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DATA SHEET

AS215-92, AS215-92LF: Single Positive Control PHEMT GaAs IC SPDT Switch 0.5–3 GHz

Applications

- T/R switch for Bluetooth™ and general-purpose telecommunication applications


Features

- Single bias control
- Operates with 1.8 V control voltage
- Low DC power consumption
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

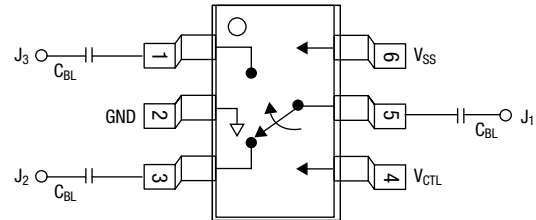
Description

The AS215-92 is a medium-power IC FET SPDT switch in a low-cost, miniature SC-70 6-lead plastic package. The AS215-92 features low insertion loss and positive voltage operation with very low DC power consumption. This general-purpose switch can be used in a variety of telecommunications applications.

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



Pin Out



DC blocking capacitors (C_{BL}) must be supplied externally for positive voltage operation. $C_{BL} = 100$ pF for operation >500 MHz.

Electrical Specifications

$V_S = 3$ V, $V_{CTL} = 0/3$ V, $Z_0 = 50$ Ω , unless otherwise noted

Parameter	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽¹⁾	0.5–1 GHz		0.75	1.0	dB
	1.0–2 GHz		0.60	0.8	dB
	2.0–3 GHz		0.50	0.7	dB
Isolation	0.5–1 GHz	25	28		dB
	1.0–2 GHz	21	24		dB
	2.0–3 GHz	17	20		dB
VSWR ⁽²⁾	0.5–1 GHz		1.1:1		
	1.0–2 GHz		1.4:1		
	2.0–3 GHz		1.2:1		

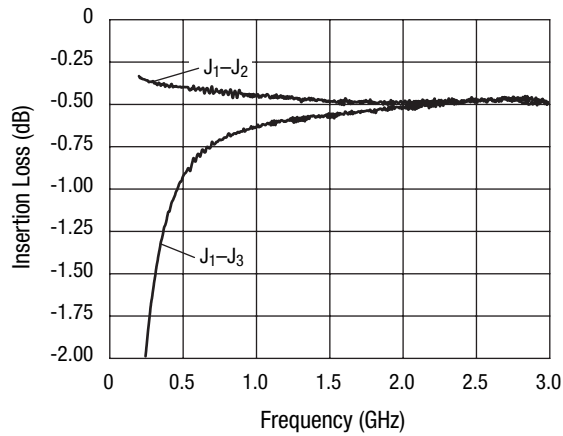
1. Insertion loss changes by 0.003 dB/°C.
 2. Insertion loss state.

Operating Characteristics at 25 °C **$V_S = 3\text{ V}$, $V_{CTL} = 0/3\text{ V}$, $Z_0 = 50\ \Omega$, unless otherwise noted**

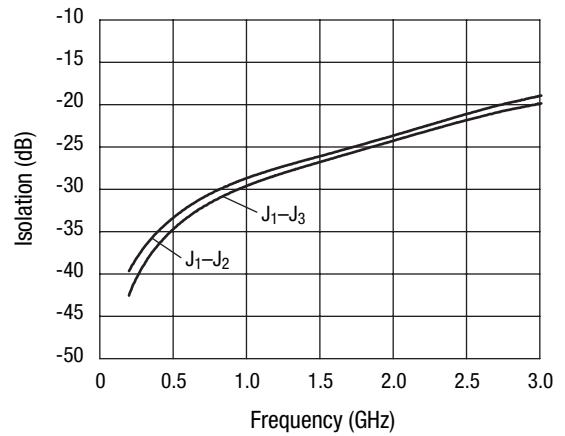
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			10		ns
On, off	50% CTL to 90/10% RF			20		ns
Video feedthru	$T_{RISE} = 1\text{ ns}$, BW = 500 MHz			25		mV
Input power for 1 dB compression	$V_{CTL} = 0/1.8\text{ V}$ $V_{CTL} = 0/3\text{ V}$	0.5–3 GHz 0.5–3 GHz		20 27		dBm dBm
Intermodulation intercept point (IP3)	For two-tone input power 5 dBm $V_{CTL} = 0/3\text{ V}$	0.5–3 GHz		40		dBm
Thermal resistance				25		°C/W
Control voltages	Low High		0 1.8		0.2 5.0	V V
Control port current	$V_{CTL} = \text{low}$ $V_{CTL} = 2.7\text{ V}$ $V_{CTL} = 5\text{ V}$				20 100 200	μA μA μA
Supply voltage			V_{HIGH} -0.2		V_{HIGH} +0.2	V

Typical Performance Data

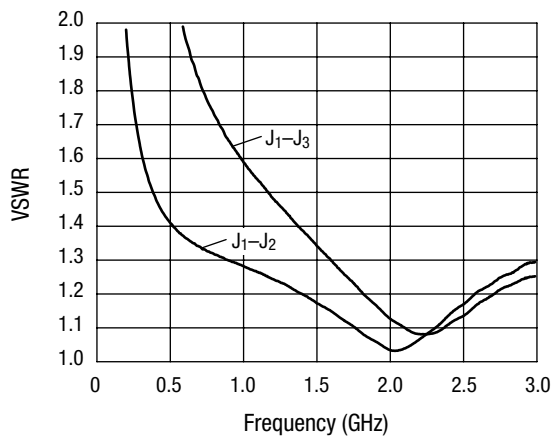
$V_S = 3\text{ V}$, $V_{CTL} = 0/3\text{ V}$, $Z_0 = 50\ \Omega$, unless otherwise noted



Insertion Loss vs. Frequency



Isolation vs. Frequency



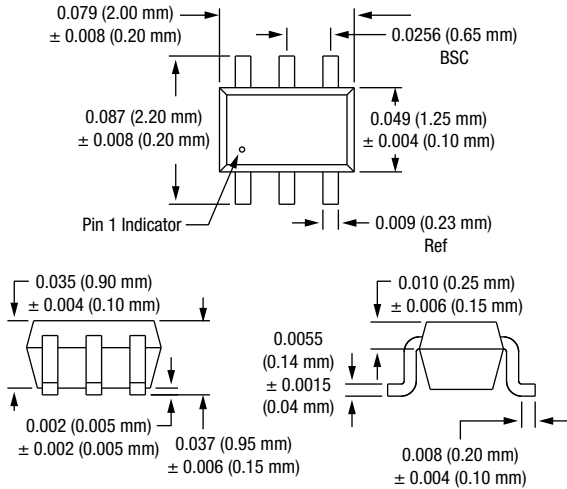
VSWR vs. Frequency

Truth Table

V ₁	J ₁ -J ₂	J ₁ -J ₃
0	Isolation	Insertion loss
V _{HIGH}	Insertion loss	Isolation

1.8 ≤ V_{HIGH} ≤ 5 V.
V_{DD} = V_{HIGH} ± 0.2 V.

SC-70 6 Lead (SC-88)



Absolute Maximum Ratings

Characteristic	Value
RF input power	2 W max. > 500 MHz 0/8 V control
Supply voltage	8 V
Control voltage	-0.2 V, +8 V
Operating temperature	-40 °C to +85 °C
Storage temperature	-65 °C to +150 °C

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

Recommended Solder Reflow Profiles

Refer to the [“Recommended Solder Reflow Profile”](#) Application Note.

Tape and Reel Information

Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note.

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