

Pickering Series 110

SIL/SIP Reed Relays

20 Watts switching - Very high packing density

1 Form A stacks on 0.15 x 0.40 inches pitch

Features

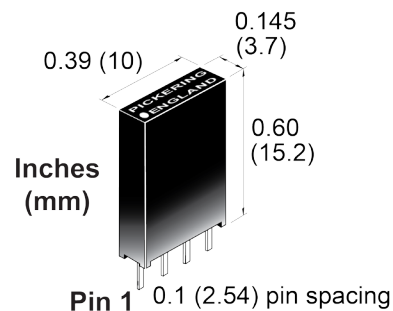
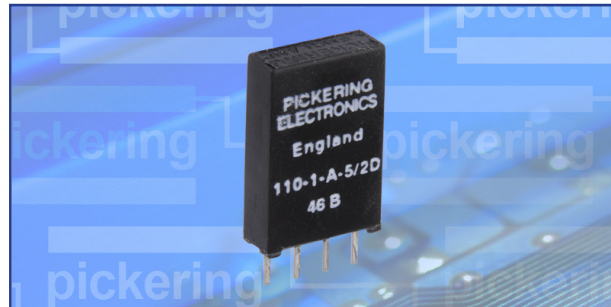
- **SoftCenter®** construction (see adjacent diagram)
- Highest quality instrumentation grade switches
- Plastic package with internal mu-metal magnetic screen
- They take up the minimum of board area, conserving board space
- Insulation resistance greater than $10^{12} \Omega$
- 3, 5 and 12 Volt coils with or without internal diode
- 5 Volt coils of 500 ohms may be driven directly from TTL logic
- 100% tested for dynamic contact resistance for guaranteed performance

The Pickering Series 110 V-SIL (vertical single-in-line) is a range of magnetically screened single-in-line reed relays that stack on 0.15 inches by 0.4 inches pitch. The switches in this range are mounted vertically within the package, this allows the use of the same switch types as would normally be found in relays requiring a very much larger board area. Two types of Form A (energize to make) switches are available, a general purpose version and a type suitable for low level or "cold" switching applications.

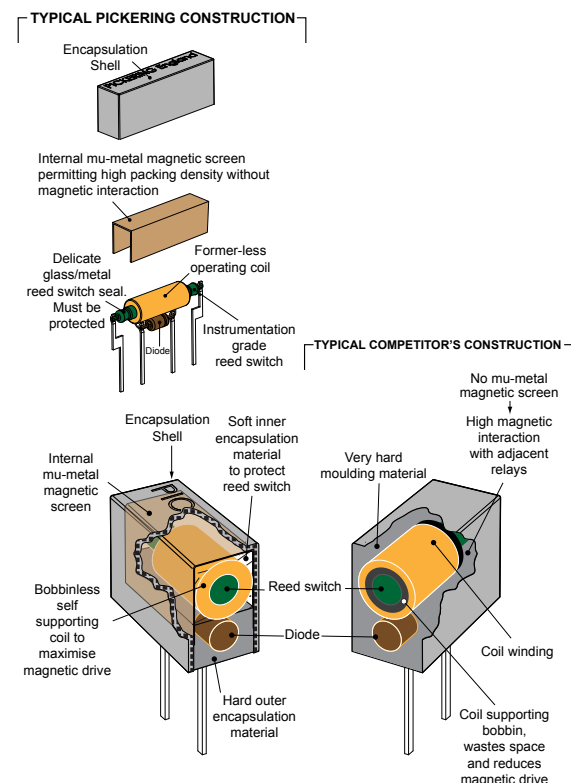
These relays require around one third the board area of the more usual 0.2 x 0.8 inch devices. These are your ideal choice for high density applications such as A.T.E. switching matrices or where very little board area is available. If a lower profile device is required, look at the Series 111 & 112.

The Series 110 is encapsulated in a plastic package using a very high resistivity resin. The relay has an internal mu-metal screen which totally eliminates the risk of magnetic interaction problems. An unscreened device mounted on this pitch would have an interaction figure of around 40 percent. Relays of this size without magnetic screening would therefore be totally unsuitable for applications where dense packing is required. Pickering Series 110 have a typical interaction figure of 5 percent.

3, 5 and 12 Volt coils are standard, with the option of an internal diode. 5 Volt coils have a resistance of 500 ohms and may be driven directly from TTL logic.



Typical Pickering **SoftCenter®** Construction



Series 110 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 ¹ below)	Operate time inc bounce (max)	Release time	Special features
1	A or B	20 W	1.0 A	1.2 A	200	10E9	0.5 ms	0.2 ms	General purpose
2	A	10 W	0.5 A	1.2 A	200	10E9	0.5 ms	0.2 ms	Low level

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.

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
12 V	9 V	1.2 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 ² below)	
					Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) General Purpose Switch No. 1	110-1-A-5/1D	5	500 Ω	0.15 Ω	10E12 Ω	10E12 Ω	3 pF	0.1 pF
	110-1-A-12/1D	12	1000 Ω					
1 Form A (energize to make) Low Level Switch No. 2	110-1-A-3/2D	3	250 Ω	0.15 Ω	10E12 Ω	10E12 Ω	3 pF	0.1 pF
	110-1-A-5/2D	5	500 Ω					
	110-1-A-12/2D	12	1000 Ω					

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 x 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

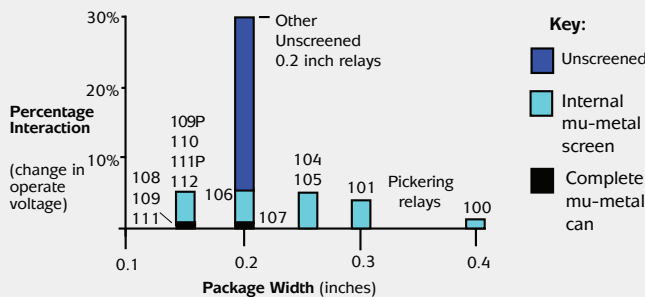
Note¹ Life expectancy
The life of a reed relay depends upon the switch load and end of life criteria. For example, for an 'end of life' contact resistance specification of 1 Ω, switching low loads (10 V at 10 mA resistive) or when 'cold' switching, typical life is approx 1 x 10⁹ ops. At the maximum load (resistive), typical life is 1 x 10⁷ 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.

Note² Capacitance across open switch
The capacitance across the open switch was measured with other connections guarded.

Internal Mu-metal Magnetic Screen

The Series 110 relays are fitted with an internal mu-metal magnetic screen which permits side-by-side stacking on 0.15 inches pitch.

Graph showing the effects of different types of Screening



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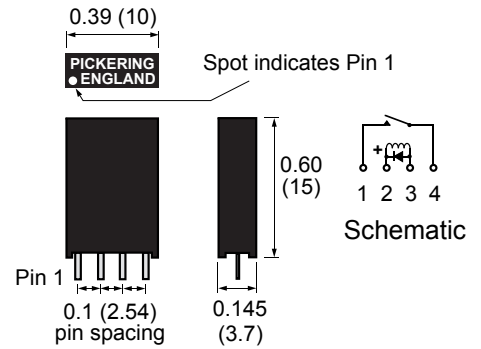
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ISO9001 Manufacture of
Reed Relays FM 29036

Pin Configuration and Dimensional Data

Dimensions in Inches (Millimeters in brackets)

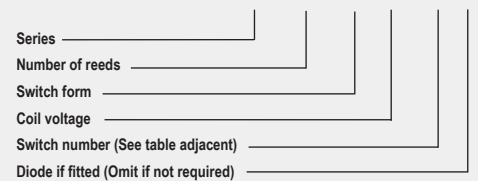


Important: Where the optional internal diode is fitted, the correct coil polarity must be observed, as shown by the + symbol on the schematic.

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

Order Code

110 - 1 - A - 5 / 2 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.