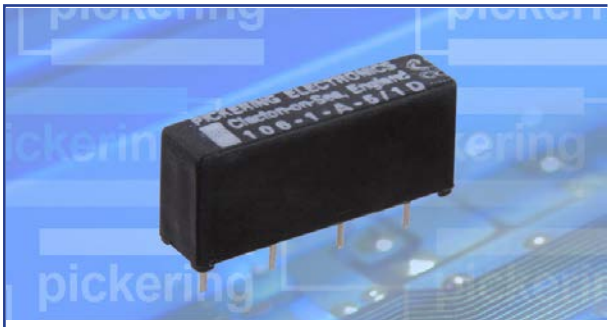
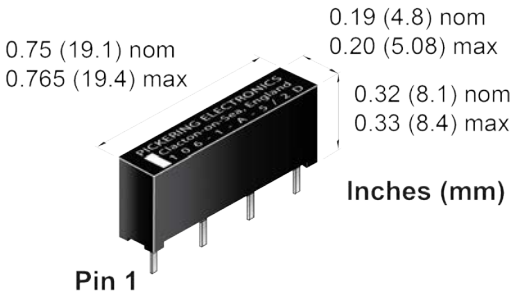
Single-in-Line SIL/SIP Reed Relays

1 Form A (energise to make), 20 Watts at 200V
1 Form C (change-over), 3 Watts at 200V



Features

- ***SoftCenter***® **construction (see adjacent diagram)**
- **Highest quality instrumentation grade switches**
- **Internal mu-metal magnetic screen**
- **Insulation resistance greater than 10^{12} Ω for Form A devices**
- **Dry switches available in both 1 Form A and 1 Form C configurations**
- **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 Series 106 is a range of Single-In-Line reed relays intended for stacking on 0.2 inches pitch. Their small size, superb contact resistance stability and ultra high insulation resistance, make these relays an ideal choice for Automatic Test Equipment. They have an internal mu-metal screen to eliminate problems that would otherwise be experienced due to magnetic interaction. While the screening is not quite as efficient as the complete mu-metal can of the Series 107, 108 or 109, it is more than adequate for most applications (see explanation below).

If even greater packing density is required, smaller devices are available in other Pickering SIL ranges.

Magnetic Interaction - An explanation

Magnetic interaction between relays is normally expressed as a percentage increase in the voltage required to operate the relay, due to the extraneous fields from adjacent relay coils.

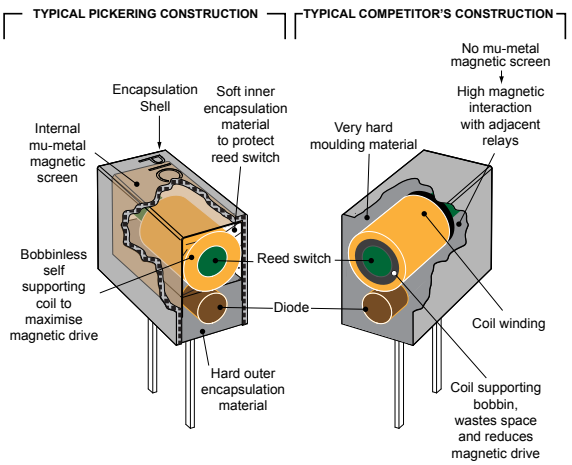
An unscreened SIL relay of this size would have an interaction figure of around 30 percent, i.e. the voltage required to operate it will increase by this amount when relays alongside are operated also. It may prove impossible to use such a relay at its nominal coil voltage in high density applications.

A Pickering Series 106 reed relay has an interaction figure of approximately 5 percent.

Switch Ratings

- **1 Form A (Energize to Make) relays. Up to 1 Amp switching at 20 Watts**
- **1 Form C (Change-over) relays. 3 Watts at 200 Volts**

Typical Pickering *SoftCenter*® Construction



Series 106 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	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
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	106-1-A-5/1D 106-1-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) Low Level Switch No. 2	106-1-A-3/2D 106-1-A-5/2D 106-1-A-12/2D	3 5 12	500 Ω 500 Ω 1000 Ω	0.12 Ω	10E12 Ω	10E12 Ω	2.5 pF	0.1 pF
1 Form C (change-over) Switch No. 3	106-1-C-5/3D 106-1-C-12/3D	5 12	500 Ω 1000 Ω	0.20 Ω	10E12 Ω	10E10 Ω	See Note[3]	See Note[3]

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

Note[1] 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 10^9 ops. At the maximum load (resistive), typical life is 1 x 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[2] Capacitance across open switch

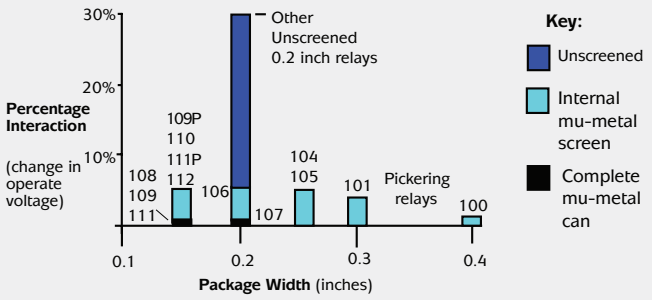
The capacitance across the open switch was measured with other connections guarded.

Note[3] Capacitance values

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

Internal Mu-metal Magnetic Screen

The Series 106 relays are fitted with an internal mu-metal magnetic screen which permits side-by-side stacking on 0.2 inches pitch.



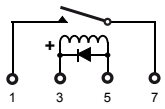
Pickering Electronics Limited
Stephenson Road
Clacton-on-Sea
CO15 4NL
England

email: sales@pickeringrelay.com
Tel. (UK) 01255 428141
(International) +44 1255 428141
Fax. (UK) 01255 475058
(International) +44 1255 475058

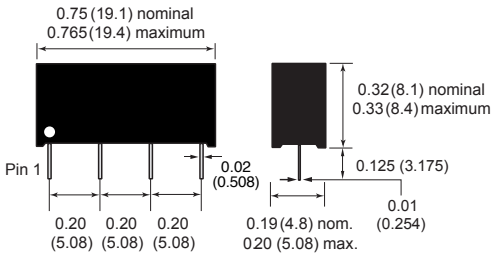
ISO9001 Manufacture of Reed Relays FM 29036

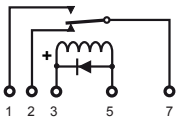
Pin Configuration and Dimensional Data

Dimensions in Inches (Millimeters in brackets)

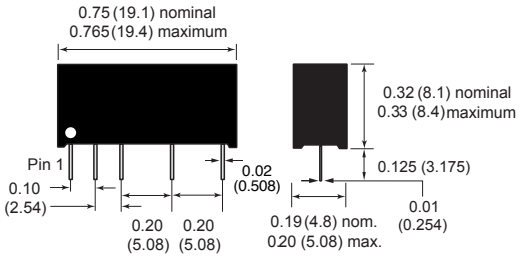


1 Form A (Energize to make)





1 Form C (Changeover)



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.

Mercury Relays

UP

With the exception of the position insensitive type, mercury relays should be mounted vertically with pin 1 uppermost.

Order Code

106 - 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.