

Pickering Series 108

Micro-SIL[®] SIL/SIP Reed Relays

20 Watts at 200V - 1 Form A and 2 Form A (energise to make)

3 Watts at 200V - 1 Form C (change-over)

Features

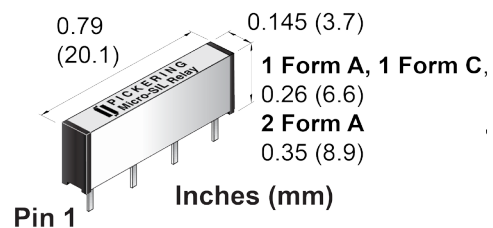
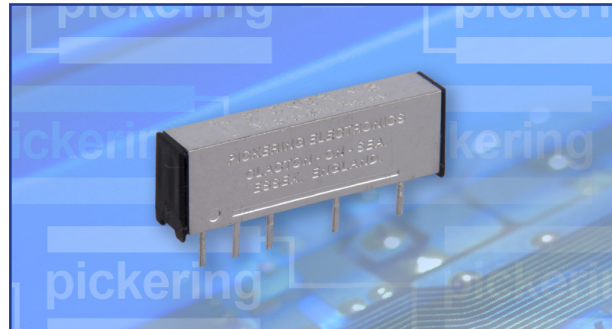
- **SoftCenter[®]** construction (see adjacent diagram)
- Highest quality instrumentation grade switches
- Encapsulated in mu-metal can
- Insulation resistance greater than $10^{12} \Omega$ for Form A devices
- Dry switches available in 1 Form A, 2 Form A and 1 Form C configurations. 2 Form A types require the same board area as 1 Form A
- 3, 5 and 12 Volt coils with or without internal diode
- 5 Volt coils are 500 ohms and may be driven directly from TTL logic
- 100% tested for dynamic contact resistance for guaranteed performance

The Pickering Series 108 is a range of magnetically screened single-in-line reed relays that stack on 0.15 inches (3.8mm) pitch, resulting in a 25 percent saving in board space over 0.2 inch (5.08mm) wide relays. This means that it is possible to pack 33 percent more relays into the same board area.

Their small size, superb contact resistance stability and ultra high insulation resistance, greater than 10^{12} ohms for Form A devices, make these relays a popular choice for high quality instrumentation.

The device is encapsulated in a mu-metal can using a very high resistivity resin. Mu-metal is used rather than steel because of both its very high permeability and its low magnetic remanence. This construction totally eliminates the risk of magnetic interaction problems. Magnetic interaction is usually measured as a percentage increase in the voltage required to operate a relay when two additional relays, stacked one each side, are themselves operated. An unscreened device mounted on this pitch would have an interaction figure of around 40 percent, it would therefore be totally unsuitable for applications where relays are to be packed densely. Pickering Series 108 have a typical interaction figure of only 1 percent.

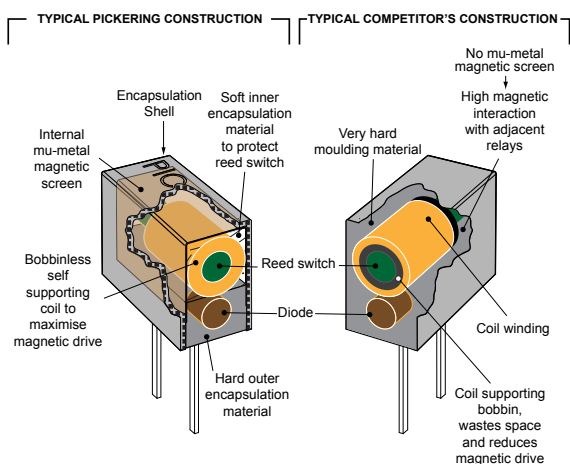
Dry switches are available in 1 or 2 Form A (energise to make) and 1 Form C (change-over) configurations. 3, 5 and 12 Volt coils are available, 5 Volt coils have a resistance of 500 Ohms and may therefore be driven directly from TTL logic.



Switch Ratings - Dry switches

- Single or Double pole Form A (Energize to Make) relays. Up to 1 Amp switching at 20 Watts
- Single pole Form C (Change-over) relays. 0.25 Amps switching at 3 Watts

Typical Pickering **SoftCenter[®]** Construction



Series 108 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	15 W (5 V Versions) 20 W (12 V Versions)	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
3	C	3 W	0.25 A	1.2 A	200	10E7	1.0 ms	0.5 ms	Change over

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	108-1-A-5/1D	5	500 Ω	0.15 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.15 pF
	108-1-A-12/1D	12	1000 Ω					
1 Form A (energize to make) Low Level Switch No. 2	108-1-A-3/2D	3	330 Ω	0.12 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.15 pF
	108-1-A-5/2D 108-1-A-12/2D	5 12	500 Ω 1000 Ω					
1 Form C (change-over) Switch No. 3	108-1-C-5/3D	5	500 Ω	0.20 Ω	10E12 Ω	10E10 Ω	See Note ³	See Note ³
	108-1-C-12/3D	12	1000 Ω					
2 Form A (energize to make) General Purpose Switch No. 1	108-2-A-5/1D	5	375 Ω	0.17 Ω	10E12 Ω	10E12 Ω	See Note ³	See Note ³
	108-2-A-12/1D	12	1000 Ω					
2 Form A (energize to make) Low Level Switch No. 2	108-2-A-5/2D	5	375 Ω	0.15 Ω	10E12 Ω	10E12 Ω	See Note ³	See Note ³
	108-2-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 $40 \times 0.4 = 16\%$ to maintain the required magnetic drive level. Please contact sales@pickeringrelay.com for assistance if necessary.

Vibration: Maximum 20 G **Shock:** Maximum 50 G

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 1×10^9 ops. At the maximum load (resistive), typical life is 1×10^7 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.

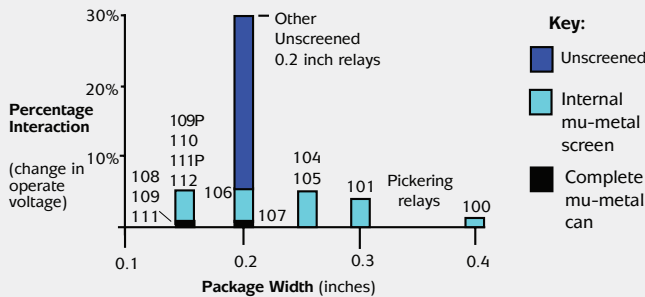
Note² Capacitance across open switch

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

Note³ Capacitance values

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

Graph showing the effects of different types of Screening



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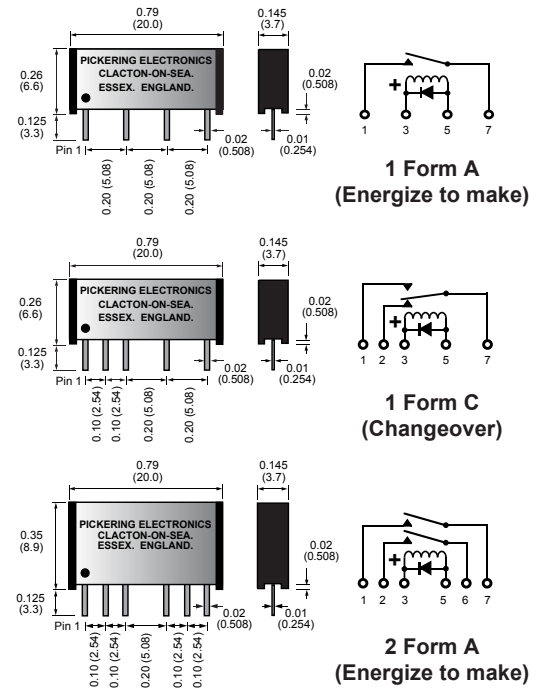
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ISO9001 Manufacture of
Reed Relays FM 29036

Pin Configuration and Dimensional Data

Dimensions in Inches (Millimeters in brackets)

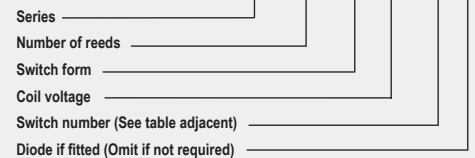


Important: Where the optional internal diode is fitted, the correct coil polarity must be observed, as shown by the + symbol on the schematics.

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

Order Code

108 - 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.



pickeringrelay.com