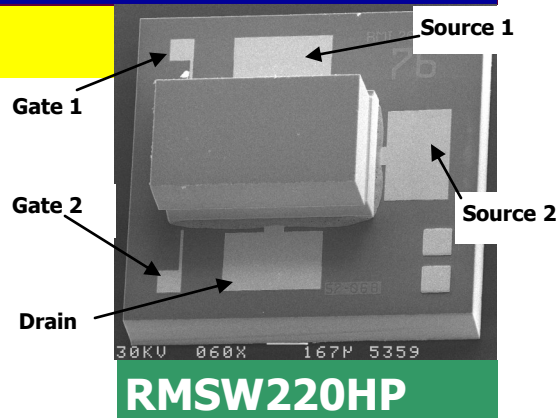




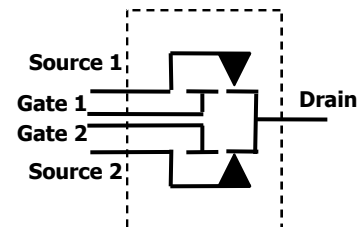
SPDT, High Power, RF-MEMS Switch, DC to 40 GHz

Features

- **Long Life at High Power** (typical >10 billion cycles @ 36 dBm cold-switched, >1 billion cycles @ 40 dBm cold-switched)
- **High Isolation** (typical 20 dB @ 10 GHz, 13 dB @ 35 GHz)
- **Low Insertion Loss** (<0.5 dB typical @ 20 GHz)
- **Near Zero Harmonic Distortion**
- **No Quiescent Power Dissipation**
- **Hermetically sealed die designed for die-attach and wire-bond to board. Please contact us for other packaging options.**



Functional Block Diagram



Description

The RMSW220HP is a Single Pole Double Throw (SPDT) Reflective RF Switch utilizing Radant's break-through MEMS technology that delivers high linearity, high isolation, and low insertion loss in a chip-scale package configuration.

This device is ideally suited for use in many applications, such as RF and microwave multi-throw switching, radar beam steering antennas, phase shifters, RF test instrumentation, ATE, telecommunications, and broadband wireless access.

Typical Device Specifications

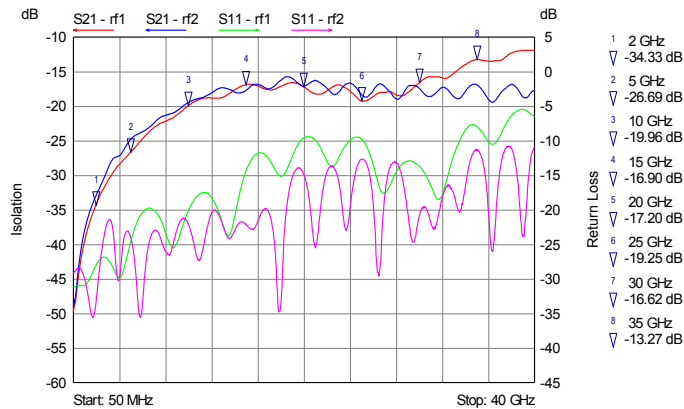
Insertion Loss DC 10 GHz 20 GHz 35 GHz	< 4 Ω	Lifecycle Cold-switched, 36 dBm Cold-switched, 40 dBm Cold-switched, 42 dBm Hot-switched, -20 dBm Hot-switched, -10 dBm Hot-switched, 20 dBm	> 10 ¹⁰ cycles
	< 0.45 dB		> 10 ⁹ cycles
	< 0.5 dB		> 10 ³ cycles
	< 0.8 dB		> 10 ¹¹ cycles
Isolation DC 10 GHz 20 GHz 35 GHz	> 1 G Ω	Control Gate-Source Voltage (on) Gate-Source Voltage (off) Control Power, steady-state Control Power, 1 KHz cycle rate	+/- 90 V
	> 19 dB		0 V
	> 17 dB		< 1 nW
	> 12 dB		< 2 μ W
Return Loss 10 GHz 20 GHz 35 GHz	< -25 dB	Switching speed On Off	< 10 μ s
	< -18 dB		< 2 μ s
	< -15 dB		
Input IP3 (Two-tone inputs 900 MHz and 901 MHz up to +5 dBm)	> 65 dBm	Operating temperature Maximum Minimum	85 °C -40 °C
		Storage temperature Maximum Minimum	150 °C -55 °C

Notes:

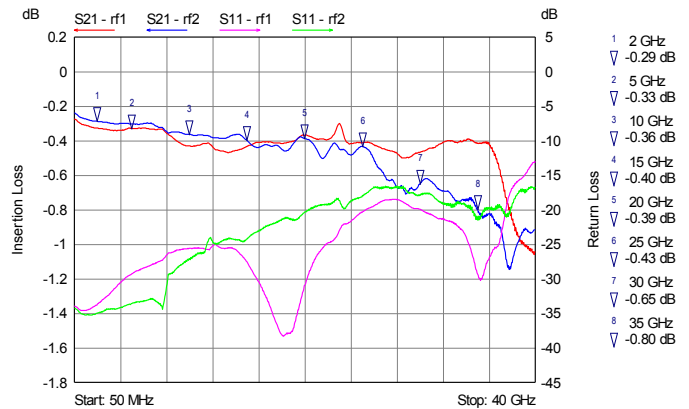
1. All RF measurements were made in a 50 Ω system.
2. Measurements include bond-wires from die to test-board.

- Phone: 978-562-3866
- Fax: 978-562-6277
- Email: sales@radantmems.com
- Visit www.radantmems.com

Typical RF Performance



Isolation



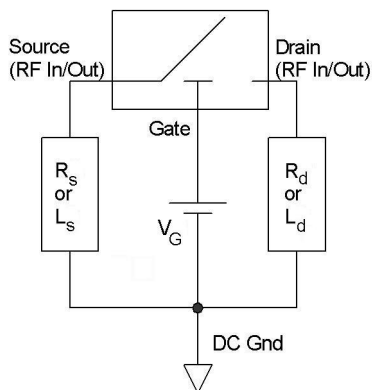
Insertion Loss

* Measurement results include bond wires

Absolute Maximum Ratings

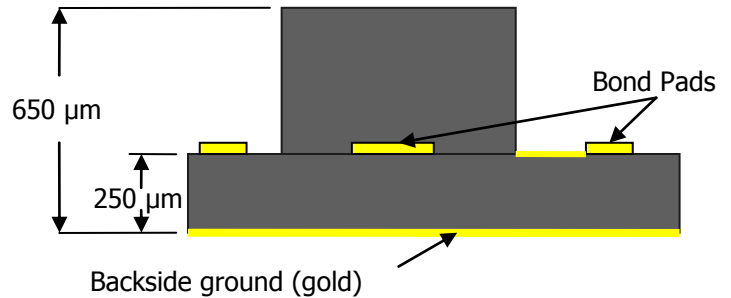
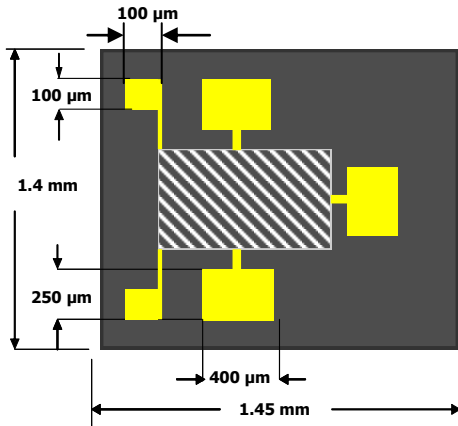
Maximum Temperature (10 seconds)	290 °C
(120 seconds)	250 °C
Maximum Voltage, Gate-Source	+/- 110 V
Maximum Voltage, Drain-Source	+/- 100 V

Recommended Application



1. Figure shows one half of the SPDT switch. The Drain terminal is common to both halves.
2. Resistors R_S and R_D (40 k Ω -100 k Ω) or inductors L_S and L_D should be used to provide a path to DC Ground from Source and Drain.
3. V_G may be of either polarity.
4. V_G rise-time should be at least 10 μ s for optimal lifetime.
5. Please refer to the application note entitled "Test and Handling of SPST RF-MEMS Switches" for more information. Contact us for driver solutions.

Nominal Device Dimensions



Please contact us for a footprint in .gds or .dxf format.

Static sensitivity

This device has an ESD (HBM) sensitivity of 100 V. Use proper ESD precautions when handling. Please refer to the application note entitled "Test and Handling of SPST RF-MEMS Switches" for more information.

Die Assembly

The gold backside-metallization on the die is designed to be mounted with electrically conductive silver epoxy, or with a lower temperature solder which does not consume gold. Bond pads on the die are made of gold. Ball-bonds should be utilized to attach gold or aluminum 1 mil wires. Please refer to the application note entitled "Test and Handling of SPST RF-MEMS Switches" for more information.

- Phone: 978-562-3866
- Fax: 978-562-6277
- Email: sales@radantmems.com
Visit www.radantmems.com