Pickering Series 107

Mini-SIL® SIL/SIP Reed Relays

Up to 20 Watts switching
Stacking on 0.2 inches pitch

Features

- **SoftCenter®** construction (see adjacent diagram)
- Highest quality instrumentation grade switches
- Encapsulated in patented mu-metal can
- Insulation resistance greater than 10\(^{12}\) Ω for Form A devices
- Dry and mercury wetted switches available
- Wide range of switch configurations - 1 Form A, 1 Form B, 2 Form A, 1 Form C, and 2 Form C, see adjacent column
- For R.F. or high speed digital applications, 50 ohms coaxial devices are available in the same package style, see Series 102M
- 3, 5, 12 or 24 Volt coils with or without internal diode
- 100% tested for dynamic contact resistance for guaranteed performance

The Series 107 Mini-SIL range of reed relays are intended for stacking on 0.2 inches (5.08mm) pitch. Their small size, superb contact resistance stability and ultra high insulation resistance, make these relays an ideal choice for high quality instrumentation.

The mu-metal case ensures virtually total magnetic screening, see explanation below.

Both dry and mercury wetted switches are available in a wide range of configurations, see adjacent column.

If even greater packing density is required, smaller devices are available in other Pickering SIL ranges (except for two pole changeover types).

**Magnetic Interaction - An explanation**

Magnetic interaction between relays is normally expressed as a percentage increase in the voltage required to operate the relay, due to the extraneous fields from adjacent relay coils.

An unscreened SIL relay of this size would have an interaction figure of around 30 percent, i.e. the voltage required to operate it will increase by this amount when relays alongside are operated also. It may prove impossible to use such a relay at its nominal coil voltage in high density applications.

A Pickering Series 107 reed relay has an interaction figure of approximately 1 percent.

**Switch Ratings - Dry switches**

- Single or Double pole Form A (Energize to Make) relays. Up to 1 Amp switching at 20 Watts
- Single pole Form B (Energize to Break) relays. Up to 1 Amp switching at 20 Watts
- Single or Double pole Form C (Change-over) relays. 0.25 Amp switching at 3 Watts

**Switch Ratings - Mercury Wetted Switches**

- Single or Double pole Form A (Energize to Make) relays. 2 Amp switching at 50 Watts
- Single pole, Non Position Sensitive, Form A (Energize to Make) relays. 2 Amp switching at 50 Watts

**Typical Pickering SoftCenter® Construction**

- Unique Pickering Construction vs. Industry Standard Construction
- SoftCenter® Soft inner encapsulation material to protect reed switch
- Very hard molding material
- Hard outer encapsulation material
- Coil winding
- Self supporting coil to minimize magnetic drive
- Diode
- Diode
- Coils supporting bobbin, reduces space and weight
- Internal mu-metal magnetic screen preventing high packing density without magnetic interaction
Series 107 switch ratings - The contact ratings for each switch type are shown below:

<table>
<thead>
<tr>
<th>Switch No</th>
<th>Switch form</th>
<th>Power rating</th>
<th>Max. switch current</th>
<th>Max. carry current</th>
<th>Max. switching volts</th>
<th>Life expectancy (ops typical) (see Note 1 below)</th>
<th>Operate time (max)</th>
<th>Release time</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A or B</td>
<td>15 W (5 V Versions)</td>
<td>20 W (12 &amp; 24 V)</td>
<td>1.0 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^2 Q</td>
<td>0.5 ms</td>
<td>0.2 ms</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>10 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^2 Q</td>
<td>0.5 ms</td>
<td>0.2 ms</td>
<td>Low level</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>3 W</td>
<td>0.25 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^2 Q</td>
<td>1.0 ms</td>
<td>0.5 ms</td>
<td>0.2 ms</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>10 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>400</td>
<td>10^2 Q</td>
<td>0.75 ms</td>
<td>0.25 ms</td>
<td>500 V stand-off</td>
</tr>
</tbody>
</table>

Note: Life expectancy

The life of a reed relay depends upon the switch load and end of life criteria. For example, for an ‘end of life’ contact resistance specification of 1 Ω, switching low loads (10 V at 10 mA resistive) or when ‘cold’ switching, typical life is approx 1 x 10^6 ops. At the maximum load (resistive), typical life is 1 x 10^5 ops. In the event of abusive conditions, e.g. high currents due to capacitive invades, this figure reduces considerably. Pickering will be pleased to perform life testing with any particular load condition.

Note: Capacitance across open switch

The capacitance across the open switch was measured with other connections guarded.

Reed Relays - Series 107 switch ratings - The contact ratings for each switch type are shown below:

<table>
<thead>
<tr>
<th>Switch No</th>
<th>Switch form</th>
<th>Power rating</th>
<th>Max. switch current</th>
<th>Max. carry current</th>
<th>Max. switching volts</th>
<th>Life expectancy (ops typical) (see Note 1 below)</th>
<th>Operate time (max)</th>
<th>Release time</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>A</td>
<td>50 W</td>
<td>2 A</td>
<td>3 A</td>
<td>500</td>
<td>10^2 Q</td>
<td>2.0 ms</td>
<td>1.25 ms</td>
<td>Standard Mercury</td>
</tr>
<tr>
<td>8</td>
<td>A</td>
<td>50 W</td>
<td>2 A</td>
<td>2 A</td>
<td>350</td>
<td>10^2 Q</td>
<td>2.0 ms</td>
<td>1.25 ms</td>
<td>Positive Inversion</td>
</tr>
</tbody>
</table>

Note: Capacitance values

The value will depend upon the mode of connection/guarding of unused terminals. Please contact technical sales for details.

Pin Configuration and Dimensional Data

Dimensions in Inches (Millimeters in brackets)

Mercury Relays: Series 107 switch ratings - The contact ratings for each switch type are shown below:

<table>
<thead>
<tr>
<th>Switch No</th>
<th>Switch form</th>
<th>Power rating</th>
<th>Max. switch current</th>
<th>Max. carry current</th>
<th>Max. switching volts</th>
<th>Life expectancy (ops typical) (see Note 1 below)</th>
<th>Operate time (max)</th>
<th>Release time</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>15 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^2 Q</td>
<td>0.5 ms</td>
<td>0.2 ms</td>
<td>General purpose</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>10 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^2 Q</td>
<td>0.5 ms</td>
<td>0.2 ms</td>
<td>Low level</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>3 W</td>
<td>0.25 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^2 Q</td>
<td>1.0 ms</td>
<td>0.5 ms</td>
<td>0.2 ms</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>10 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>400</td>
<td>10^2 Q</td>
<td>0.75 ms</td>
<td>0.25 ms</td>
<td>500 V stand-off</td>
</tr>
</tbody>
</table>

Note: Life expectancy

The life of a reed relay depends upon the switch load and end of life criteria. For example, for an ‘end of life’ contact resistance specification of 1 Ω, switching low loads (10 V at 10 mA resistive) or when ‘cold’ switching, typical life is approx 1 x 10^6 ops. At the maximum load (resistive), typical life is 1 x 10^5 ops. In the event of abusive conditions, e.g. high currents due to capacitive invades, this figure reduces considerably. Pickering will be pleased to perform life testing with any particular load condition.

Note: Capacitance across open switch

The capacitance across the open switch was measured with other connections guarded.

Help

If you need any technical advice or other help, for example, any special tests that you would like carried out, please do not hesitate to contact our Technical Sales Department. We will always be pleased to discuss Pickering relays with you. email: techsales@pickeringrelay.com

Please ask us for a FREE evaluation sample.