Pickering Series 97

Dual-in-Line DIL/DIP Reed Relays

Up to 10 Watts switching for dry reed

Features

- 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
- Dry and mercury wetted switches are available with the same pin configuration and footprint (see “A useful tip” below)
- 5, 12 and 24 Volt coils with or without internal diode

The Series 97 is a range of reed relays with pins in the popular Dual-in-Line format.

Being encapsulated in a plastic package using a very high resistivity epoxy resin gives the device several advantages over the more usual moulded construction. The reed switches are not subjected to the high temperatures and pressures of the transfer moulding process with the inherent risk of damage to the sensitive glass to metal seals. The construction incorporates a mu-metal wrap around the operating coil to eliminate magnetic interaction problems. Higher drive levels are achieved, allowing a full range of switching configurations including 1 or 2 Form A (energize to make), Form C (change-over) and Form B (energize to break) in both dry and mercury wetted types.

If higher coil resistance levels are required, please look at our Series 98 DIL relays which may be driven directly from 74HC or 74HCT CMOS logic.

A useful tip

If there is a chance that you might want to use mercury wetted relays instead of dry relays at a later date, for example to increase switch ratings, lay out the PCB initially as though for the mercury wetted type with pins 1 and 14 uppermost. This allows uprating later without PCB changes. The mercury versions in the Series 97 have identical pin configurations to the dry types.

Switch Ratings - Dry switches

- 1 Form A (energize to make), 10 watts at 200V
- 1 Form A (energize to make), 10 watts at 300V
- 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
Dry Reed - Series 97 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 Note1 below)</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>General purpose</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>10^7</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>300</td>
<td>10^6</td>
<td>500V 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. 1s is more suitable.

Operating voltages

- **Coil voltage - nominal**: Must operate voltage - maximum at 25°C
- **Must release voltage - minimum at 25°C**
- **Life expectancy**: ops typical (see Note1 below)

Dry Relay - 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>
</tr>
</thead>
<tbody>
<tr>
<td>1 Form A (energize to make) General Purpose</td>
<td>97-1-A-5/1D</td>
<td>5</td>
<td>500 Ω</td>
<td>0.15 Ω</td>
</tr>
<tr>
<td>1 Form B (energize to break) General Purpose</td>
<td>97-1-B-5/1D</td>
<td>5</td>
<td>500 Ω</td>
<td>0.15 Ω</td>
</tr>
<tr>
<td>2 Form A (energize to make) General Purpose</td>
<td>97-2-A-5/1D</td>
<td>5</td>
<td>500 Ω</td>
<td>0.15 Ω</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 97 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 Note1 below)</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>10^6</td>
<td>Standard Mercury</td>
</tr>
</tbody>
</table>

Mercury Relay: Coil data and type numbers

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

Environmental specification

- **Standard operating temperature range**: -20 to +65 °C
- **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 inrushes, this figure reduces considerably. Pickering will be pleased to perform life testing with any particular load condition.

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