

## Pickering Series 118

# High Coil Resistance Single-in-Line SIL/SIP Reed Relays

Up to 15 Watts switching - Very high packing density

### Features

- **SoftCenter®** construction (see adjacent diagram)
- Highest quality instrumentation grade switches
- Sputtered ruthenium switches rated at 10 Watts, 0.5 A or 15 Watts, 1.0 A
- Plastic package with internal mu-metal magnetic screen
- They take up the minimum of board area, conserving board space
- Insulation resistance greater than  $10^{12} \Omega$
- 3 or 5 Volt coils with or without internal diode
- 100% tested for dynamic contact resistance for guaranteed performance

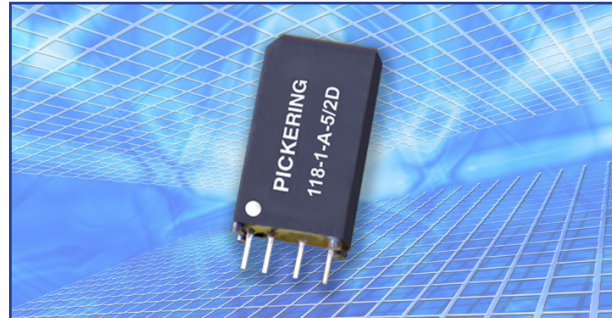
The Pickering Series 118 is a range of very sensitive reed relays that are ideal for portable electronic instruments or other applications where low power consumption and a very small footprint is important. They have 5 volt coils with a resistance up to 2200  $\Omega$  and the option of an internal diode.

Two switch types are available. Switch type number 1 is better suited for general purpose applications. Switch type 2 is better suited to low level or 'cold' switching.

Both types feature high quality, instrumentation grade switch contacts and require a board area of only 0.2 x 0.33 inches (5.1 x 8.4 mm).

These relays feature internal mu-metal magnetic screens. Mu-metal has the advantage of a high permeability and low magnetic remanence and eliminates problems that would otherwise occur due to magnetic interaction. Relays of this size without magnetic screening would be totally unsuitable for applications where dense packing is required.

Initially, single pole versions only are available in this range but double pole versions will follow in the future.



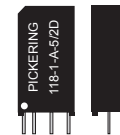
0.32 nom (8.13)  
0.33 max (8.38)

0.19 nom (4.80)  
0.20 max (5.08)

Inches  
(mm)

0.6 nom (15.24)  
0.61 max (15.5)

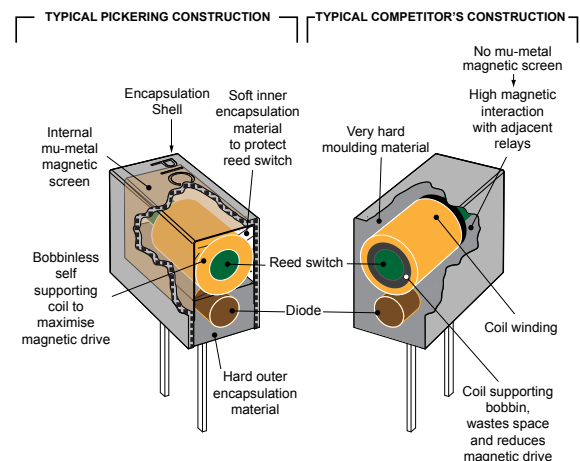
Pin 1



1 Form A

Actual size

### Typical Pickering **SoftCenter®** Construction



## Series 118 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	0.6 ms	0.35 ms	General purpose
2	A	10 W	0.5 A	1.2 A	200	10E9	0.6 ms	0.35 ms	Low level

## Operating voltages

Coil voltage - nominal	Must operate voltage - maximum at 25°C	Must release voltage - minimum at 25°C
3 V	2.25 V	0.3 V
5 V	3.75 V	0.5 V

## 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>2,3</sup> below)	
					Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) Switch No. 1	118-1-A-5/1D	5	1500 Ω	0.12 Ω	10E12 Ω	10E12 Ω	3.0 pF	0.14 pF
1 Form A (energize to make) Switch No. 2	118-1-A-3/2D 118-1-A-5/2D	3 5	1000 Ω 2200 Ω	0.12 Ω	10E12 Ω	10E12 Ω	3.0 pF	0.14 pF

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 +85 °C.

**Note:** The upper temperature limit can be extended to +125 °C if the coil drive voltage is increased to accommodate the resistance/temperature coefficient of the copper coil winding. This is approximately 0.4% per °C. This means that at 125 °C the coil drive voltage will need to be increased by approximately  $40 \times 0.4 = 16\%$  to maintain the required magnetic drive level. Please contact sales@pickeringrelay.com for assistance if necessary.

**Vibration:** Maximum 20 G

**Shock:** Maximum 50 G

### 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  $1 \times 10^9$  ops. At the maximum load (resistive), typical life is  $1 \times 10^7$  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<sup>2</sup> Switch to coil capacitance

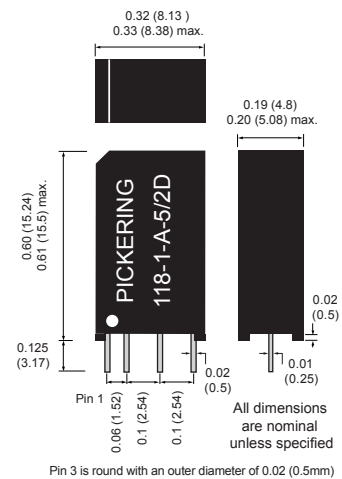
Due to the asymmetrical internal construction of the relay, the capacitance to the coil from one switch connection is approximately half the capacitance of the other switch connection, pin 3 is lower. In some applications this feature may be used to advantage for example, in a multiplexer where it is desirable to minimize the capacitance of the common connection to maximize bandwidth.

### Note<sup>3</sup> Capacitance across open switch

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

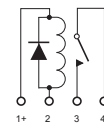
## Pin Configuration and Dimensional Data

Dimensions in Inches (Millimeters in brackets)



Pin 3 is round with an outer diameter of 0.02 (0.5mm)

### 1 Form A (Energize to make)



### Note<sup>4</sup>

**Note<sup>4</sup>:** When an optional diode is fitted pin 1 is the positive connection.

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

## Internal Mu-metal Magnetic Screen

The Series 118 relays are fitted with an internal mu-metal magnetic screen which permits side-by-side stacking on 0.2 inches pitch.

## Order Code

118 - 1 - A - 5 / 2 D

Series	118
Number of reeds	- 1 -
Switch form	A
Coil voltage	- 5 -
Switch number (1 or 2 See table adjacent)	/ 2
Diode if fitted (Omit if not required)	D

## 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.

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