z_O = 50 Ω, -10 dBm Small Signal

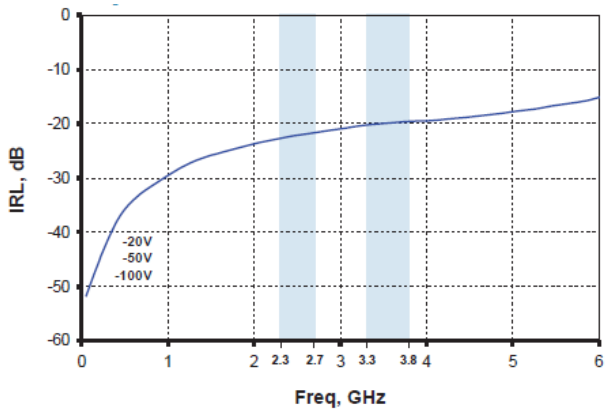
Insertion Loss



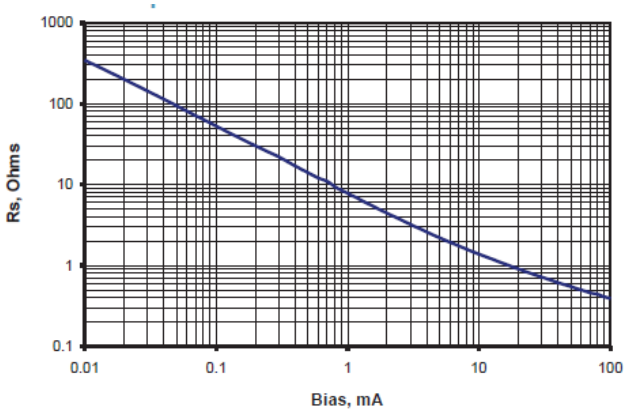
Isolation



Input Return Loss

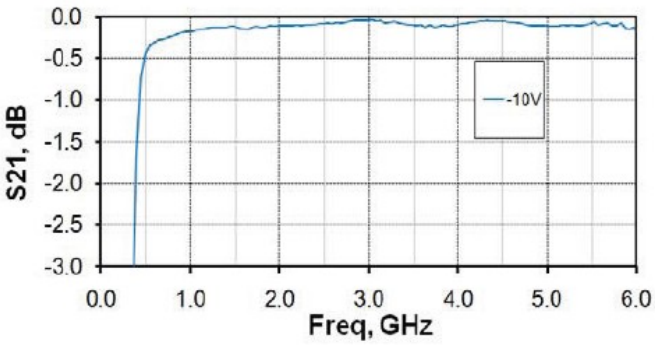


Series Resistance vs. Bias, 500 MHz

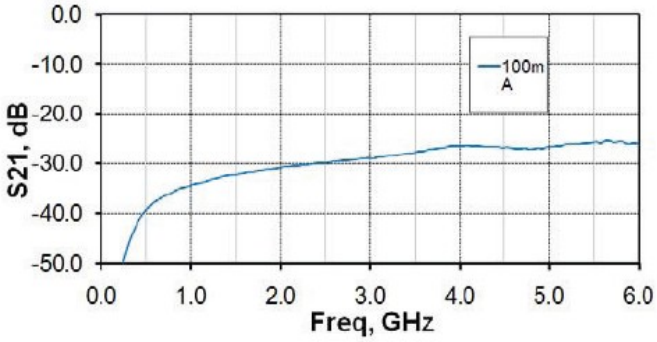


Typical RF Performance: Demo Board
T_A = 25°C, Z_O = 50 Ω, -10 dBm Small Signal, 100 mA Bias

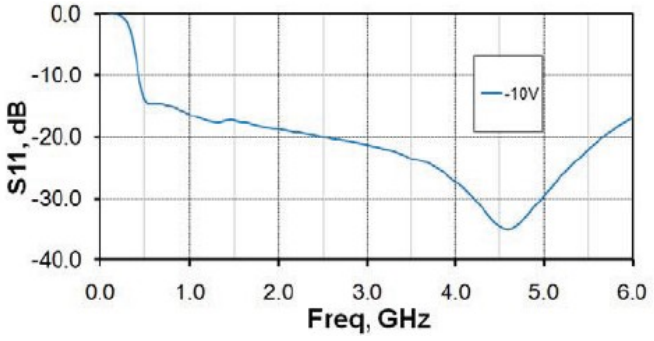
Insertion Loss



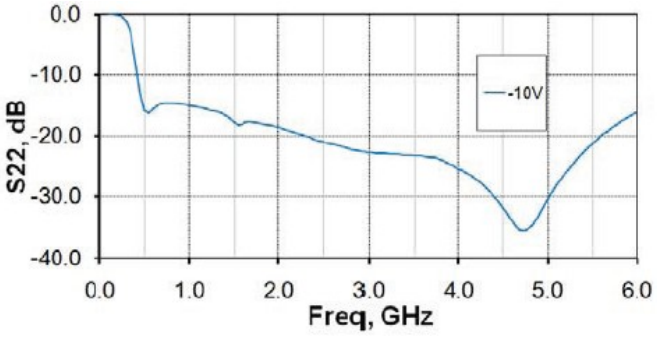
Isolation



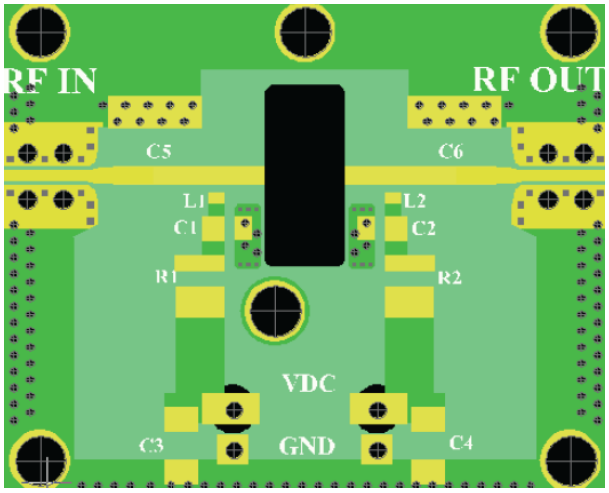
Input Return Loss



Output Return Loss

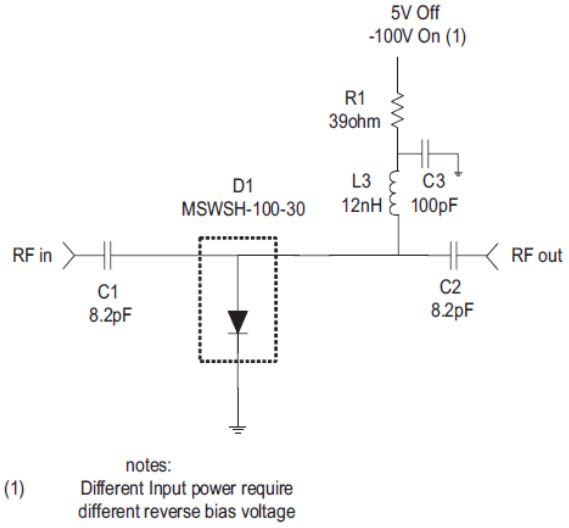


Recommended Demo PCB Layout



Dimensions: 1.50 in (3.81 cm) X 2.10 in (5.33cm)

Schematic

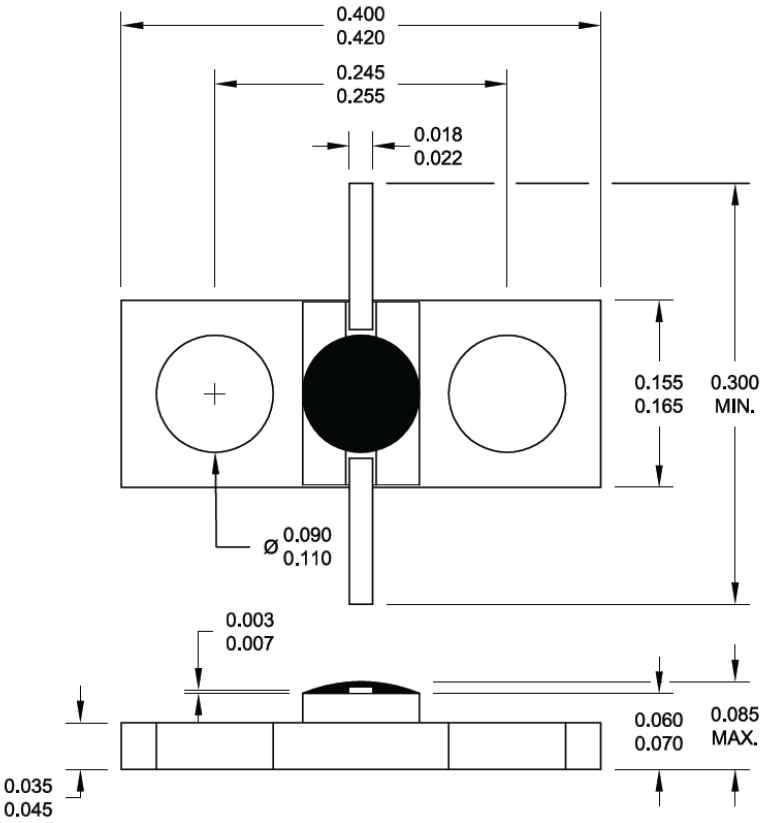


notes:
(1) Different Input power require different reverse bias voltage

Electrical Specifications: T_A = +25°C

Component	Value	Description	Manufacture	Manufacture Part #
C1, C2	8.2 pF	Capacitor, 0402 pkg, 20%	ATC	ATC600L8R2BT200T
C3	100 pF	Chip Capacitor, 0603 pkg, 20%	ATC	ATC600S101JT250XT
R1	39 Ω	Chip Resistor, 0.5 W, 5%	KOA Speer	RK73B3ATTD390J
L1	12 nF	Chip Inductor, 0402 pkg, 10%	ATC	ATC402WL120JT

Outline (2012)



PIN	FUNCTION
1,2	ANODE
Base Flange:	CATHODE, RF and DC GROUND

(Inches)