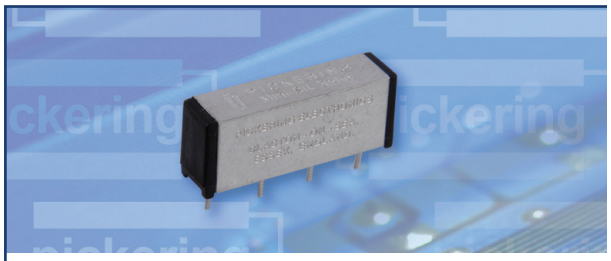
Mini-SIL® SIL/SIP Reed Relays

Up to 20 Watts switching

Stacking on 0.2 inches pitch



Features

- ***SoftCenter*® construction (see adjacent diagram)**
- **Highest quality instrumentation grade switches**
- **Encapsulated in patented mu-metal can**
- **Insulation resistance greater than 10^{12} Ω for Form A devices**
- **Dry and mercury wetted switches available**
- **Wide range of switch configurations - 1 Form A, 1 Form B, 2 Form A, 1 Form C, and 2 Form C, see adjacent column**
- **For R.F. or high speed digital applications, 50 ohms coaxial devices are available in the same package style, see Series 102M**
- **3, 5, 12 or 24 Volt coils with or without internal diode**
- **100% tested for dynamic contact resistance for guaranteed performance**

The Series 107 Mini-SIL range of reed relays are intended for stacking on 0.2 inches (5.08mm) pitch. Their small size, superb contact resistance stability and ultra high insulation resistance, make these relays an ideal choice for high quality instrumentation.

The mu-metal case ensures virtually total magnetic screening, see explanation below.

Both dry and mercury wetted switches are available in a wide range of configurations, see adjacent column.

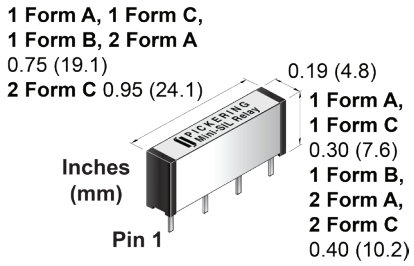
If even greater packing density is required, smaller devices are available in other Pickering SIL ranges (except for two pole changeover types).

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 107 reed relay has an interaction figure of approximately 1 percent.



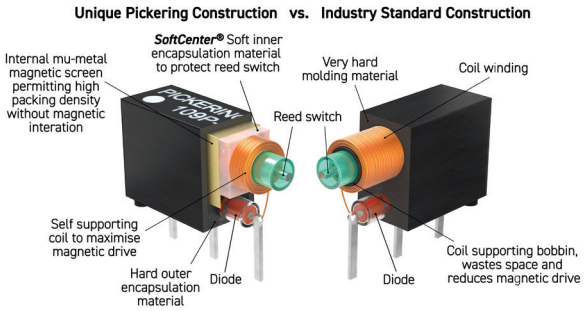
Switch Ratings - Dry switches

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

Switch Ratings - Mercury Wetted Switches

- **Single or Double pole Form A (Energize to Make) relays. 2 Amp switching at 50 Watts**
- **Single pole, Non Position Sensitive, Form A (Energize to Make) relays. 2 Amp switching at 50 Watts**

Typical Pickering *SoftCenter*® Construction



Series 107 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	15 W (5 V Versions) 20 W (12 & 24 V)	1.0 A	1.2 A	200	10^9	0.5 ms	0.2 ms	General purpose
2	A	10 W	0.5 A	1.2 A	200	10^9	0.5 ms	0.2 ms	Low level
3	C	3 W	0.25 A	1.2 A	200	10^7	1.0 ms	0.5 ms	Change over
4	A	10 W	0.5 A	1.2 A	400	10^7	0.75 ms	0.25 ms	500V stand-off

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.

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	107-1-A-5/1D 107-1-A-12/1D 107-1-A-24/1D	5 12 24	500 Ω 1000 Ω 3000 Ω	0.15 Ω	10^{12} Ω	10^{12} Ω	2.5 pF	0.2 pF
1 Form A (energize to make) Low Level Switch No. 2	107-1-A-3/2D 107-1-A-5/2D 107-1-A-12/2D 107-1-A-24/2D	3 5 12 24	500 Ω 500 Ω 1000 Ω 3000 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	2.5 pF	0.2 pF
1 Form A (energize to make) High Voltage Switch No. 4	107-1-A-5/4D 107-1-A-12/4D 107-1-A-24/4D	5 12 24	500 Ω 1000 Ω 3000 Ω	0.15 Ω	10^{12} Ω	10^{12} Ω	2.5 pF	0.2 pF
1 Form C (change-over) Switch No. 3	107-1-C-5/3D 107-1-C-12/3D 107-1-C-24/3D	5 12 24	500 Ω 1000 Ω 3000 Ω	0.20 Ω	10^{12} Ω	10^{10} Ω	See Note[3]	See Note[3]
1 Form B (energize to break) General Purpose Switch No. 1	107-1-B-5/1D 107-1-B-12/1D 107-1-B-24/1D	5 12 24	1000 Ω 3000 Ω 3000 Ω	0.15 Ω	10^{12} Ω	10^{12} Ω	2.5 pF	0.2 pF
2 Form A (energize to make) General Purpose Switch No. 1	107-2-A-5/1D 107-2-A-12/1D 107-2-A-24/1D	5 12 24	500 Ω 1000 Ω 3000 Ω	0.17 Ω	10^{12} Ω	10^{12} Ω	See Note[3]	See Note[3]
2 Form A (energize to make) Low Level Switch No. 2	107-2-A-5/2D 107-2-A-12/2D 107-2-A-24/2D	5 12 24	500 Ω 1000 Ω 3000 Ω	0.15 Ω	10^{12} Ω	10^{12} Ω	See Note[3]	See Note[3]
2 Form C (change-over) Switch No. 3	107-2-C-3/3D 107-2-C-5/3D 107-2-C-12/3D 107-2-C-24/3D	3 5 12 24	200 Ω 375 Ω 1000 Ω 2700 Ω	0.22 Ω	10^{12} Ω	10^{12} 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.

Mercury Reed: Series 107 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 (max)	Release time	Special features
6	A	50 W	2 A	3 A	500	10^8	2.0 ms	1.25 ms	Standard Mercury
8	A	50 W	2 A	2 A	350	10^8	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[2] below)	
					Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) Switch No. 6	107-1-A-5/6D 107-1-A-12/6D 107-1-A-24/6D	5 12 24	140 Ω 500 Ω 1500 Ω	0.075 Ω	10^{12} Ω	10^{11} Ω	5 pF	0.1 pF
1 Form A (energize to make) Position Insensitive Switch No. 8	107-1-A-5/8D 107-1-A-12/8D 107-1-A-24/8D	5 12 24	140 Ω 500 Ω 1500 Ω	0.100 Ω	10^{12} Ω	10^{11} Ω	5 pF	0.1 pF
2 Form A (energize to make) Switch No. 6	107-2-A-5/6D 107-2-A-12/6D 107-2-A-24/6D	5 12 24	100 Ω 375 Ω 1000 Ω	0.100 Ω	10^{12} Ω	10^{11} 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.

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.

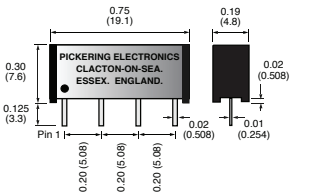
Note[3] Capacitance values
The value will depend upon on the mode of connection/guarding of unused terminals. Please contact technical sales for details.

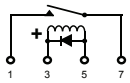
Main contact:
UK Headquarters: email: sales@pickeringrelay.com | Tel. +44 1255 428141
Worldwide contacts:
USA: email: ussales@pickeringtest.com | Tel. +1 781 897 1710
Germany: email: desales@pickeringtest.com | Tel. +49 89 125 953 160
China: email: johnson@tomtech.cn | Tel. 0755 8374 5452
For a full list of agents and representatives visit: **pickeringrelay.com/agents**

ISO9001 Manufacture of Reed Relays FM 29036

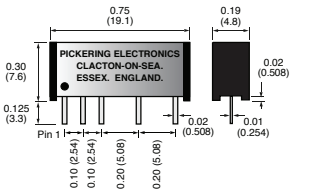
Pin Configuration and Dimensional Data

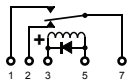
Dimensions in Inches (Millimeters in brackets)



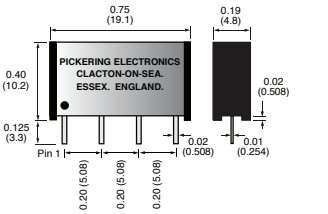


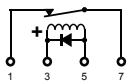
1 Form A (Energize to make)



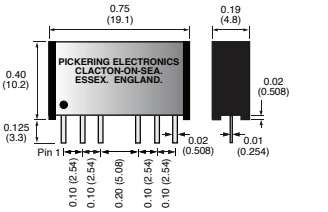


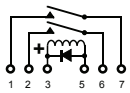
1 Form C (Changeover)



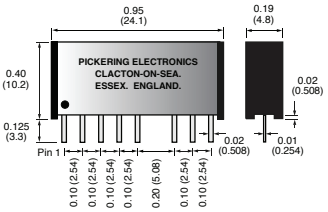


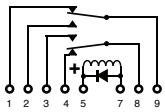
1 Form B (Energize to break)





2 Form A (Energize to make)





2 Form C (Changeover)

Important: Where the optional internal diode is fitted or for all Form B types, 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

107 - 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.