

# 104 Series - Dry Miniature Reed Relay

## SPDT, DPDT, .25 Amp

Dry miniature reed relays offer long life and extremely fast switching times. Capable of switching up to 100VDC. Compact printed circuit board package with standard 0.100" pin spacing. Electrostatic shields are available. Nonstandard schematics and pin-outs can also be produced for specific customer requirements.

### GENERAL SPECIFICATIONS (@ 25° C)

#### Contacts:

Contact Configuration	Up to DPDT
Contact Material	Rhodium
Contact Rating	
Load (maximum)	4VA
Switching Voltage (maximum)	100VDC
Switching Current (maximum)	0.5 Amp
Carry Current (maximum)	1 Amp
Contact Resistance, Initial	200 milliohms max @ 6VDC

#### Coil:

Coils Available	DC
Coil Power	Varies
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous

#### Timing:

Operate Time (typical w/o suppression)	1ms
Release Time (typical w/o suppression)	1ms

#### Dielectric Strength:

Across Open Contacts	200VDC
Between Mutually Insulated Points	500VDC
Insulation Resistance	1000 megohms @ 100VDC

#### Capacitance:

Across Open Contacts	3pF
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#### Temperature:

Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 105°C (-40 to 221°F)

#### Life Expectancy:

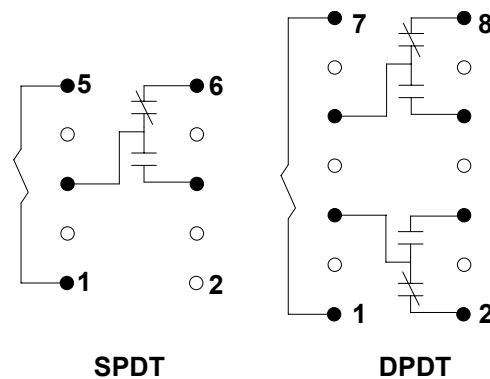
Electrical (full load operations)	10,000,000
Mechanical (no load operations)	100,000,000

#### Miscellaneous:

Mounting Position	Any
Weight	Varies



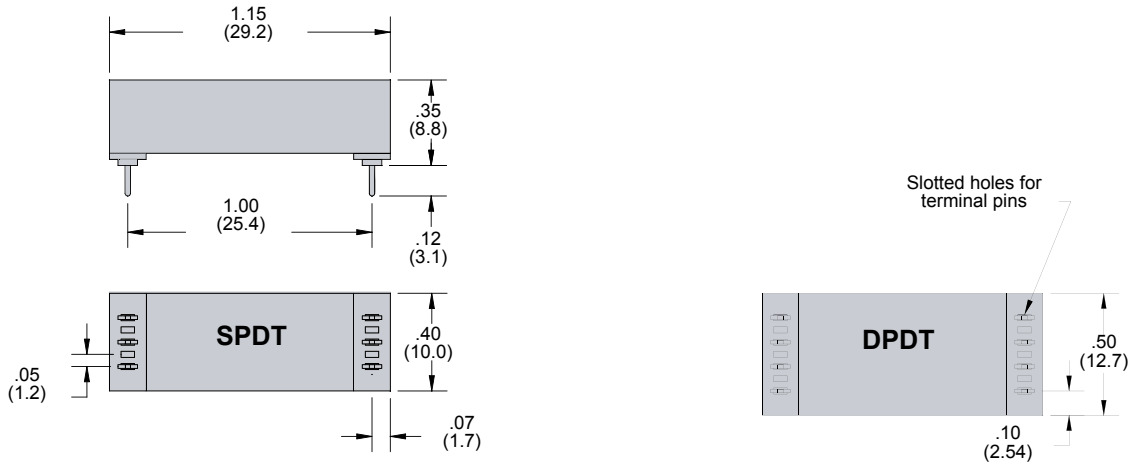
104 Wire Diagram  
(Top View)



# Reed Relays

## Outline Dimensions

Dimensions Shown in inches & (millimeters)



## 104 Part Number Chart

						Maximum Contact Rating		
Part number	Nominal input voltage	Maximum pull-in	Minimum dropout	Nominal resistance (ohms)	Nominal power (mW)	Maximum switching load	Switching current and voltage	Carry current (Amps)
<b>SPDT</b>								
104MPCX-3	24	18	2	2600	220	4VA	0.25 AMP 100VDC	0.5
<b>DPDT</b>								
104MPCX-149	5	4	0.5	45	556	4VA	0.25 AMP 100VDC	0.5
104MPCX-150	12	9	1	230	626	4VA	100VDC	
104MPCX-151	24	18	2	1200	480	4VA		

# 131 Series - Mercury Reed

## SPST, DPST - N.O. , 2 Amp

The 131 series are single throw, normally open, miniature mercury reed relays. Reeds are hermetically sealed in glass tubes with trace amounts of liquid mercury to provide continuously refreshed contact surfaces for extremely long life.

The 134 series offers double throw contacts. Both are capable.

### GENERAL SPECIFICATIONS (@ 25° C)

#### Contacts:

Contact Configuration	Up To DPST
Contact Material	Liquid Mercury
Contact Rating	
Load (maximum)	50VA
Switching Voltage (maximum)	500VDC
Switching Current (maximum)	2 Amp
Carry Current (maximum)	3 Amp
Contact Resistance, Initial	100 milliohms max @ 6VDC

#### Coil:

Coils Available	DC
Coil Power	Varies
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous

#### Timing:

Operate Time	2ms
(typical w/o suppression)	
Release Time	1.5ms
(typical w/o suppression)	

#### Dielectric Strength:

Across Open Contacts	1000VDC
Between Mutually Insulated Points	1000VDC
Insulation Resistance	1000 megohms @ 100VDC

#### Capacitance:

Across Open Contacts	0.3pF
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#### Temperature:

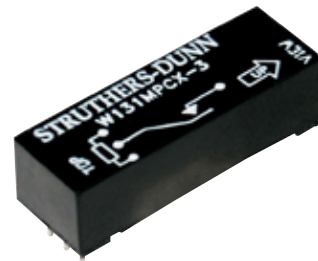
Operating	-37 to 85°C (-34.6 to 185°F)
Storage	-40 to 105°C (-40 to 221°F)

#### Life Expectancy:

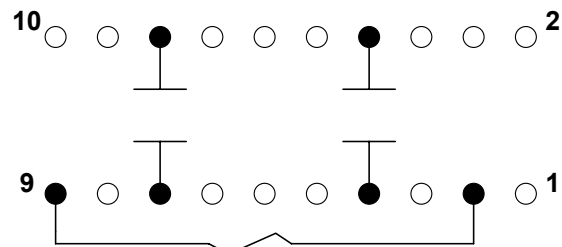
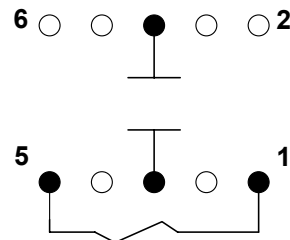
Electrical (full load operations)	40,000,000
Mechanical (no load operations)	100,000,000

#### Miscellaneous:

Enclosure	Epoxy encapsulated
Mounting Position	Vertical ±15°
Weight	Varies



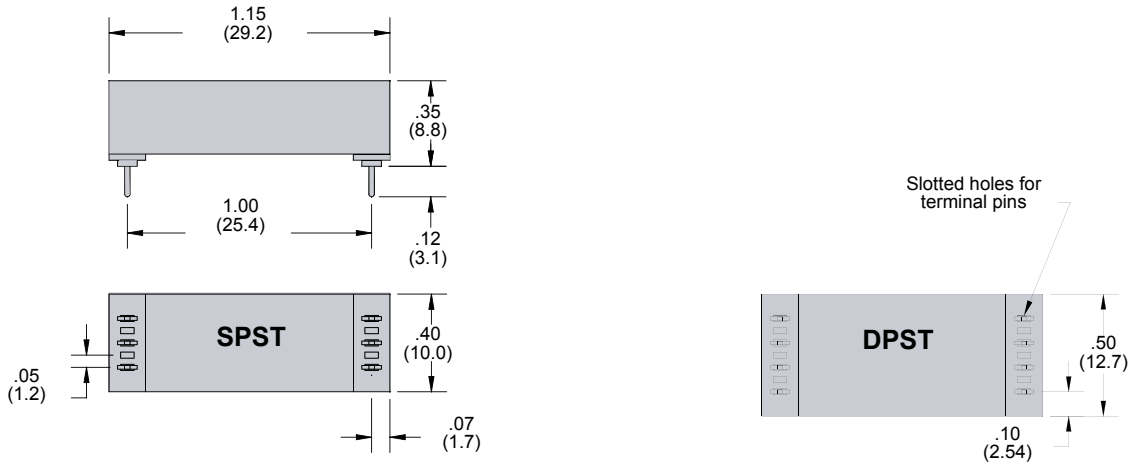
131 Wire Diagram  
(Top View)



# Reed Relays

## Outline Dimensions

Dimensions Shown in inches & (millimeters)



## 131 Part Number Chart

						Maximum Contact Rating		
Part number	Nominal input voltage	Maximum pull-in	Minimum dropout	Nominal resistance (ohms)	Nominal power (mW)	Maximum switching load	Switching current and voltage	Carry current (Amps)
SPST - N.O.								
131MPCX-3	12	9	1	330	435	50VA	2 AMP	3
131MPCX-4	24	18	2	1400	410		500VDC	
DPST - N.O.								
131MPCX-7	12	9	1	230	626	50VA	2 AMP	3
131MPCX-8	24	18	2	1200	480		500VDC	

# 134 Series - Mercury Reed

## SPDT, DPDT , 2 Amp

The 134 series are single throw, normally open, miniature mercury reed relays. Reeds are hermetically sealed in glass tubes with trace amounts of liquid mercury to provide continuously refreshed contact surfaces for extremely long life.

The 131 series offers double throw contacts. Both are capable.

### GENERAL SPECIFICATIONS (@ 25° C)

#### Contacts:

Contact Configuration	Up To DPDT
Contact Material	Liquid Mercury
Contact Rating	
Load (maximum)	50VA
Switching Voltage (maximum)	500VDC
Switching Current (maximum)	2 Amp
Carry Current (maximum)	3 Amp
Contact Resistance, Initial	100 milliohms max @ 6VDC

#### Coil:

Coils Available	DC
Coil Power	Varies
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous

#### Timing:

Operate Time (typical w/o suppression)	2ms
Release Time (typical w/o suppression)	2.5ms

#### Dielectric Strength:

Across Open Contacts	1,000VRMS
Between Mutually Insulated Points	1,000VRMS
Insulation Resistance	1,000 megohms @ 500VAC

#### Capacitance:

Across Open Contacts	0.9pF
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#### Temperature:

Operating	-37 to 85°C (-34.6 to 185°F)
Storage	-40 to 105°C (-40 to 221°F)

#### Life Expectancy:

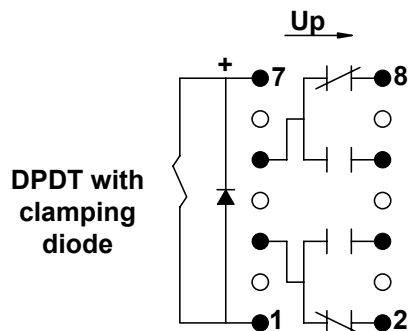
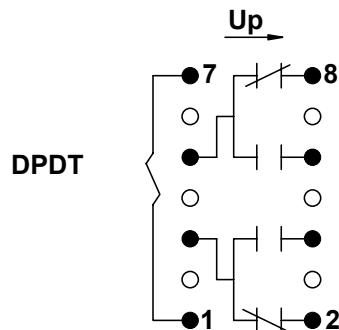
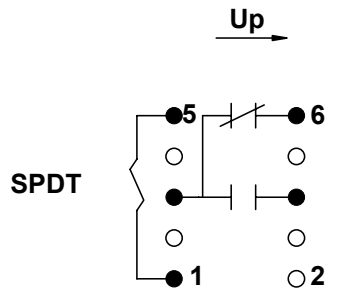
Electrical (full load operations)	40,000,000
Mechanical (no load operations)	100,000,000

#### Miscellaneous:

Enclosure	Epoxy encapsulated
Mounting Position	Vertical ±15°
Weight	Varies



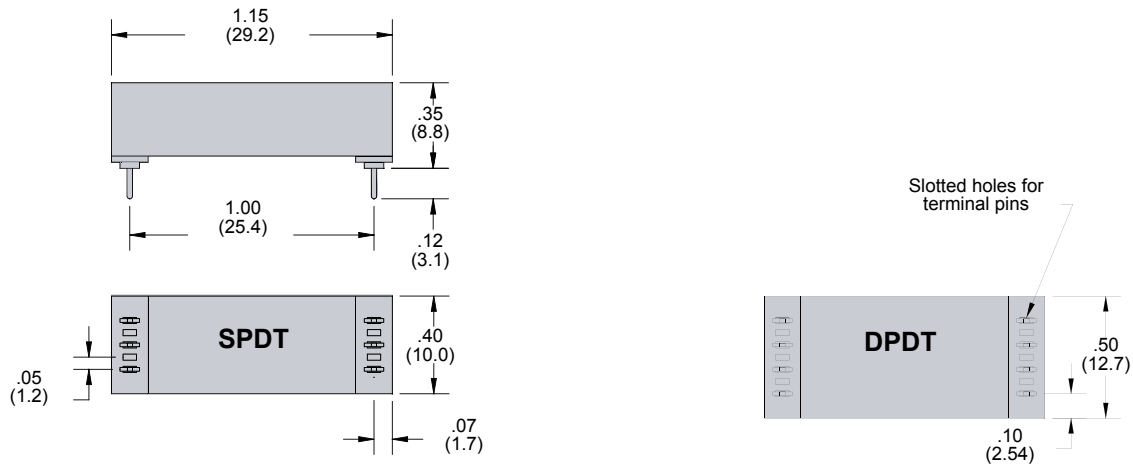
134 Wire Diagram  
(Top View)



# Reed Relays

## Outline Dimensions

Dimensions Shown in inches & (millimeters)



## 134 Part Number Chart

Part number	Nominal input voltage	Maximum pull-in	Minimum dropout	Nominal resistance (ohms)	Nominal power (mW)	Maximum Contact Rating		
						Maximum switching load	Switching current and voltage	Carry current (Amps)
<b>SPDT Mercury</b>								
134MPCX-1	5	4	0.5	60	417	50VA	1 Amps 500VDC	2 Amps
134MPCX-2	12	9	1	330	435			
134MPCX-3	24	18	2	1400	410			
<b>DPDT Mercury</b>								
134MPCX-7	5	4	0.5	45	560	50VA	1 Amp 500VDC	2 Amp
134MPCX-8	12	9.6	1	230	620			
<b>DPDT Mercury with Clamping Diode</b>								
134MPCX-10	5	4	1	45	560	50VA	1 Amp 500VDC	2 Amp
134MPCX-11	12	9.6	1	230	620			

# 193 Series - Dry Miniature Reed

## Up to 4PDT, 0.5 Amp

The 193 series is a unique series of dry reed relays easily customized for special needs. Customers can choose up to four pole double throw in a single package. All poles are operated by a single coil to reduce power consumption. Maximum switching capacity is 0.5 amps at 200VDC. Rhodium contact material provides long life at FAST switching speeds.

### GENERAL SPECIFICATIONS (@ 25° C)

#### Contacts:

Contact Configuration	Up to 4PDT
Contact Material	Rhodium
Contact Rating	xPDT xPST
Load (maximum)	4VA 10VA
Switching Voltage (maximum)	100VDC 200VDC
Switching Current (maximum)	0.5 Amp
Carry Current (maximum)	1 Amp 2 Amp
Contact Resistance, Initial	200 milliohms max @ 6VDC

#### Coil:

Coils Available	DC
Coil Power	Varies
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous

#### Timing:

Operate Time (typical w/o suppression)	1ms
Release Time (typical w/o suppression)	1ms

#### Dielectric Strength:

Across Open Contacts	200VDC
Between Mutually Insulated Points	500VDC
Insulation Resistance	1000 megohms @ 100VDC

#### Capacitance:

Across Open Contacts	3pF
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#### Temperature:

Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 105°C (-40 to 221°F)

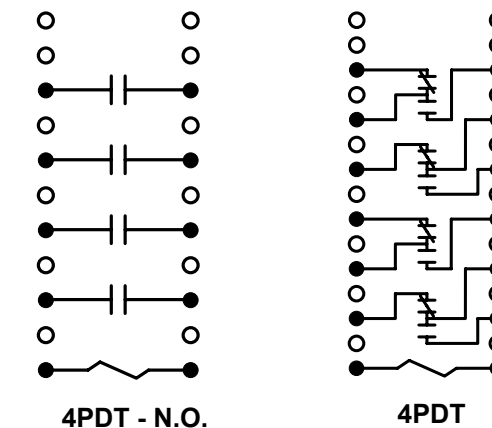
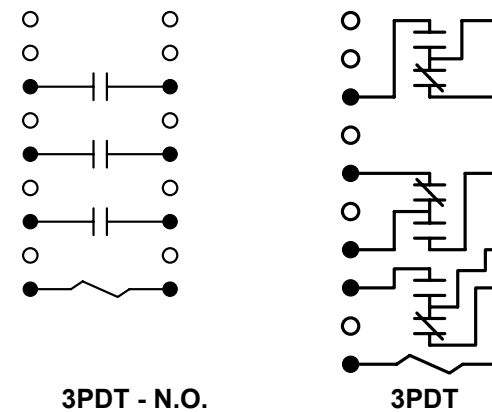
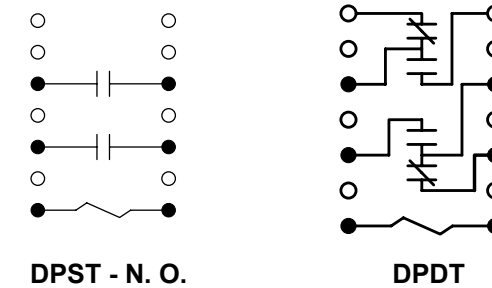
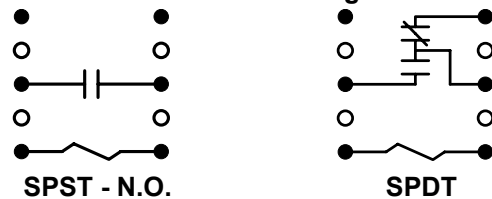
#### Life Expectancy:

Electrical (full load operations)	10,000,000
Mechanical (no load operations)	100,000,000

#### Miscellaneous:

Enclosure	Epoxy Encapsulated
Mounting Position	Any
Weight	Varies

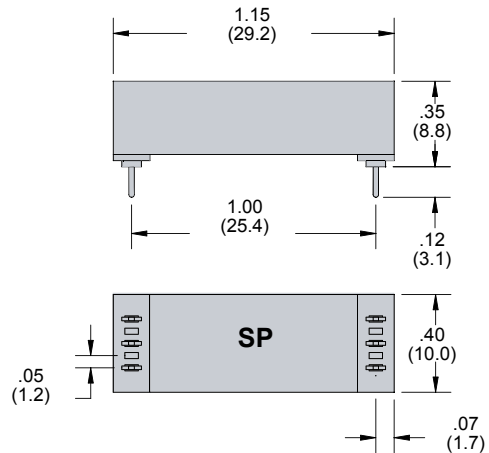
### 193 Wire Diagram



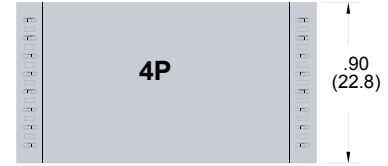
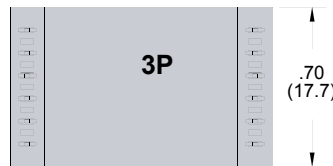
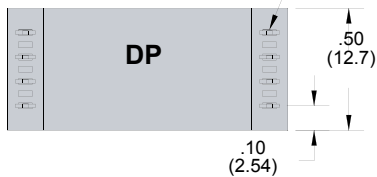
# Reed Relays

## Outline Dimensions

Dimensions Shown in inches & (millimeters)



Slotted holes for terminal pins



## 193 Part Number Chart

Part number	Nominal input voltage	Maximum pull-in	Minimum dropout	Nominal resistance (ohms)	Nominal power (mW)	Maximum Contact Rating		
						Maximum switching load	Switching current and voltage	Carry current (Amps)
<b>SPST - N.O.</b>								
193RE1A3-5S	5	4	0.5	500	50	10VA	0.5 Amps	2 Amps
193RE1A3-12G	12	9	1	420	350		200VDC	
193RE1A3-24G	24	18	2	2300	250			
<b>SPDT</b>								
193RE1C3-5S	5	4	0.5	350	70	4VA	0.5 Amp	1 Amps
193RE1C3-12G	12	9	1	420	350		100VDC	
193RE1C3-24G	24	18	2	2300	250			
<b>DPST - N.O.</b>								
193RE2A3-6G	5	4	0.5	70	360	10VA	0.5 Amp	2 Amps
193RE2A3-12G	12	9	1	280	500		200VDC	
193RE2A3-24G	24	18	2	1500	390			
<b>DPDT</b>								
193RE2C3-6G	5	4	0.5	70	360	4VA	0.5 Amp	1 Amps
193RE2C3-12G	12	9	1	280	500		100VDC	
193RE2C3-24G	24	18	2	1500	390			

\*Call for 3 and 4 pole



# MRR, RR Series - Axial Lead, Shielded Reed

## Up to 4PST - NO, 0.5 Amp

MRR/RR Series Axial lead epoxy molded reed relays have solid wire leads on each end. They are available with two grid spacing's - 0.1 inch for the MRR and 0.2 for the RR. Both versions have a metal protection shield around the body.

### GENERAL SPECIFICATIONS (@ 25° C)

#### Contacts:

Contact Configuration	Up to 4PST-NO	
Contact Material	Rhodium	
Contact Rating	MRR	RR
Load (maximum)	10VA	15VA
Switching Voltage (maximum)	200VDC	250VDC
Switching Current (maximum)	500mA	1 Amp
Carry Current (maximum)	500mA	1 Amp
Contact Resistance, Initial	200 milliohms max @ 6VDC	

#### Coil:

Coils Available	DC
Coil Power	Varies
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous

#### Timing:

Operate Time (typical w/o suppression)	2 to 10mS
Release Time (typical w/o suppression)	2 to 10mS

#### Dielectric Strength:

Across Open Contacts	MRR = 400VRMS, RR = 500VRMS
Between Mutually Insulated Points	1,500VRMS
Insulation Resistance	1000 megohms @ 500VAC

#### Capacitance:

Across Open Contacts	2pF
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#### Temperature:

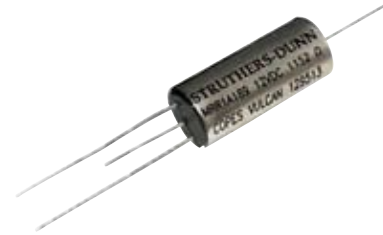
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 105°C (-40 to 221°F)

#### Life Expectancy:

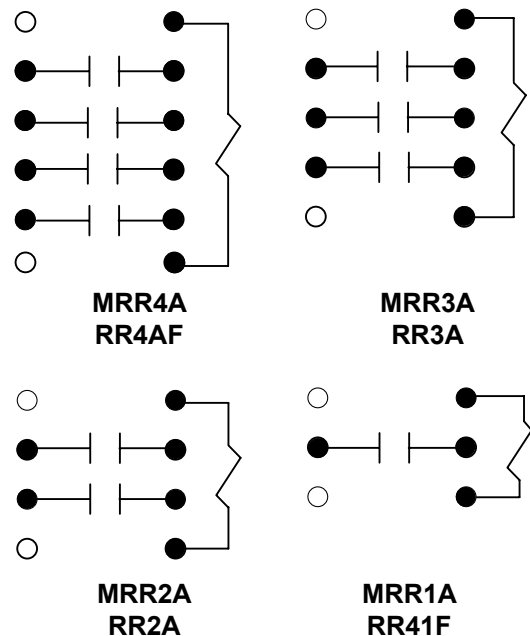
Electrical (full load operations)	10,000,000
Mechanical (no load operations)	200,000,000

#### Miscellaneous:

Shock	50 grams
Vibration	MRR 20 G's to 2000Hz, RR 10 G's to 450Hz
Enclosure	Epoxy molded, metal covered
Mounting Position	Any
Weight	Varies



MRR, RR Wire Diagram  
(Top View)

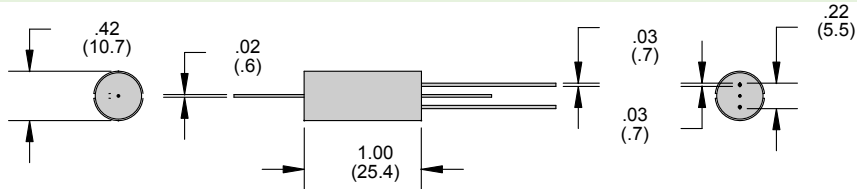


# Reed Relays

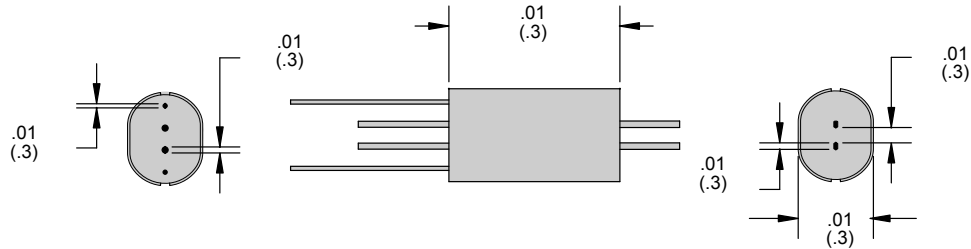
## Outline Dimensions

Dimensions Shown in inches & (millimeters)

### MRR Series



### RR Series



Ordering Code	MRR or RR	2A	12VDC
<b>Series</b>			
MRR			
RR			
<b>Contact Arrangement</b>			
1A - SPST - N.O.			
2A - DPST - N.O.			
3A - 3PST - N.O.			
4A - 4PST - N.O.			
<b>Coil Voltage (DC only)</b>			
DC: 6, 12, 24			
(5 volts and other voltages available)			

## Coil Specifications

### MRR Series

Nominal voltage (VDC)	SPST-N.O. ohms	DPST-N.O. ohms	3PST-N.O. ohms	4PST-N.O. ohms
6	288	144	72	24
12	1152	576	288	94
24	4600	2300	1152	384
48	-	-	3300	1536

### RR Series

Nominal voltage (VDC)	SPST-N.O. ohms	DPST-N.O. ohms	4PST-N.O. ohms
6	90	36	24
12	360	145	94
24	1440	580	384
48	5760	2300	1536

# MRRDL Series - Latching Reed SPST - N.O., 0.5 Amp

The MRR-D series is a latching reed relay. Form A or Form C contact stands less than 5/16" above the PC mounting surface. To accommodate Form B or 2 Form A contacts the relay is slightly under 3/8" high. These relays offer mercury reed contacts 8, 12, or 14 pins and a variety of other options. All relays mate with the standard 14 pin DIP socket. Low powers 5 volt models provide operation on less than 50 milliwatts.

## GENERAL SPECIFICATIONS (@ 25° C)

### Contacts:

Contact Configuration	SPST-NO
Contact Material	Rhodium
Contact Rating	
Load (maximum)	10VA
Switching Voltage (maximum)	100VDC
Switching Current (maximum)	0.5 Amp
Carry Current (maximum)	0.5 Amp
Contact Resistance, Initial	100 milliohms max @ 6VDC

### Coil:

Coils Available	DC
Coil Power	Varies
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous

### Timing:

Operate Time (typical w/o suppression)	1ms
Release Time (typical w/o suppression)	1ms

### Dielectric Strength:

Across Open Contacts	150VRMS
Between Mutually Insulated Points	1500VRMS
Insulation Resistance	1000 megohms @ 500VAC

### Capacitance:

Across Open Contacts	2pF
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### Temperature:

Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 105°C (-40 to 221°F)

### Life Expectancy:

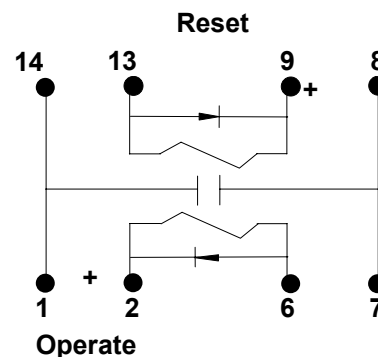
Electrical (full load operations)	10,000,000
Mechanical (no load operations)	100,000,000

### Miscellaneous:

Vibration	20 G's to 200Hz
Mounting Position	Any
Accessories	
Weight	Varies



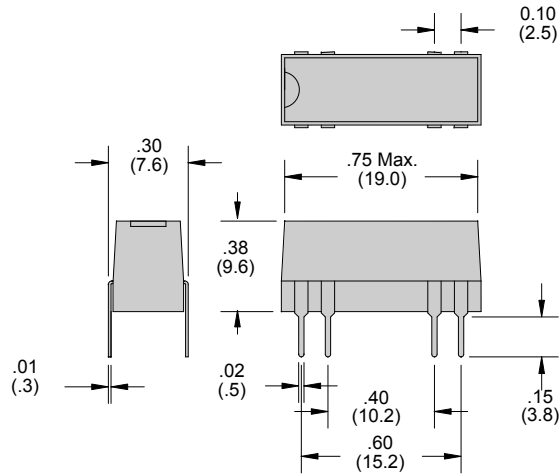
MRRDL Wire Diagram  
(Top View)



# Reed Relays

## Outline Dimensions

Dimensions Shown in inches & (millimeters)



### MRRDL Part Number Chart

						Maximum Contact Rating	
Part number	Nominal input voltage	Maximum pull-in	Minimum dropout	Nominal resistance (ohms)	Nominal power (mW)	Maximum switching load	Carry current (Amps)
SPST - N.O. - Latching							
MRRDL1AS8-5D	5	3.8	0.5	750	35	10VA	1.5 Amps
MRRDL1AS8-12D	12	9	1	1000	145	0.5 Amps	
MRRDL1AS8-24D	24	18	2	4600	125	100VDC	