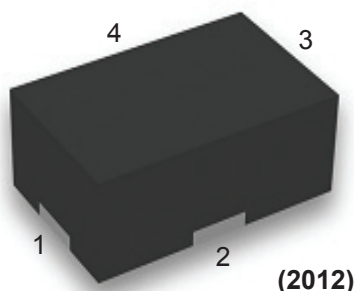
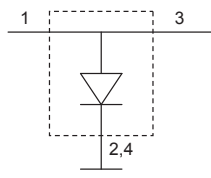


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PIN DIODE SHUNT SWITCH ELEMENT



(2012)



Description

A broadband, high linearity, medium power shunt 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 0.25 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}	$I_R = 10\ \mu\text{A}$		100	—	—	V
C_J	$V_R = 10\text{V}$	$F = 1\ \text{MHz}$	—	0.13	—	pF
R_S	$I_F = 50\ \text{mA}$	$F = 500\ \text{MHz}$	—	0.6	0.9	Ω
Switching Speed			—	—	0.5	μs
IL	$V_R = 10\ \text{volts}$	$F = 2.3 \sim 2.7\ \text{GHz}$	—	0.25	0.35	dB
		$F = 6.0\ \text{GHz}$	—	0.35	0.45	dB
IRL	$V_R = 10\ \text{volts}$	$F = 2.3 \sim 2.7\ \text{GHz}$	15	19	—	dB
		$F = 6.0\ \text{GHz}$	10	14	—	dB
Iso	$I_F = 50\ \text{mA}$	$F = 2.3 \sim 2.7\ \text{GHz}$	26	31	—	dB
		$F = 6.0\ \text{GHz}$	25	27	—	dB

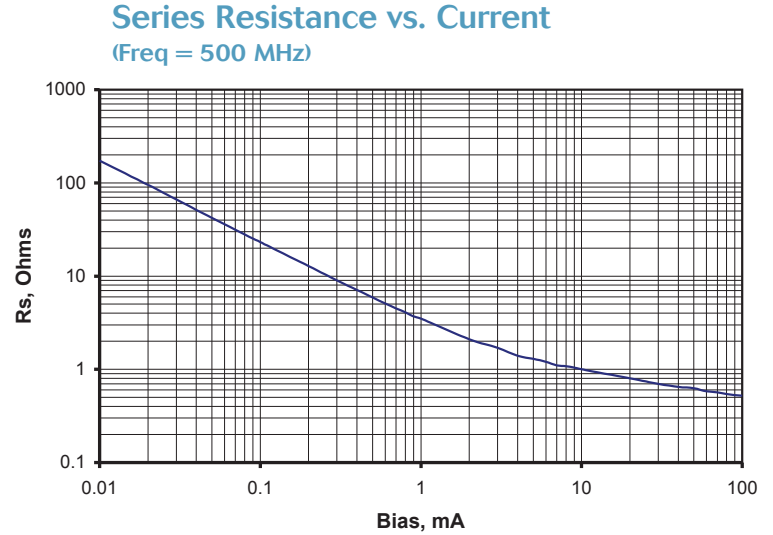
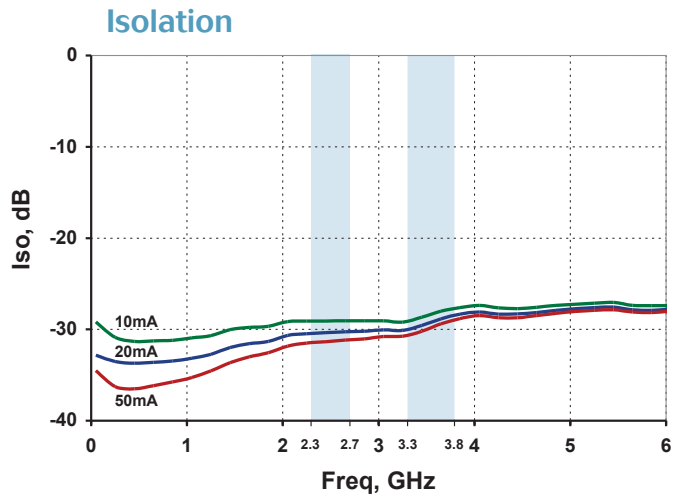
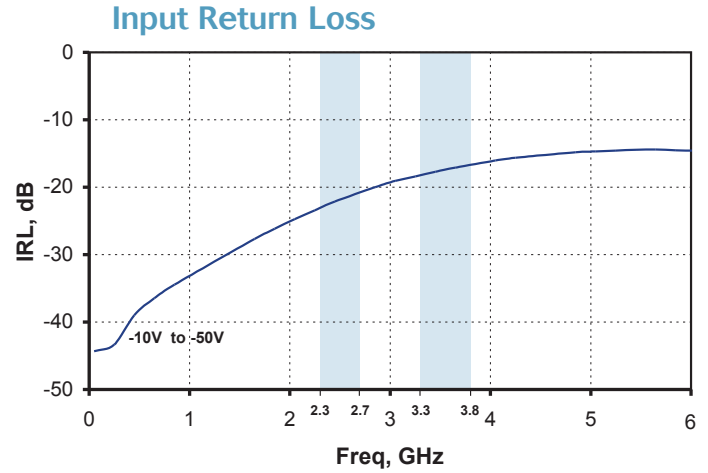
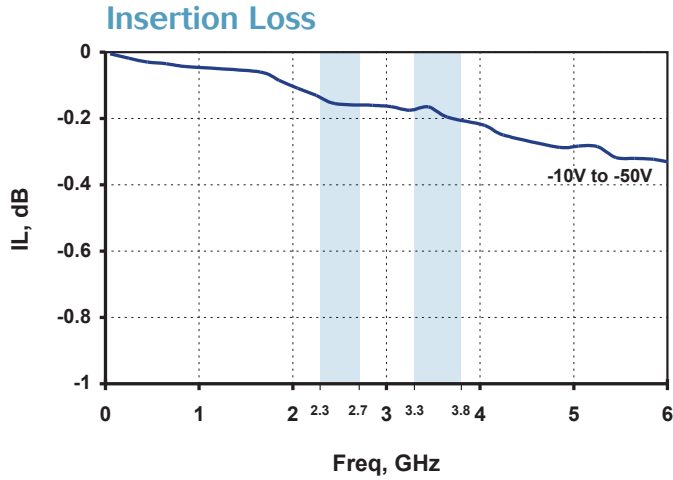
Absolute Maximum Ratings

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	



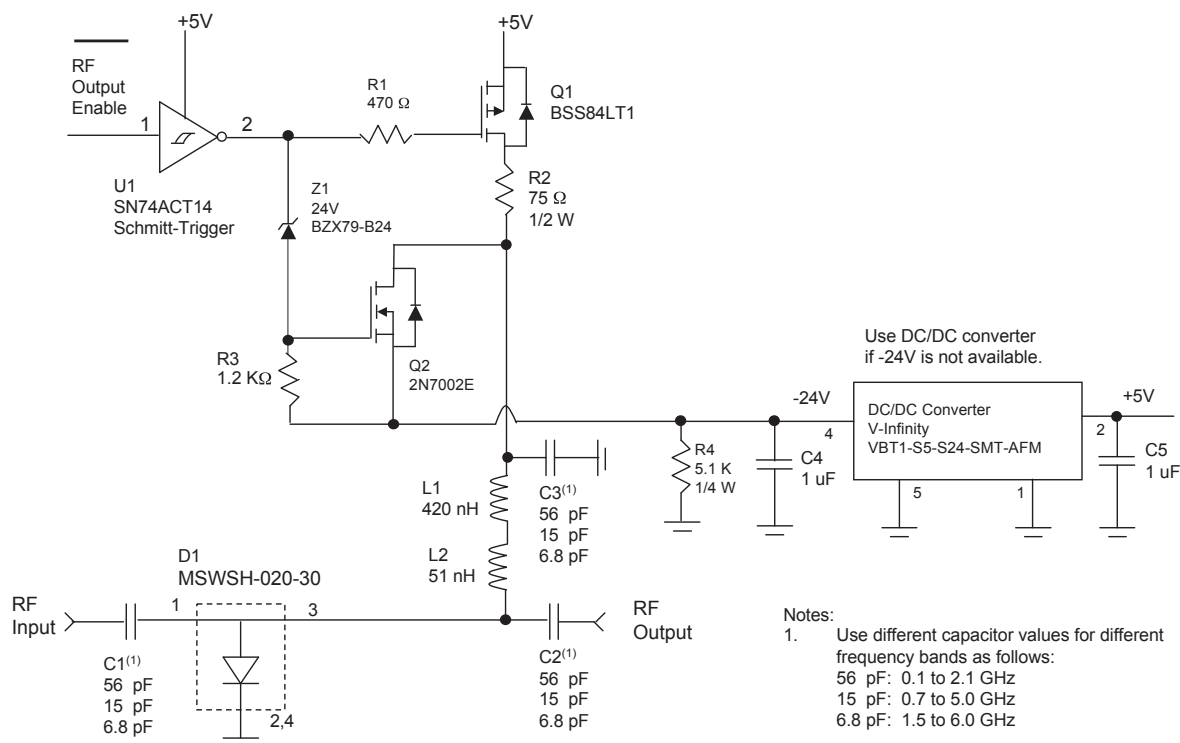
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Typical RF Performance at $T_A = 25^\circ\text{C}$, $Z_0 = 50\ \Omega$, Small Signal
(Unless Otherwise Specified)



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Bias Schematic (0.1 to 6 GHz)



Parts List

COMPONENT	DESCRIPTION	MANUFACTURE	P/N
R1	470Ω, 1/10W, 0603 chip resistor	KOA Speer	RK73B1JTDD471J
R2	75Ω, 1/2W, 1210 chip resistor	KOA Speer	RK73B2ETTD750J
R3	1.2KΩ, 1/10 W, 0603 chip resistor	KOA Speer	RK73B1JTDD122J
R4	5.1KΩ, 1/4W, 1206 chip resistor	KOA Speer	RK73B2BTDD512J
C1,C2,C3 ⁽¹⁾	56pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S560JT250XT
C1,C2,C3 ⁽¹⁾	15pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S150JT250XT
C1,C2,C3 ⁽¹⁾	6.8pF, 250VDC Capacitor, 0603 pkg	ATC	ATC600S6R8JT250XT
C4,C5	1uF, 50WVDC Capacitor, 1206 pkg	ATC	ATC1206Z5U105MT2AT
L1	420nH, 340mA, 700MHz SRF Inductor	Coilcraft	0402AF-421XJLW
L2	51nH, 330mA, 2.3GHz SRF, Inductor	Coilcraft	0402HP-51NXJLW
Q1	50V, 130mA, P-Channel MOSFET	ON SEMI	BSS84LT1
Q2	60V, 310mA, N-Channel MOSFET	ON SEMI	2N7002E
U1	Hex Schmitt-Trigger TTL Inverter	Texas Instruments	SN74ACT14
Z1	24V, 2%, 500mW Zener Diode	Philips	BZX79-B24
DC1	1W, 5V to 24V DC/DC Converter	V-Infinity	VBT1-S5-S24-SMT-AFM
D1	PIN Diode Shunt Switch	Aeroflex-Metelics	MSWSH-20-30

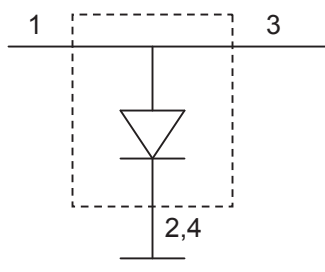
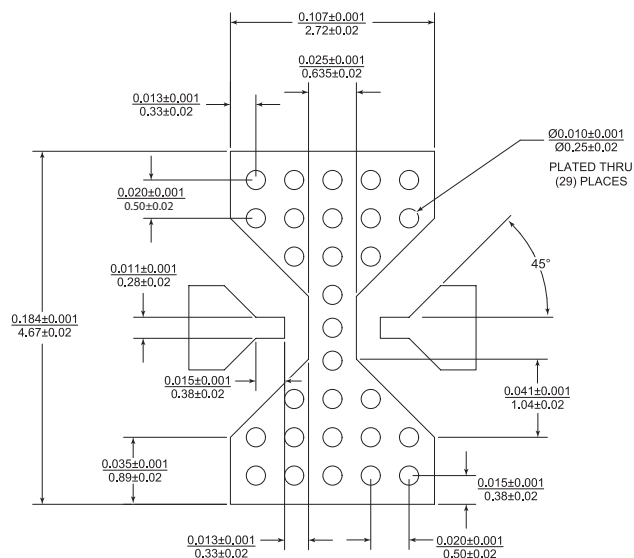
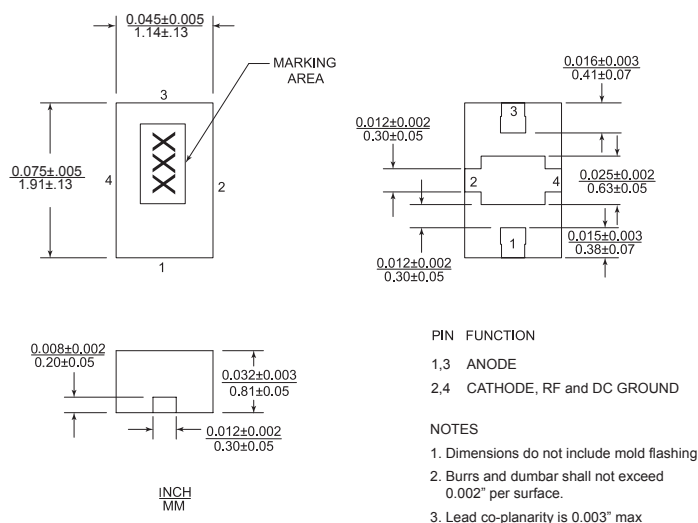
Notes:

- 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

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Package Outline (2012) and Electrical Schematic

PCB Layout



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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.