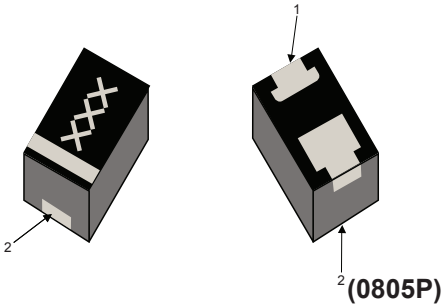
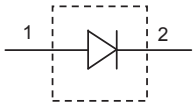
MSWSE-040-10

PIN Diode Series Switch Element





Description

A broadband, high linearity, medium power series switch element in a 2.0 X 1.3 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 ~ 3 GHz applications with up to 40 watts of power.

Features

- Supports up to 40 watts power when cold switched
- Low Insertion Loss 0.25 dB typical up to 2.7 GHz
- Medium Isolation 11 dB typical up to 2.7 GHz

Electrical Specifications, T_A = +25 °C

SYMBOL	TEST CONDITIONS		MIN	TYPICAL	MAX	UNITS
V_{BR}	I_R = 10 µA		250	–	–	V
V_F	I_F = 50 mA		–	900	–	mV
C_J	V_R = 50 V	F = 1 MHz	–	0.12	–	pF
R_S	I_F = 10 mA	F = 500 MHz	–	2.0	–	Ω
R_S	I_F = 50 mA	F = 500 MHz	–	0.6	1.4	Ω
τ	I_F = 10 mA	I_R = 6 mA 50%	–	700	–	nsec
W	I - Layer		–	40	–	µm
IL	I_F = 50 mA	F = 2.025 GHz	–	0.12	0.20	dB
		F = 2.3 ~ 2.7 GHz	–	0.25	0.35	dB
IRL	I_F = 50 mA	F = 2.025 GHz	15	25	–	dB
		F = 2.3 ~ 2.7 GHz	15	20	–	dB
Iso	V_R = 10 V	F = 2.025 GHz	10	14	–	dB
		F = 2.3 ~ 2.7 GHz	9	11	–	dB

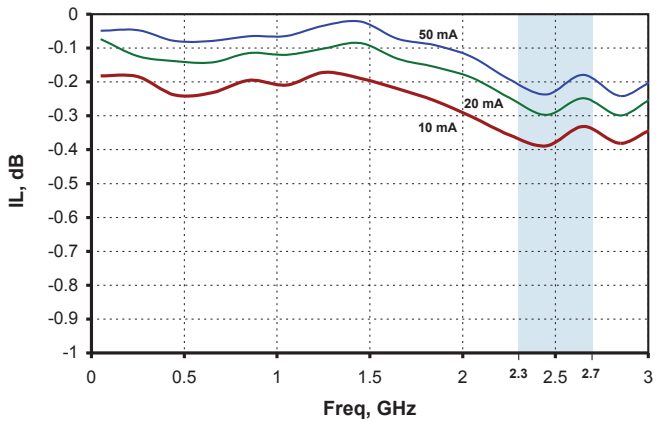
Absolute Maximum Ratings

RATING	LIMITS	UNITS
V_R	250	V
I_F	100	mA
θ_{JC}	20	°C/W
T_J	+175	°C
T_{STG}	-65 to +150	°C
T_{SOLDER}	+260 °C per JEDEC J-STD-20C	

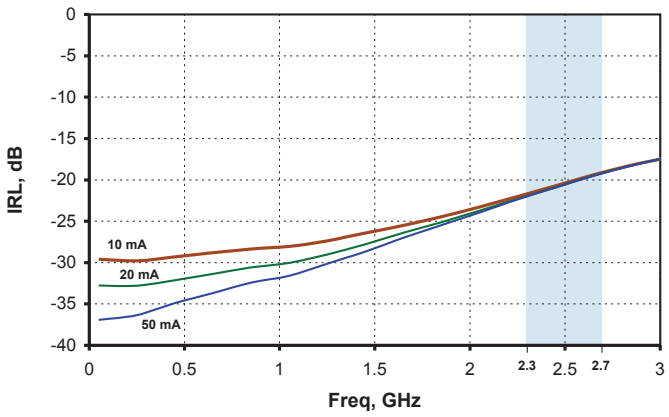
METELICS

Typical RF Performance at T_A = 25 °C, Zo = 50 Ω, Small Signal
(Unless Otherwise Specified)

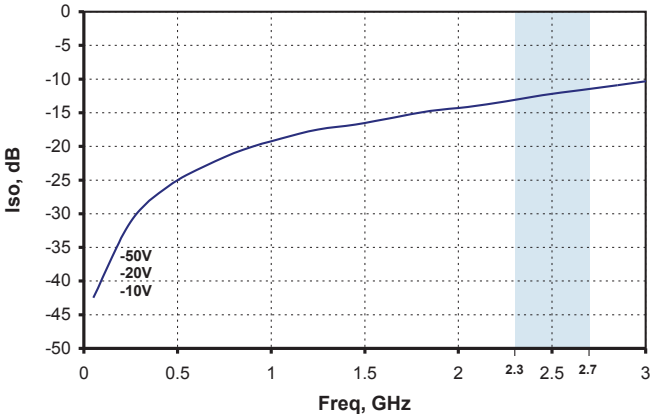
Insertion Loss



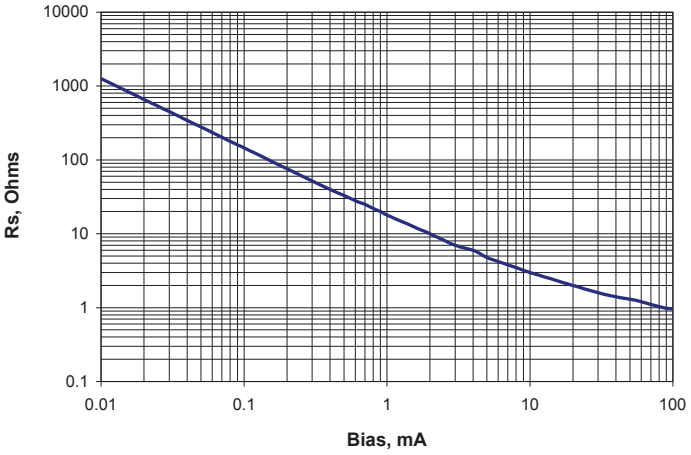
Input Return Loss



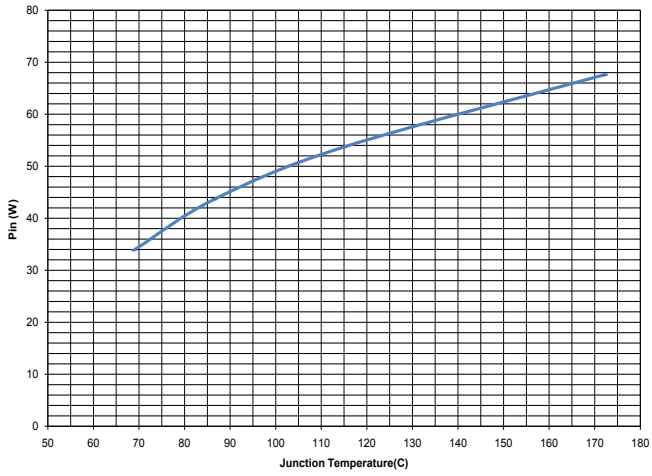
Isolation



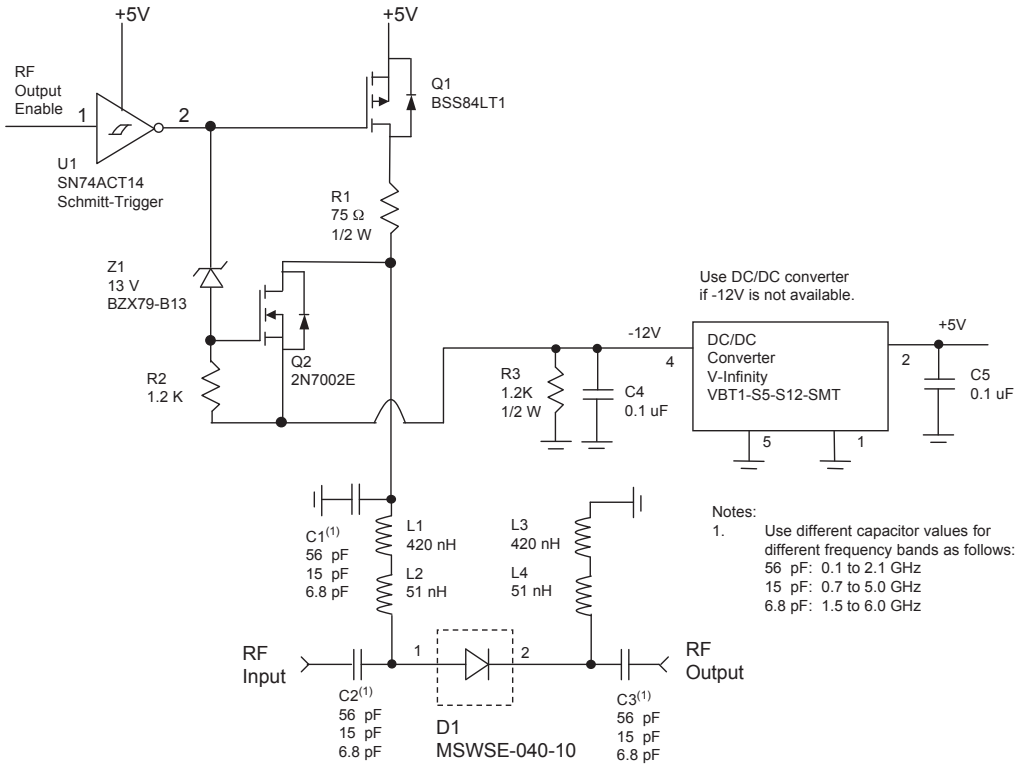
Series Resistance vs. Current
(Freq = 500 MHz)



Junction Temperature vs Power with the Backside of Board maintained @ 25°C
Board thickness 62 mils



Bias Schematic (0.1 to 3 GHz)

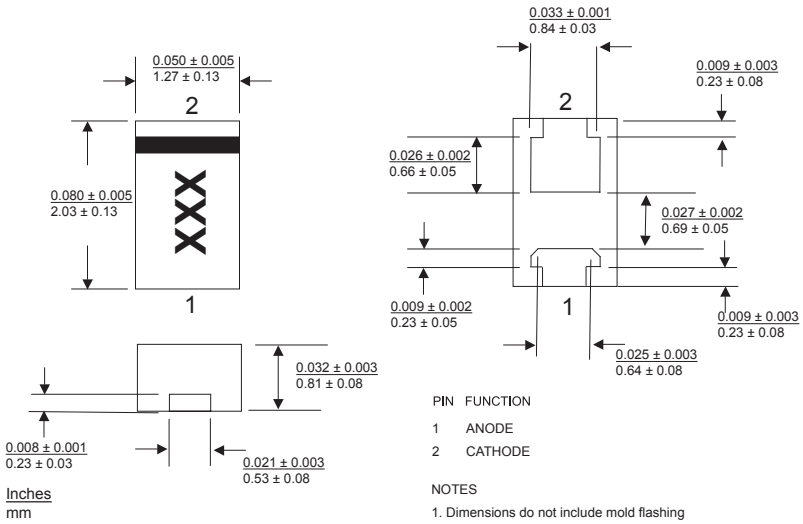


Parts List

COMPONENT	DESCRIPTION	MANUFACTURE	P/N
R1	75Ω, 1/2W, 1210 chip resistor	KOA Speer	RK73B2ETTD750J
R2	1.2KΩ, 1/10W, 603 chip resistor	KOA Speer	RK73B1JTTD122J
R3	1.2KΩ, 1/2W, 1210 chip resistor	KOA Speer	RK73B2ETTD122J
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	0.1 uF, 50VDC Capacitor, 0805 pkg	ATC	ATC0805XR7104KT2AT
L1,L3	420nH, 340mA, 700MHz SRF Inductor	Coilcraft	0402AF-421XJLW
L2,L4	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	13V, 2%, 500mW Zener Diode	Philips	BZX79-B13
DC1	1W, 5V to 12V DC/DC Converter	V-Infinity	VBT1-S5-S12-SMT-AFM
D1	PIN Diode Series Switch in 0805 pkg	Aeroflex-Metelics	MSWSE-040-10

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

Package Outline (0805P) and Electrical Schematic

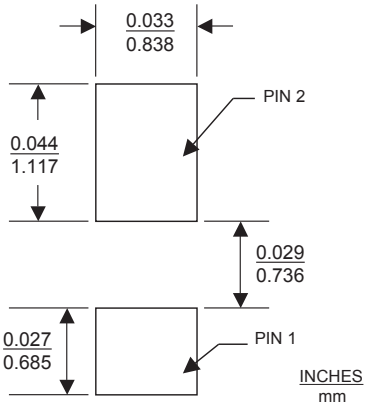


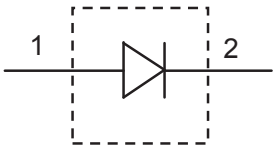
PIN	FUNCTION
1	ANODE
2	CATHODE

NOTES

1. Dimensions do not include mold flashing
2. Burrs and dumbar shall not exceed 0.002" per surface.
3. Lead co-planarity is 0.003" max

PCB Layout





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