**Low Thermal EMF SIL/SIP Reed Relays**

Direct drive from CMOS

**Features**

- **SoftCenter®** construction (see adjacent diagram)
- Highest quality instrumentation grade switches
- Thermal EMF about 1 microvolt or less
- Low power consumption, ideal for portable equipment
- Encapsulated in a plastic package with internal mu-metal magnetic screen
- Wide range of switch configurations - 1 Form A, 1 Form B, 2 Form A, 1 Form C
- Two pole relay requires the same board area as the single pole type
- Dry and mercury wetted switches are available with the same pin configuration and footprint
- Insulation resistance greater than $10^{12}$ Ω for dry Form A devices
- 3, 5, 12 or 24 Volt coils with or without internal diode
- 100% tested for dynamic contact resistance for guaranteed performance

The Pickering Series 100 is a complete range of Single-in-Line (SIL) reed relays primarily intended for direct drive from 4000B CMOS or NMOS logic or similar low current sources. The mercury wetted relays in the range may be driven directly from TTL logic. They are also useful for applications where conservation of current is important, for example, battery powered equipment.

The extremely low level of thermal EMF, about 1 microvolt or less, of the dry versions make them ideally suited to applications such as data acquisition or thermocouple switching.

An internal mu-metal magnetic screen is fitted to avoid the effects of magnetic interaction between relays.

If you do not require quite such high coil resistances or if a slightly smaller device is desired, please look also at our Series 101 which may be driven directly by 74HC or 74HCT logic.

Other special parts are also available that may be operated from 3 Volt logic, please contact our Sales Office for further information.

**Switch Ratings - Dry switches**

- 1 Form A (energize to make), 10 watts at 200V
- 1 Form A (energize to make), 10 watts at 500V
- 1 Form B (energize to break), 10 watts at 200V
- 1 Form C (change-over), 3 watts at 200V
- 2 Form A (energize to make), 10 watts at 200V

**Switch Ratings - Mercury Wetted Switches**

- 1 Form A (energize to make), 50 watts at 500V
- 1 Form A (Position insensitive), 50 watts at 500V
- 2 Form A (energize to make), 50 watts at 500V

**Typical Pickering SoftCenter® Construction**

![image of SoftCenter® construction](image-url)

**Unique Pickering Construction** vs. **Industry Standard Construction**

- **SoftCenter®** Soft inner encapsulation material to protect reed switch
- Internal mu-metal magnetic screen permitting high packing density without magnetic interaction
- Very hard molding material
- SoftCenter® Self supporting coil to minimize magnetic drive
- Hard outer encapsulation material
- Diode
- Diode
- Coil supporting tabbing, wastes space and reduces magnetic drive

For FREE evaluation samples go to: pickeringrelay.com/samples
Series 100 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 (see Note 1)</th>
<th>Operate time inc bounce (max)</th>
<th>Release time</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A or B</td>
<td>10 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>200</td>
<td>10^6</td>
<td>1.0 ms</td>
<td>1.0 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>10^4</td>
<td>1.0 ms</td>
<td>1.0 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</td>
<td>1.0 ms</td>
<td>1.0 ms</td>
<td>Change over</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>10 W</td>
<td>0.5 A</td>
<td>1.2 A</td>
<td>500</td>
<td>10^6</td>
<td>1.75 ms</td>
<td>1.75 ms</td>
<td>1000V stand-off</td>
</tr>
</tbody>
</table>

Switch no. 2 is particularly good for switching low currents and/or voltages. It is the ideal switch for A.T.E. systems where cold switching techniques are often used. Where higher power levels are involved, switch no. 1 is more suitable.

Coil data and type numbers

<table>
<thead>
<tr>
<th>Device type</th>
<th>Type Number</th>
<th>Coil (V)</th>
<th>Coil resistance</th>
<th>Max. contact resistance (initial)</th>
<th>Insulation resistance (minimum)</th>
<th>Capacitance (typical) (see Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Form A (energize to make)</td>
<td>100-1-A-5/1D</td>
<td>5</td>
<td>3300 Ω</td>
<td>0.15 Ω</td>
<td>1012 Ω</td>
<td>5 pF</td>
</tr>
<tr>
<td>1 Form A (energize to make)</td>
<td>100-1-A-12/1D</td>
<td>12</td>
<td>6800 Ω</td>
<td>0.15 Ω</td>
<td>1012 Ω</td>
<td>5 pF</td>
</tr>
<tr>
<td>1 Form A (energize to make)</td>
<td>100-1-A-24/1D</td>
<td>24</td>
<td>6800 Ω</td>
<td>0.15 Ω</td>
<td>1012 Ω</td>
<td>5 pF</td>
</tr>
</tbody>
</table>

When an internal diode is required, the suffix D is added to the part number as shown in the table.

Mercury Reed: Series 100 switch ratings - The contact ratings for each switch type are shown below:

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<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)</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>2000 Ω</td>
<td>2.0 ms</td>
<td>2.0 ms</td>
<td>Standard Mercury</td>
</tr>
<tr>
<td>8</td>
<td>A</td>
<td>50 W</td>
<td>2 A</td>
<td>3 A</td>
<td>1000</td>
<td>5000 Ω</td>
<td>2.0 ms</td>
<td>2.0 ms</td>
<td>Position Invasive</td>
</tr>
</tbody>
</table>

Mercury Relay: Coil data and type numbers

<table>
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<tr>
<th>Device type</th>
<th>Type Number</th>
<th>Coil (V)</th>
<th>Coil resistance</th>
<th>Max. contact resistance (initial)</th>
<th>Insulation resistance (minimum)</th>
<th>Capacitance (typical) (see Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Form A (energize to make)</td>
<td>100-1-A-5/1D</td>
<td>5</td>
<td>500 Ω</td>
<td>0.100 Ω</td>
<td>10^6 Ω</td>
<td>5 pF</td>
</tr>
<tr>
<td>1 Form A (energize to make)</td>
<td>100-1-A-12/1D</td>
<td>12</td>
<td>2000 Ω</td>
<td>0.100 Ω</td>
<td>10^6 Ω</td>
<td>5 pF</td>
</tr>
<tr>
<td>1 Form A (energize to make)</td>
<td>100-1-A-24/1D</td>
<td>24</td>
<td>3300 Ω</td>
<td>0.100 Ω</td>
<td>10^6 Ω</td>
<td>5 pF</td>
</tr>
</tbody>
</table>

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Note 1 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 at approx 1 x 10^6 ops. At the maximum load (resistive), typical life is 1 x 10^7 ops. In the event of abusive conditions, e.g. high currents due to capacitive inrushes, this figure reduces considerably. Pickering will be pleased to perform life testing with any particular load condition.

Note 2 Capacitance across open switch
The capacitance across the open switch was measured with other connections guarded.

Note 3 Capacitance values
The value will depend upon the mode of connection/grounding of unused terminals. Please contact technical sales for details.

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