S0202AF High Frequency Thin Film Chip Resistor

Standard Grade, Surface Mount, Top Surface Terminations

**PRODUCT FEATURES**

- Frequency Range to 20GHz with excellent VSWR characteristics
- High stability thin film resistor element, 99.5% alumina substrate
- Produced with the same stringent quality and reliability standards as our QPL S level Mil-PRF-55342 and space level products
- Tight tolerance and low TCR availability

**MECHANICAL**

<table>
<thead>
<tr>
<th>MECHANICAL</th>
<th>INCHES</th>
<th>MILIMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>.022 (020 - 028)</td>
<td>0.56 (51.0 - 71.0)</td>
</tr>
<tr>
<td>Width</td>
<td>.020 (.018 - 022)</td>
<td>0.51 (46.0 - 56.0)</td>
</tr>
<tr>
<td>Thickness</td>
<td>.010 (.008 - 018)</td>
<td>0.25 (20.0 - 45.0)</td>
</tr>
<tr>
<td>Top Term</td>
<td>.006 (.004 - 008)</td>
<td>0.15 (10.0 - 20.0)</td>
</tr>
<tr>
<td>Gap</td>
<td>.008 (.006 - 010)</td>
<td>0.21 (16.0 - 26.0)</td>
</tr>
</tbody>
</table>

**FREQUENCY PERFORMANCE**

State of the Art thin film high frequency chip resistors are produced with a tantalum-nitride based resistor element that is extremely stable with time, temperature, and frequency. The chips perform well over a wide frequency range, exhibiting low VSWR response from DC to 20 Ghz and higher. Solderable terminations allow the chips to be reflowed or hand soldered into microwave circuits easily while maintaining excellent return loss characteristics. Parasitic reactance is very low for these chips with capacitance being typically less than 0.1 pF.

The frequency response data plotted below shows an example of VSWR obtained for 50 ohm resistors tested (resistor element down) in pressure contact fixtures. Data for chips which are solder attached to matched circuit traces may exhibit even better performance.

**CHARACTERISTICS**

- Resistance (others available) 50, 75, 100, 200 ohms
- Tolerance (others available) 0.1, 1, 2, 5 %
- Maximum Power 25 milliwatts
- Frequency Range DC to 20 GHz
- TCR (-55°/ + 125°C) 25, 50, 100 ppm°C

**ENVIRONMENTAL PERFORMANCE**

- Thermal Shock ±0.03 %
- Low Temperature Operation ±0.03 %
- Short Time Overload ±0.03 %
- Resistance to Bonding Exposure ±0.03 %
- Moisture Resistance ±0.03 %
- High Temperature Exposure ±0.05 %

*Typical percent resistance change - methods and actual specification limits are in accordance with Mil-PRF-55342.

**TYPICAL LIFE PERFORMANCE**

Parts are solder mounted on FR-4 board and tested at 70°C. Power is applied for 80 minutes on and 30 minutes off at a rate that achieves a film temperature 30°C above ambient.

**PART NUMBERING**

S0202AF 50R0 F H B

**RESISTANCE VALUE**

Three digits (+1% tolerance) or four digits (1% and lower) are used with all leading digits significant. The last digit specifies the number of zeros to add. The letter "F" is used to represent the decimal for fractional ohmic values.

**OPTIONS**

- Optional high reliability screening or custom testing or other special requirements can also be furnished. Consult our factory with your special needs.
- Also available on fused silica, product code: T