

DATA SHEET

AS230-348, AS230-348LF: SPDT 7 W T/R Switch 300 kHz–6 GHz

Features

- Low DC power consumption
- Low insertion loss
- High linearity (63 dBm IP3)
- T/R switch
- Small low-cost plastic package
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

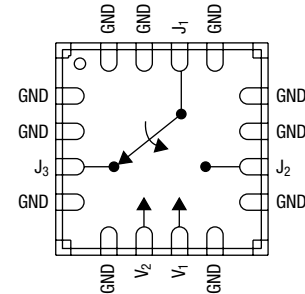
Description

The AS230-348 is an IC FET SPDT reflective switch in a low-cost plastic package. It features extremely high linearity, low insertion loss, with very low DC power consumption. Some standard implementations include antenna changeover, T/R and diversity switching over 2 W. This switch can be used in many analog and digital wireless communication systems.

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



Pin Out



Exposed paddle should be grounded.
DC blocking capacitors (C_{BL}) are required on RF lines for positive voltage operation.

Electrical Specifications at 25 °C

Parameter ⁽¹⁾	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽²⁾	300 kHz–1 GHz		0.8	1.0	dB
	300 kHz–2 GHz		0.9	1.1	dB
	300 kHz–4 GHz		1.0	1.2	dB
	300 kHz–6 GHz		1.2	1.4	dB
Isolation	300 kHz–1 GHz	28	30		dB
	300 kHz–2 GHz	23	25		dB
	300 kHz–4 GHz	14	16		dB
	300 kHz–6 GHz	13	15		dB
Return loss ⁽³⁾	300 kHz–1 GHz		22		dB
	300 kHz–2 GHz		22		dB
	300 kHz–4 GHz		15		dB
	300 kHz–6 GHz		20		dB

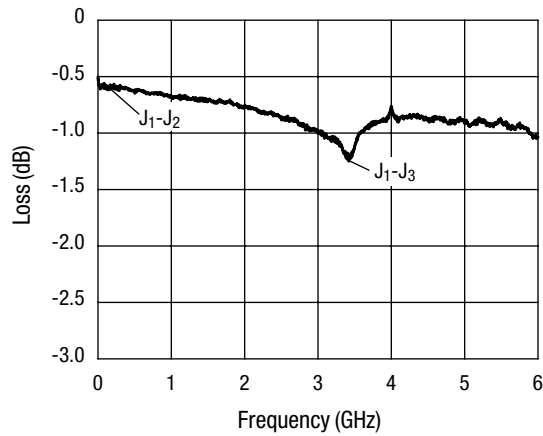
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.
3. Insertion loss state.

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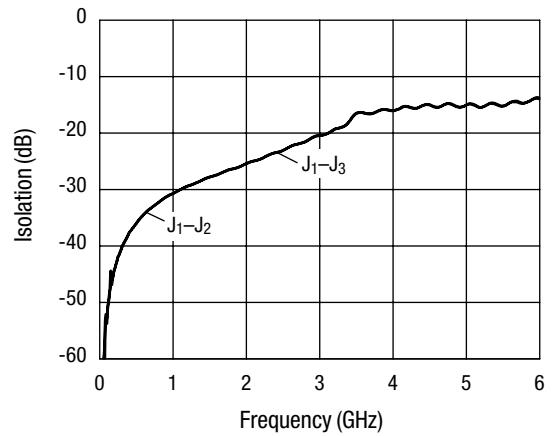
Operating Characteristics at 25 °C

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			6		ns
On, off	50% CTL to 90/10% RF			12		ns
Video feedthru	$T_{RISE} = 1 \text{ ns}$, BW = 500 MHz			30		mV
Input power for 1 dB compression	@ -5 V @ -10 V	0.9 GHz 0.9 GHz		35 40		dBm dBm
Intermodulation intercept point (IP3)	For two-tone input power 13 dBm, $V_{HIGH} = -10 \text{ V}$	0.9 GHz		63		dBm
Thermal resistance				45		°C/W
Control voltages	$V_{LOW} = -12 \text{ V} \leq V_{LOW} \leq 0 \text{ V}$, 500 μA max. $V_{HIGH} = 0 \text{ V} \leq V_{HIGH} \leq 12 \text{ V}$, 500 μA max. Differential = $5 \text{ V} \leq (V_{HIGH} - V_{LOW}) < 12 \text{ V}$					

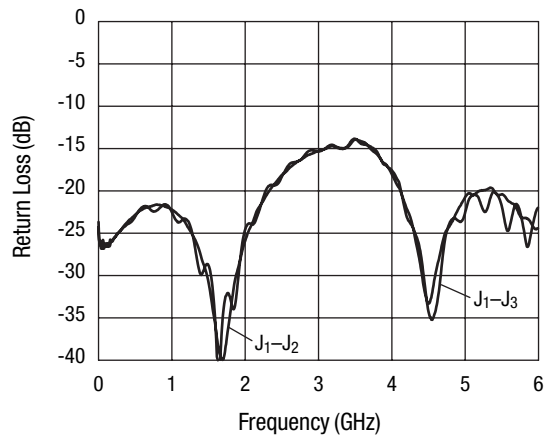
Typical Performance Data



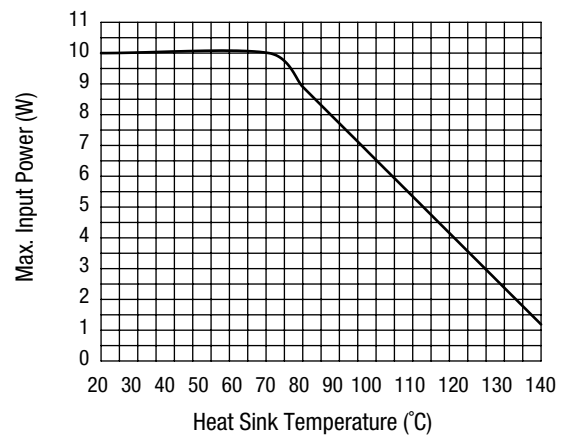
Insertion Loss



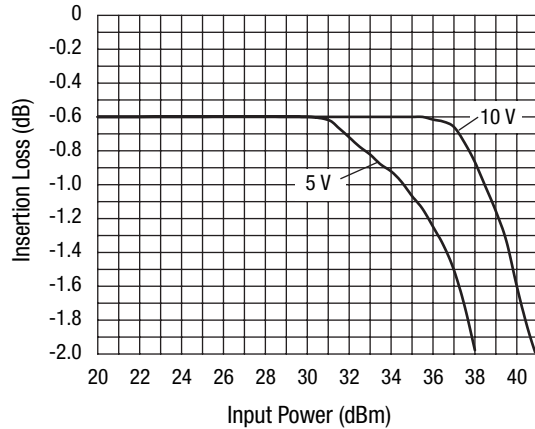
Isolation



Return Loss in Insertion Loss State



Temperature Derating Curve (0, 10 V)



Compression at 900 MHz 25 °C

Truth Table

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

All other conditions not recommended.
 V_{LOW} = 0 to -12 V.
 V_{HIGH} = 0 to 12 V.
 Differential = 5 V ≤ (V_{HIGH} - V_{LOW}) < 12 V.

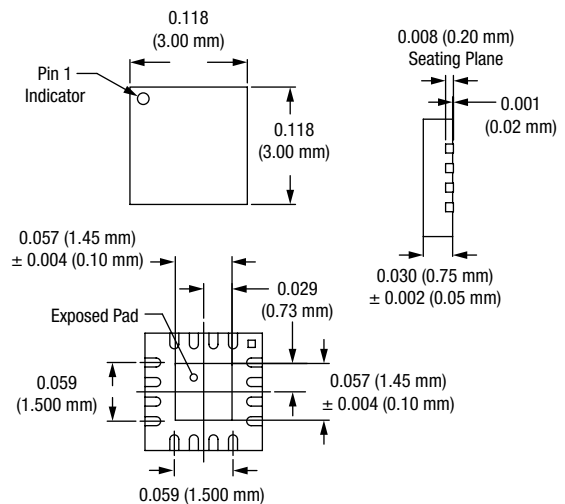
Absolute Maximum Ratings

Characteristic	Value
RF input power (RF In)	8 W max. > 900 MHz 0/-10 V control
Control voltage (V _C)	+0.2 V, -12 V
Operating temperature (T _{OP})	-40 °C to +85 °C
Storage temperature (T _{ST})	-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.

-348 (QFN 3 x 3)



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