Wirewound Resistors, Military, MIL-PRF-26 Qualified, Type RW, Precision Power, Silicone Coated, Axial Lead

**FEATURES**
- High temperature coating (> 350 °C)
- Complete welded construction
- Qualified to MIL-PRF-26
- Excellent stability in operation (typical resistance shift < 0.5 %)

**STANDARD ELECTRICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MILITARY MODEL</th>
<th>VISHAY REFERENCE MODEL</th>
<th>POWER RATING $P_{25°C}$ W CHARACTERISTIC U</th>
<th>POWER RATING $P_{25°C}$ W CHARACTERISTIC V</th>
<th>RESISTANCE RANGE $\Omega$ $\pm 0.1%$</th>
<th>RESISTANCE RANGE $\Omega$ $\pm 0.5%$, $\pm 1%$</th>
<th>RESISTANCE RANGE $\Omega$ $\pm 5%$, $\pm 10%$</th>
<th>WEIGHT (typical) g</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW67</td>
<td>RS005...70</td>
<td>-</td>
<td>6.5</td>
<td>0.499 to 6.49K</td>
<td>0.1 to 6.49K</td>
<td>-</td>
<td>0.70</td>
</tr>
<tr>
<td>RW68</td>
<td>RS010...39</td>
<td>-</td>
<td>11.0</td>
<td>0.499 to 71.5K</td>
<td>0.1 to 71.5K</td>
<td>-</td>
<td>9.0</td>
</tr>
<tr>
<td>RW69</td>
<td>RS02C...23</td>
<td>3.0</td>
<td>-</td>
<td>0.499 to 3.0K</td>
<td>-</td>
<td>0.1 to 2.0K</td>
<td>1.6</td>
</tr>
<tr>
<td>RW70</td>
<td>RS01A...300</td>
<td>1.0</td>
<td>-</td>
<td>0.499 to 2.74K</td>
<td>0.1 to 2.74K</td>
<td>-</td>
<td>0.34</td>
</tr>
<tr>
<td>RW74</td>
<td>RS005...69</td>
<td>5.0</td>
<td>-</td>
<td>0.499 to 24.3K</td>
<td>0.1 to 24.3K</td>
<td>-</td>
<td>4.2</td>
</tr>
<tr>
<td>RW76</td>
<td>RS005...70</td>
<td>-</td>
<td>6.5</td>
<td>0.499 to 6.49K</td>
<td>0.1 to 6.49K</td>
<td>-</td>
<td>0.1 to 8.2K</td>
</tr>
<tr>
<td>RW78</td>
<td>RS010...38</td>
<td>10.0</td>
<td>-</td>
<td>0.499 to 71.5K</td>
<td>0.1 to 71.5K</td>
<td>-</td>
<td>9.0</td>
</tr>
</tbody>
</table>

**Notes**
- RW67, RW68, RW69 available tolerance for these MIL parts is $\pm 5\%$ for 1 $\Omega$ and above, $\pm 10\%$ below 1 $\Omega$

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNIT</th>
<th>RW RESISTOR CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Coefficient</td>
<td>ppm/°C</td>
<td>± 20 for 10 $\Omega$ and above, ± 50 for 1 $\Omega$ to 9.9 $\Omega$, ± 90 for below 1 $\Omega$</td>
</tr>
<tr>
<td>Maximum Working Voltage</td>
<td>V</td>
<td>$(P \times R)^{1/2}$</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Ω</td>
<td>1000 MΩ minimum dry, 100 MΩ minimum after moisture test</td>
</tr>
<tr>
<td>Solderability</td>
<td>-</td>
<td>MIL-PRF-26 type - meets requirements of ANSI J-STD-002</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>°C</td>
<td>Characteristic U = -65 to +250, characteristic V = -65 to +350</td>
</tr>
</tbody>
</table>

**MILITARY PART NUMBER INFORMATION**

Military Part Numbering example: RW80U49R9FB12

**TOLERANCE CODE**
- Tolerance for “U” characteristic only
  - B = ± 0.1 %
  - D = ± 0.5 %
  - F = ± 1.0 %
- Tolerance for “V” characteristic is not listed and is as specified by MIL-PRF-26

**PACKAGING CODE**
- B12 = bulk pack
- S70 = tape/reel (smaller than 5 W)
- S73 = tape/reel (5 W and higher)
DIMENSIONS in inches [millimeters]

Note
(1) On some standard reel pack methods, the leads may be trimmed to a shorter length than shown

MATERIAL SPECIFICATIONS

Element: copper-nickel alloy or nickel-chrome alloy, depending on resistance value

Core: ceramic, steatite or alumina, depending on physical size

Coating: special high temperature silicone

Standard Terminals: 60/40 Sn/Pb coated Copperweld®

End Caps: stainless steel

MARKING

MODELS: RW70, RW74, RW78, RW79, RW80, RW81

Characteristic U
Tolerance code: B = 0.1 %, D = 0.5 %, F = 1 %

Example
Dale
RW680U Model
1001F Characteristic, value
0703 Date code

MODELS: RW67, RW68, RW69

Characteristic V
Tolerance code: not listed

Example
Dale
RW68 Model
V100 Characteristic, value
M0202 Date code

DERATING

PERFORMANCE

TEST
CONDITIONS OF TEST
TEST LIMITS

Thermal Shock
Rated power applied until thermally stable, then a minimum of 15 min at -55 °C
CHARACTERISTIC U
\( \pm (0.2 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (2.0 \% + 0.05 \Omega) \Delta R \)

Short Time Overload
5x rated power (3.75 W and smaller), 10 x rated power (4 W and larger) for 5 s
CHARACTERISTIC U
\( \pm (0.2 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (2.0 \% + 0.05 \Omega) \Delta R \)

Dielectric Withstanding Voltage
500 V<sub>RMS</sub> min. (RW70, RW80, RW81), 1000 V<sub>RMS</sub> for all others, duration of 1 min
CHARACTERISTIC U
\( \pm (0.1 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (0.1 \% + 0.05 \Omega) \Delta R \)

Low Temperature Storage
-65 °C for 24 h
CHARACTERISTIC U
\( \pm (0.2 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (2.0 \% + 0.05 \Omega) \Delta R \)

High Temperature Exposure
250 h at: U = +250 °C, V = +350 °C
CHARACTERISTIC U
\( \pm (0.5 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (2.0 \% + 0.05 \Omega) \Delta R \)

Moisture Resistance
MIL-STD-202 Method 106, 7b not applicable
CHARACTERISTIC U
\( \pm (0.2 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (2.0 \% + 0.05 \Omega) \Delta R \)

Shock, Specified Pulse
MIL-STD-202 Method 213, 100 g’s for 6 ms, 10 shocks
CHARACTERISTIC U
\( \pm (0.1 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (0.2 \% + 0.05 \Omega) \Delta R \)

Vibration, High Frequency
Frequency varied 10 Hz to 2000 Hz, 20 g peak, 2 directions 6 h each
CHARACTERISTIC U
\( \pm (0.1 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (0.2 \% + 0.05 \Omega) \Delta R \)

Load Life
2000 h at rated power, +25 °C, 1.5 h “ON”, 0.5 h “OFF”
CHARACTERISTIC U
\( \pm (0.5 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (3.0 \% + 0.05 \Omega) \Delta R \)

Terminal Strength
Pull test 5 s to 10 s, 5 lb (RW70, RW80, RW81), 10 lb for all others; torsion test - 3 alternating directions, 360° each
CHARACTERISTIC U
\( \pm (0.1 \% + 0.05 \Omega) \Delta R \)
CHARACTERISTIC V
\( \pm (1.0 \% + 0.05 \Omega) \Delta R \)
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