

## Pickering Series 200

# Surface Mount Reed Relays

Including coaxial types for up to 5GHz

### Features

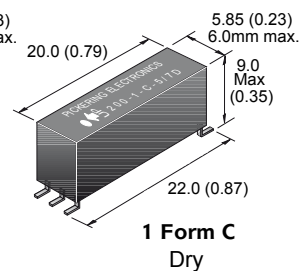
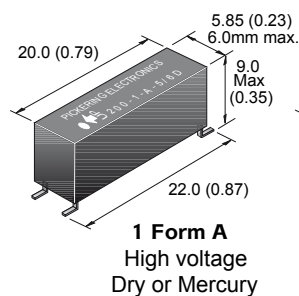
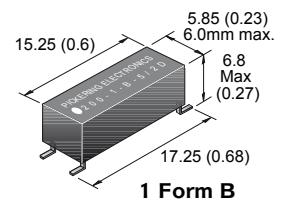
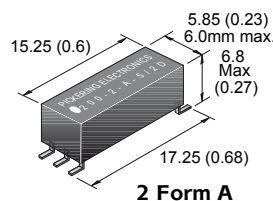
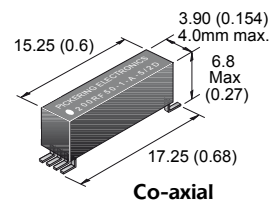
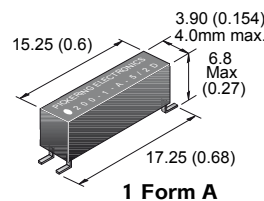
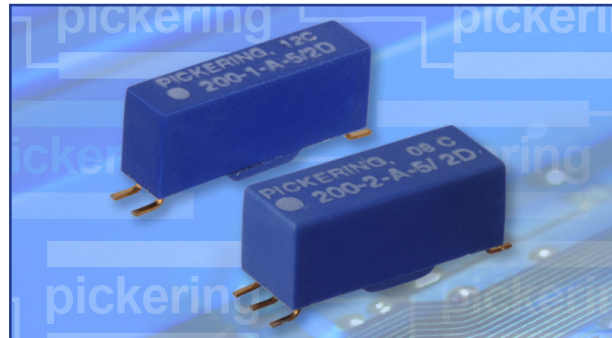
- **SoftCenter®** construction
- Highest quality instrumentation grade switches
- Encapsulated in plastic package with internal mu-metal screen for side-by-side mounting without magnetic interaction
- Insulation resistance greater than  $10^{12}$  ohms for Form A devices
- Dry and mercury wetted switches available
- Wide range of switch configurations - 1 Form A, 1 Form B, 2 Form A and 1 Form C
- For R.F. or high speed digital applications, 50 or 75 ohms coaxial devices are available in the same small package
- 3, 5, and 12 volt coils are standard, with or without internal diode
- 100% tested for dynamic contact resistance

The Series 200 is a complete range of surface mount reed relays. Both dry and mercury wetted switches are available in a wide range of configurations including coaxial types for RF up to 5GHz, or high speed digital switching with a step response time of less than 30ps. Please contact our technical department for supplementary RF data.

The special high temperature plastic package will withstand the temperatures associated with Infra-red or vapor phase reflow soldering processes. A flexible inner encapsulant protects the sensitive glass/metal reed switch seals - this is a very big advantage over the more usual hard moulded package.

### Switch Ratings - Dry switches

- 1 Form A (energize to make), 10 watts at 200V
- 1 Form A (energize to make), 15 watts at 200V
- 1 Form A (energize to make), 10 watts at 500V
- Coaxial 50Ω (energize to make), 10 watts at 200V
- Coaxial 75Ω (energize to make), 10 watts at 200V
- 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



mm (Inches)

### Switch Ratings - Mercury Wetted Switches

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

**Dry Reed - Series 200 switch ratings** - The contact ratings for each switch type are shown below:

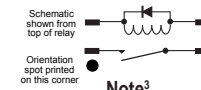
Switch No	Switch form	Power rating	Max. switch current	Max. carry current	Max. switching volts	Life expectancy ops typical (see Note <sup>1</sup> below)	Operate time inc bounce (max)	Release time	Special features
1	A	15 W	1.0 A	1.2 A	200	10E9	0.5 ms	0.2 ms	General purpose
2	A or B	10 W	0.5 A	1.2 A	200	10E9	0.5 ms	0.2 ms	Low level
3	C	3 W	0.25 A	1.2 A	200	10E7	1.0 ms	0.5 ms	Change-over
4	A	10 W	0.5 A	1.2 A	500	10E8	0.5 ms	0.2 ms	High voltage

**Pin Configuration and Dimensional Data**

Dimensions in Inches (Millimeters in brackets)

**1 Form A (Energize to make)**

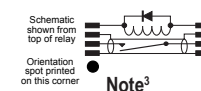
Package Number 1



Note<sup>3</sup>

**1 Form A (Coaxial)**

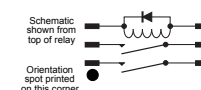
Package Number 2



Note<sup>3</sup>

**2 Form A (Energize to make)**

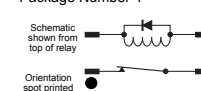
Package Number 3



Note<sup>3</sup>

**1 Form B (Energize to break)**

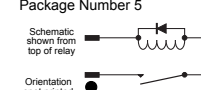
Package Number 4



Note<sup>3</sup>

**1 Form A (Energize to make)**

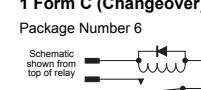
Package Number 5



Note<sup>3</sup>

**1 Form C (Changeover)**

Package Number 6



Note<sup>3</sup>

Note<sup>2</sup>: When an optional diode is fitted the orientation spot end of the relay forms the positive connection.

3D Models: Interactive models of the complete range of Pickering relay products can be downloaded from the web site.

**Mercury Relays**

With the exception of the position insensitive type, mercury relays should be mounted vertically in the direction of the arrow.

**Order Code**

200 - 1 - A - 5 / 2 D

Series \_\_\_\_\_

Number of reeds \_\_\_\_\_

Switch form \_\_\_\_\_

Coil voltage \_\_\_\_\_

Switch number (See table adjacent) \_\_\_\_\_

Diode if fitted (Omit if not required) \_\_\_\_\_

**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.

**Dry Relay - Coil data and type numbers**

Device type	Package Number	Type Number	Coil (V)	Coil resistance	Max. contact resistance (initial)	Insulation resistance (minimum)		Capacitance (typical) (see Note <sup>2</sup> below)	
						Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) Switch No. 1	1	200-1-A-5/1D 200-1-A-12/1D	5 12	500 Ω 1000 Ω	0.15 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
1 Form A (energize to make) Switch No. 2	1	200-1-A-3/2D 200-1-A-5/2D 200-1-A-12/2D	3 5 12	250 Ω 500 Ω 1000 Ω	0.12 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
1 Form A 50 Ω coaxial Switch No. 2	2	200RF50-1-A-5/2D	5	250 Ω	0.12 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
1 Form A 75 Ω coaxial Switch No. 2	2	200RF75-1-A-5/2D	5	250 Ω	0.12 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
1 Form A (energize to make) HV Switch No. 4	5	200-1-A-5/4D 200-1-A-12/4D	5 12	500 Ω 1000 Ω	0.15 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
1 Form C (change-over) Switch No. 3	6	200-1-C-5/3D 200-1-C-12/3D	5 12	500 Ω 1000 Ω	0.20 Ω	10E12 Ω	10E11 Ω	See Note <sup>3</sup>	See Note <sup>3</sup>
1 Form B (energize to break) Switch No. 2	4	200-1-B-5/2D 200-1-B-12/2D	5 12	750 Ω 1000 Ω	0.12 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
2 Form A (energize to make) Switch No. 2	3	200-2-A-5/2D 200-2-A-12/2D	5 12	400 Ω 1000 Ω	0.12 Ω	10E12 Ω	10E12 Ω	See Note <sup>3</sup>	See Note <sup>3</sup>

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

**Mercury Reed: Series 200 switch ratings** - The contact ratings for each switch type are shown below:

Switch No	Switch form	Power rating	Max. switch current	Max. carry current	Max. switching volts	Life expectancy ops typical (see Note <sup>1</sup> below)	Operate time (max)	Release time	Special features
6	A	50 W	2 A	3 A	500	10E8	2.0 ms	1.25 ms	Standard Mercury
8	A	50 W	2 A	3 A	500	10E8	2.0 ms	1.25 ms	Position insensitive

**Mercury Relay: Coil data and type numbers**

Device type	Type Number	Coil (V)	Coil resistance	Max. contact resistance (initial)	Insulation resistance (minimum)		Capacitance (typical) (see Note <sup>2</sup> below)	
					Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) Switch No. 6	200-1-A-5/6D 200-1-A-12/6D	5 12	140 Ω 500 Ω	0.075 Ω	10E12 Ω	10E10 Ω	4 pF	0.1 pF
1 Form A (energize to make) Position Insensitive Switch No. 8	200-1-A-5/8D 200-1-A-12/8D	5 12	140 Ω 500 Ω	0.100 Ω	10E12 Ω	10E10 Ω	4 pF	0.1 pF

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

**Note<sup>1</sup> 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<sup>9</sup> ops. At the maximum load (resistive), typical life is 1 x 10<sup>7</sup> 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<sup>2</sup> Capacitance across open switch**

This is measured with all other component leads connected to the guard terminal of the measuring bridge.

**Note<sup>3</sup> Capacitance values**

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

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