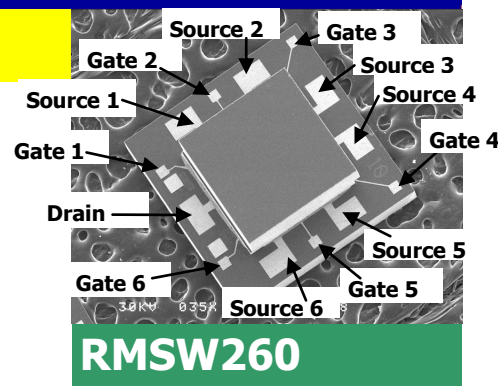




# SP6T RF-MEMS Switch DC to 20 GHz



## Features

- High Isolation (>22 dB typical @ 18 GHz)
- Low Insertion Loss (<0.5 dB @ 10 GHz, <0.8 dB @ 18 GHz)
- Near Zero Harmonic Distortion
- No Quiescent Power Dissipation
- Long Life (typical lifetime >100 billion cycles @ 27 dBm, >1 billion cycles @ 30 dBm)
- Hermetically sealed die designed for die-attach and wire-bond to board. Please contact us for other packaging options.

## Description

The RMSW260 is a Single Pole Six Throw (SP6T) Reflective RF Switch utilizing Radant's breakthrough 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

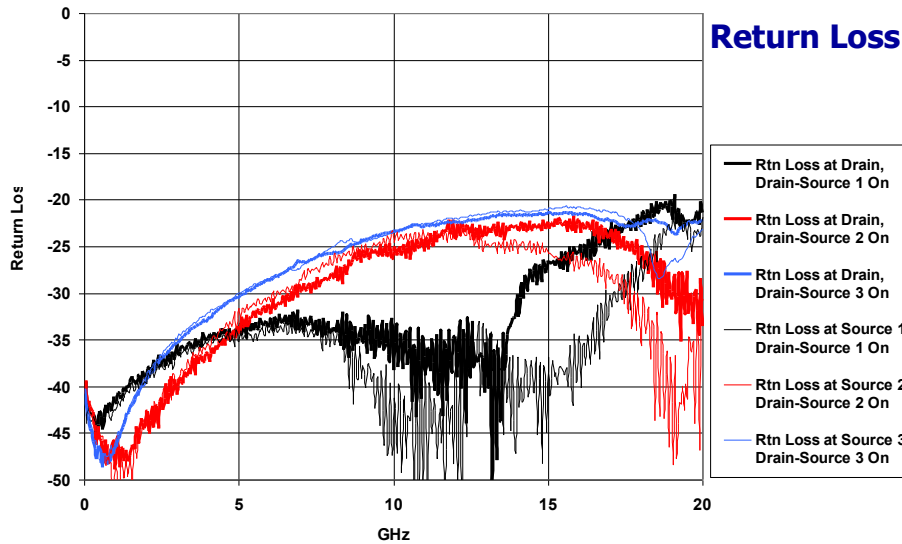
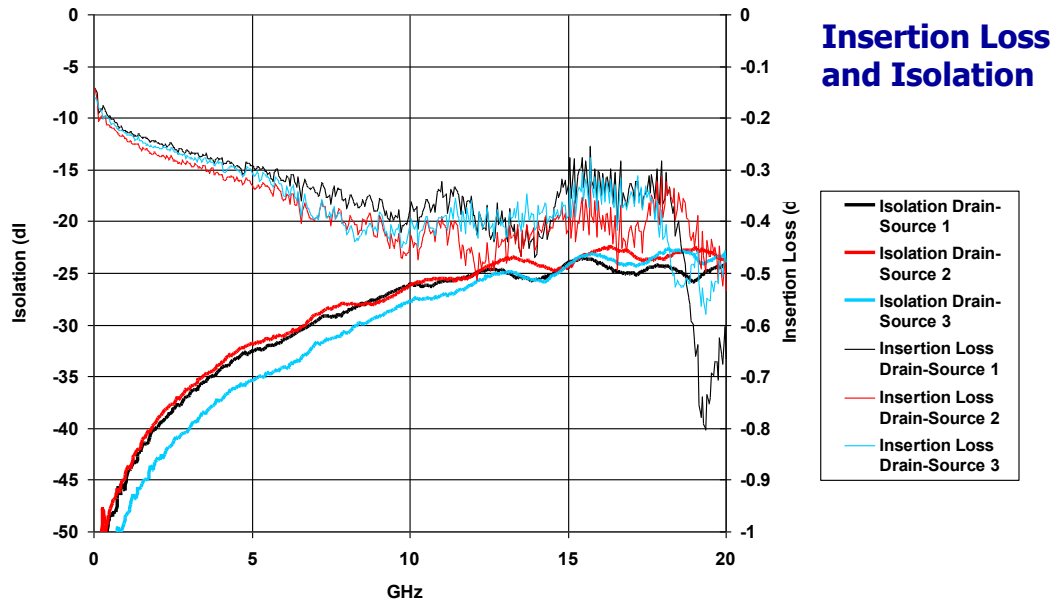
<b>Insertion Loss</b> DC 2 GHz 10 GHz 18 GHz	< 4 Ω < 0.3 dB < 0.5 dB < 0.8 dB	<b>Lifecycle</b> Cold-switched, 27 dBm Cold-switched, 30 dBm Cold-switched, 33 dBm Hot-switched, -20 dBm Hot-switched, -10 dBm Hot-switched, 20 dBm	> 10 <sup>11</sup> cycles > 10 <sup>9</sup> cycles > 10 <sup>3</sup> cycles > 10 <sup>11</sup> cycles > 10 <sup>9</sup> cycles > 10 <sup>3</sup> cycles
<b>Isolation</b> DC 2 GHz 10 GHz 18 GHz	> 1 GΩ > 36 dB > 25 dB > 22 dB	<b>Control</b> Gate-Source Voltage (on) Gate-Source Voltage (off) Control Power, steady-state Control Power, 1 KHz cycle rate	+/- 90 V 0 V < 1 nW < 2 μW
<b>Return Loss</b> 2 GHz 10 GHz 18 GHz	< -35 dB < -22 dB < -18 dB	<b>Switching speed</b> On Off	< 10 μs < 2 μs
<b>Input IP3</b> (Two-tone inputs 900 MHz and 901 MHz up to +5 dBm)	> 65 dBm	<b>Operating temperature</b> Maximum Minimum	85 °C -40 °C
		<b>Storage temperature</b> Maximum Minimum	150 °C -55 °C

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### Notes:

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

Typical RF Performance



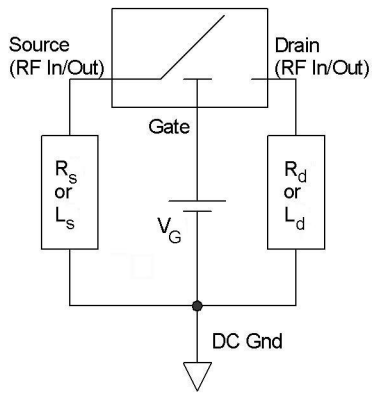
\* Measurement results include bond wires

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

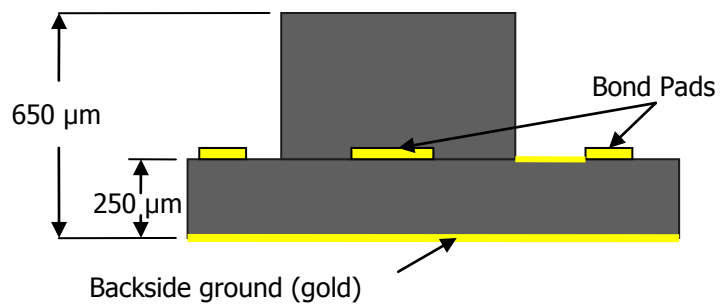
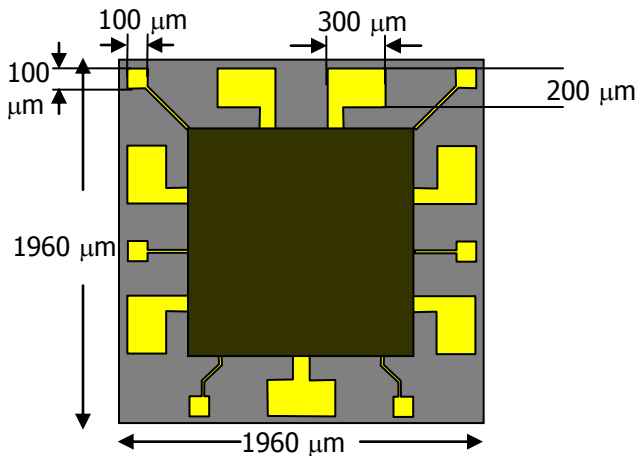
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**Recommended Application**



1. Figure shows one of the six legs of the SP6T switch. The Drain terminal is common to all six legs.
2. Resistors  $R_S$  and  $R_D$  (40 k $\Omega$ -100 k $\Omega$ ) 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  $\mu$ 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.

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