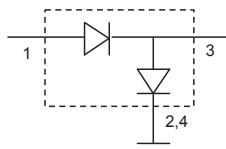
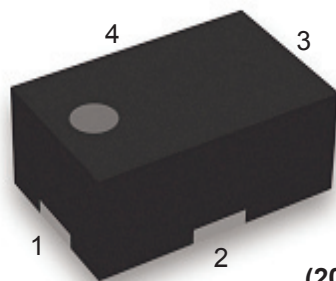


MSWSS-020-40

PIN Diode Series Shunt Integrated Switch Element



(2012)

Laser mark is input



AEROFLEX
A passion for performance.

Description

A broadband, high linearity, medium power series shunt integrated switch element in a 1.9 X 1.1 mm QFN 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 20 watts of power.

Features

- Supports up to 20 watts power when cold switched
- Low insertion loss 0.3 dB typical up to 2.7 GHz
- High Isolation 50 dB typical up to 2.7 GHz

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

SYMBOL	TEST CONDITIONS		MIN	TYPICAL	MAX	UNITS
V_{BR}	$I_R = 10 \mu\text{A}$		100	—	—	V
Switching Speed			—	—	1.0	μs
IL	$I = -50 \text{ mA}^*$	$F = 2.3 \sim 2.7 \text{ GHz}$	—	0.3	0.5	dB
		$F = 6.0 \text{ GHz}$	—	0.6	0.8	dB
IRL	$I = -50 \text{ mA}^*$	$F = 2.3 \sim 2.7 \text{ GHz}$	15	21	—	dB
		$F = 6.0 \text{ GHz}$	10	13	—	dB
ORL	$I = -50 \text{ mA}^*$	$F = 2.3 \sim 2.7 \text{ GHz}$	15	22	—	dB
		$F = 6.0 \text{ GHz}$	10	13	—	dB
Iso	$I = +50 \text{ mA}^*$	$F = 2.3 \sim 2.7 \text{ GHz}$	40	50	—	dB
		$F = 6.0 \text{ GHz}$	30	35	—	dB

* Positive current is defined as current going into pin 3.

Absolute Maximum Ratings

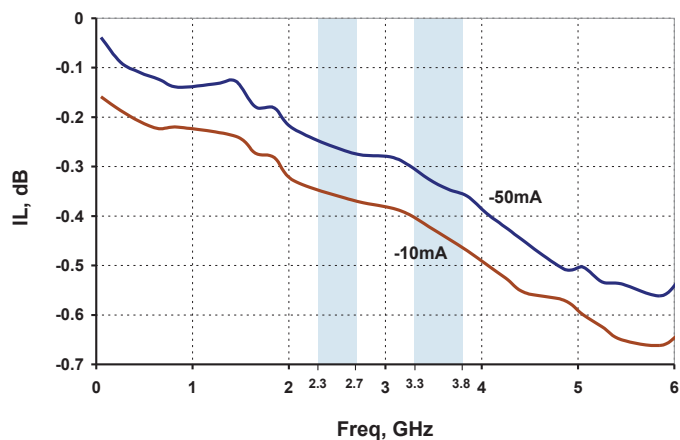
RATING	LIMITS	UNITS
V_R	100	V
I_F	100	mA
θ_{JC}	30	$^\circ\text{C/W}$
T_J	+175	$^\circ\text{C}$
T_{STG}	-65 to +150	$^\circ\text{C}$
T_{SOLDER}	+260 $^\circ\text{C}$ per JEDEC J-STD-20C	

AEROFLEX
METELICS

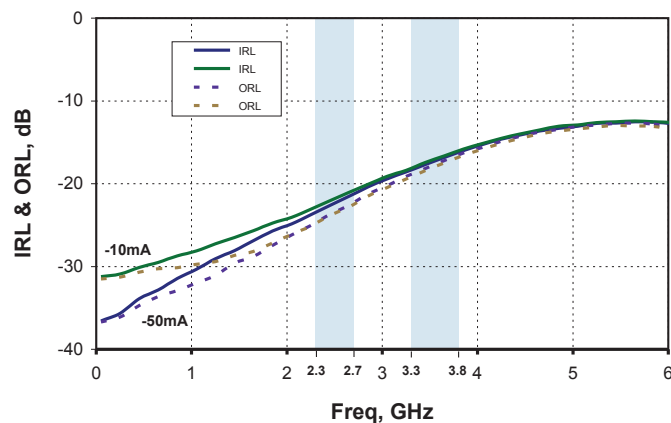
MSWSS-020-40

Typical RF Performance at $T_A = 25\text{ }^{\circ}\text{C}$, $Z_0 = 50\text{ }\Omega$, Small Signal
(Unless Otherwise Specified)

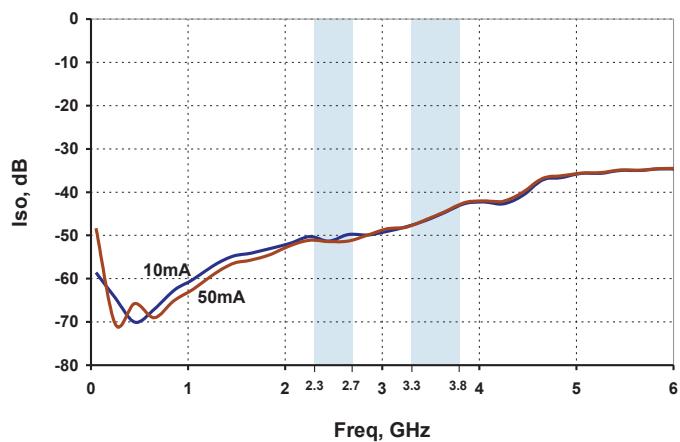
Insertion Loss



Input and Output Return Loss

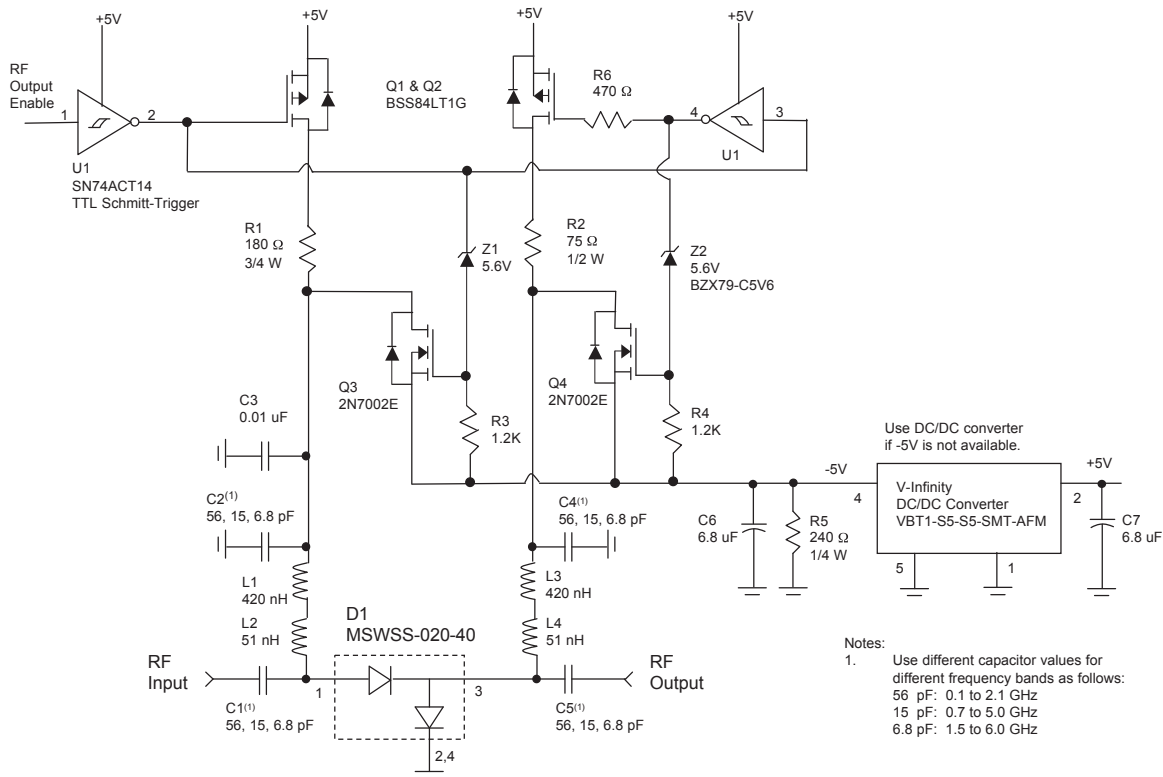


Isolation



MSWSS-020-40

Bias Schematic (0.1 to 6 GHz)



Parts List

COMPONENT	DESCRIPTION	MANUFACTURE	P/N
R1	180Ω, 3/4W, 2010 chip resistor	KOA Speer	RK73B2HTTD181J
R2	75Ω, 1/2W, 1210 chip resistor	KOA Speer	RK73B2ETTD750J
R3,R4	1.2KΩ, 1/10W, 603 chip resistor	KOA Speer	RK73B1JTDD122J
R5	240Ω, 1/4W, 1206 chip resistor	KOA Speer	RK73B2BTDD241J
R6	470Ω, 1/10W, 603 chip resistor	KOA Speer	RK73B1JTDD471J
C1,C2,C4,C5 ⁽¹⁾	56pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S560JT250XT
C1,C2,C4,C5 ⁽¹⁾	15pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S150JT250XT
C1,C2,C4,C5 ⁽¹⁾	6.8pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S68JT250XT
C3	0.01 μF, 50VDC Capacitor, 1206 pkg	ATC	ATC1206NPO103JT2AT
C6,C7	6.8 μF, 50VDC Capacitor, 2225 pkg	ATC	ATC2225Z5U685MT2AT
L1,L3	420nH, 340mA, 700MHz SRF Inductor	Coilcraft	0402AF-421XJLW
L2,L4	51nH, 330mA, 2.3GHz SRF, Inductor	Coilcraft	0402HP-51NXJLW
Q1,Q2	50V, 130mA, P-Channel MOSFET	ON SEMI	BSS84LT1G
Q3,Q4	60V, 310mA, N-Channel MOSFET	ON SEMI	2N7002E
U1	Hex Schmitt-Trigger TTL Inverter	Texas Instruments	SN74ACT14
Z1,Z2	5.6V, 500mW Zener Diode	Philips	BZX79-C5V6
DC1	1W, 5V to -5V DC/DC Converter	V-Infinity	VBT1-S5-S5-SMT-AFM
D1	Series-Shunt PIN Diode Switch	Aeroflex-Metelics	MSWSS-020-40

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

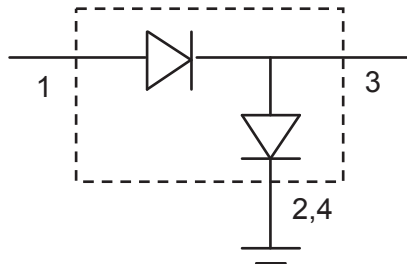
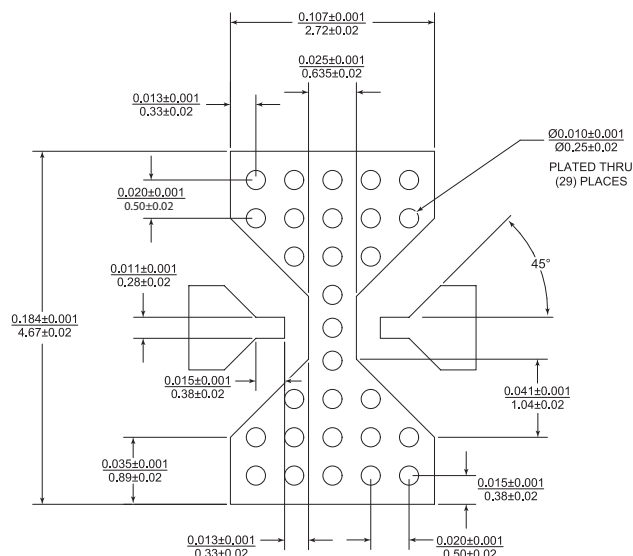
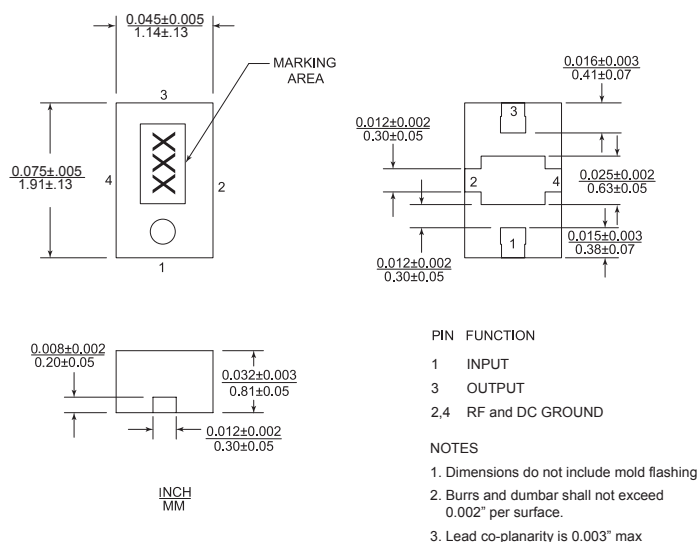
6.8 pF: 1.5 to 6.0 GHz

Revision Date: 4/1/2010

MSWSS-020-40

Package Outline (2012) and Electrical Schematic

PCB Layout



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