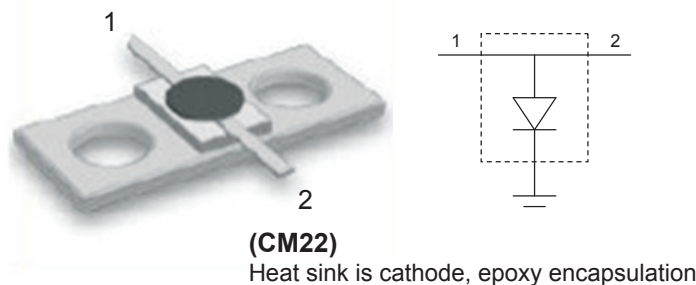


# MSWSH-100-30

## PIN Diode Shunt Switch Element



**AEROFLEX**  
A passion for performance.

### 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.

### Features

- Supports up to 100 watts when hot switched
- Supports up to 300 watts when cold switched
- Low insertion loss 0.15 dB typical up to 2.7 GHz
- High isolation 31 dB typical up to 2.7 GHz

### Electrical Specifications, $T_A = +25^\circ\text{C}$

SYMBOL	TEST CONDITIONS		MIN	TYPICAL	MAX	UNITS
$V_{BR}$	$I_R = 10\ \mu\text{A}$		700	—	—	V
$V_F$	$I_F = 100\ \text{mA}$		—	850	—	mV
$C_J$	$V_R = 50\ \text{V}$	$F = 1\ \text{MHz}$	—	0.4	—	pF
$R_S$	$I_F = 100\ \text{mA}$	$F = 500\ \text{MHz}$	—	0.4	0.6	$\Omega$
Switching Speed			—	—	1.0	$\mu\text{s}$
IL	$V_R = 50\ \text{volts}$	$F = 2.3 \sim 2.7\ \text{GHz}$	—	0.15	0.25	dB
		$F = 6.0\ \text{GHz}$	—	0.35	0.45	dB
IRL	$V_R = 50\ \text{volts}$	$F = 2.3 \sim 2.7\ \text{GHz}$	15	22	—	dB
		$F = 6.0\ \text{GHz}$	10	15	—	dB
Iso	$I_F = 100\ \text{mA}$	$F = 2.3 \sim 2.7\ \text{GHz}$	28	31	—	dB
		$F = 6.0\ \text{GHz}$	23	26	—	dB

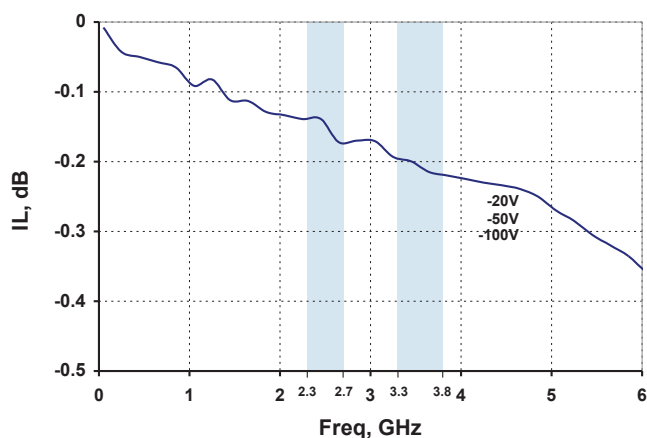
### Absolute Maximum Ratings

RATING	LIMITS	UNITS
$I_P$	1.0	A
$\theta_{JC}$	5.0	$^\circ\text{C/W}$
$T_J$	+175	$^\circ\text{C}$
$T_{STG}$	-65 to +150	$^\circ\text{C}$
$T_{SOLDER}$	+230 $^\circ\text{C}$ for 30 seconds	

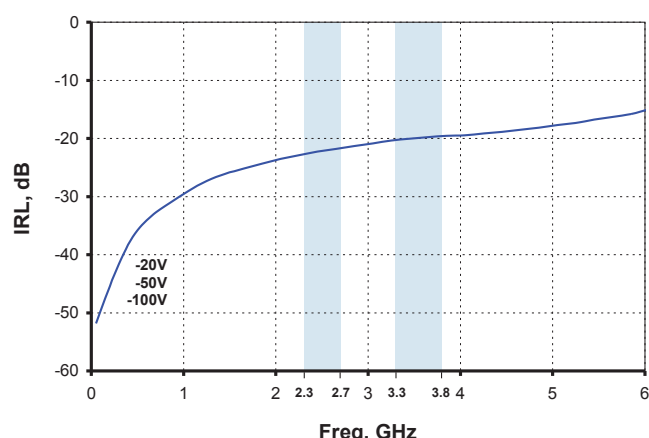
# MSWSH-100-30

Typical RF Performance at  $T_A = 25\text{ }^{\circ}\text{C}$ ,  $Z_o = 50\text{ }\Omega$ , Small Signal  
(Unless Otherwise Specified)

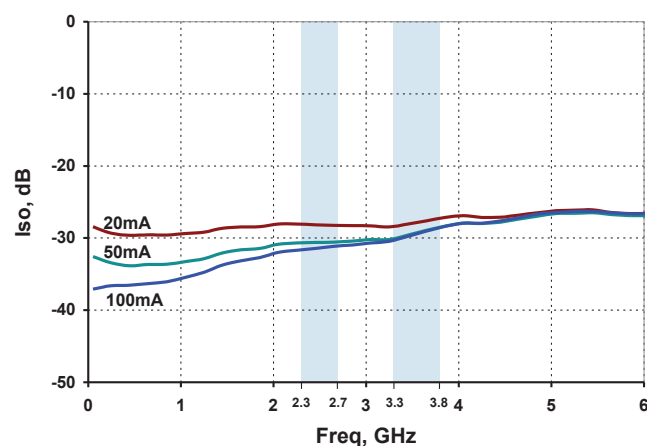
## Insertion Loss



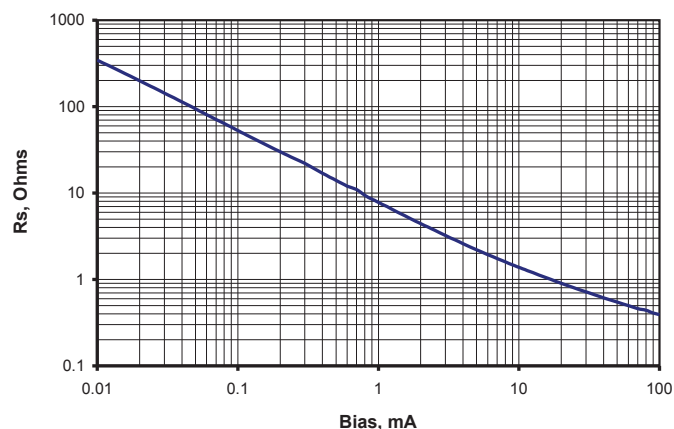
## Input Return Loss



## Isolation

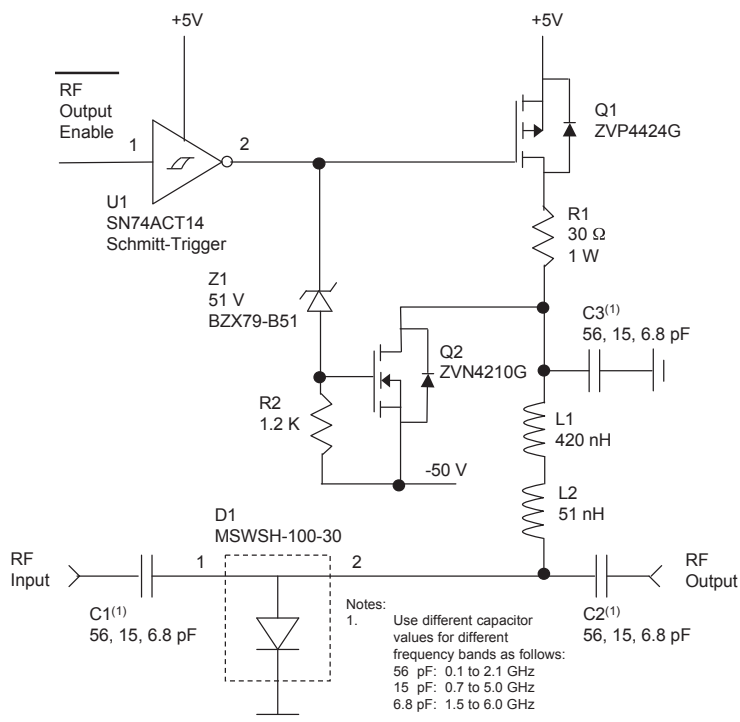


## Series Resistance vs. Current (Freq = 500 MHz)



# MSWSH-100-30

## Bias Schematic (0.1 to 6 GHz)



## Parts List

COMPONENT	DESCRIPTION	MANUFACTURE	P/N
R1	30 $\Omega$ , 1W, 2512 chip resistor	KOA Speer	RK73B3ATTD300J
R2	1.2 K $\Omega$ , 1/10W, 603 chip resistor	KOA Speer	RK73B1JTDD122J
C1,C2,C3 <sup>(1)</sup>	56pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S560JT250XT
C1,C2,C3 <sup>(1)</sup>	15pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S150JT250XT
C1,C2,C3 <sup>(1)</sup>	6.8pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S6R8JT250XT
L1	420nH, 340mA, 700MHz SRF Inductor	Coilcraft	0402AF-421XJLW
L2	51nH, 330mA, 2.3GHz SRF Inductor	Coilcraft	0402HP-51NXJLW
Q1	240V, 1A, 2.5W, P-channel MOSFET	ZETEX	ZVP4424G
Q2	10V, 0.8A, 2W, N-channel MOSFET	ZETEX	ZVN4210G
U1	Schmitt-Trigger TTL Inverter	Texas Instruments	SN74ACT14
Z1	51V +/-2%, 500mW Zener Diode	Philips	BZX79-B51
D1	PIN Diode Shunt Switch	Aeroflex-Metelics	MSWSH-100-30

### Notes:

1. Use different capacitor values for different frequency bands as follows:

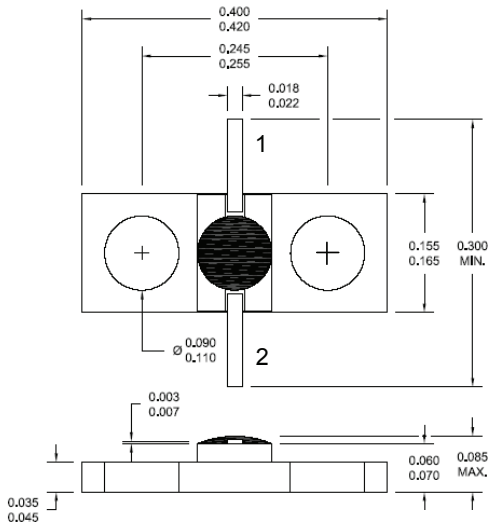
56 pF: 0.1 to 2.1 GHz

15 pF: 0.7 to 5.0 GHz

6.8 pF: 1.5 to 6.0 GHz

# MSWSH-100-30

## Package Outline (CM22) and Electrical Schematic

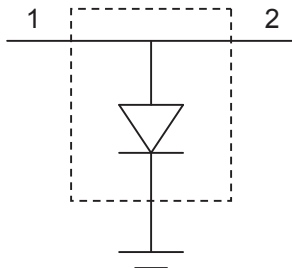


PIN FUNCTION

1,2 ANODE

Base Flange: CATHODE, RF and DC GROUND

(Inches)



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