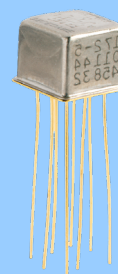


## CENTIGRID® COMMERCIAL RELAYS DPDT



| SERIES | RELAY TYPE                                                                  |
|--------|-----------------------------------------------------------------------------|
| 172    | DPDT basic relay, non-latching                                              |
| 172D   | DPDT relay with internal diode for coil transient suppression, non-latching |

### DESCRIPTION

The 172 Centigrad® relay is an ultraminiature, hermetically sealed, armature relay for commercial applications. Its low profile height (.280") and .100" grid spaced terminals, which preclude the need for spreader pads, make it an ideal choice where extreme packaging density and/or close PC board spacing are required.

The basic operating concept and internal structure are similar to Teledyne's DPDT 114 Centigrad® relay. Unique construction features and manufacturing techniques provide overall high reliability and excellent resistance to environmental extremes:

### The 172 feature:

- All welded construction.
- Unique uni-frame design providing high magnetic efficiency and mechanical rigidity.
- High force/mass ratios for resistance to shock and vibration.
- Advanced cleaning techniques provide maximum assurance of internal cleanliness.
- Precious metal alloy contact material with gold plating assures excellent high current and dry circuit switching capabilities.

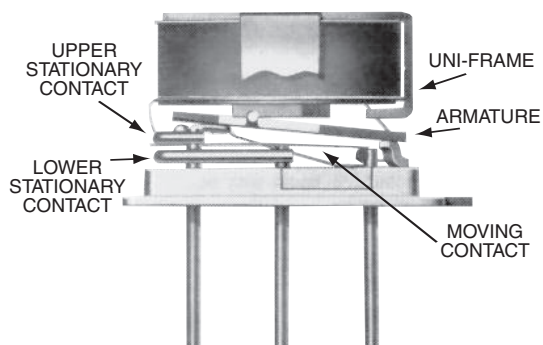
The Series 172 relay has an internal discrete silicon diode for coil transient suppression.

By virtue of its inherently low intercontact capacitance and contact circuit losses, the 172 relay is an excellent subminiature RF switch for frequencies well into the UHF spectrum. Applications include telecommunications, test instruments, mobile communications, attenuators, and automatic test equipment.

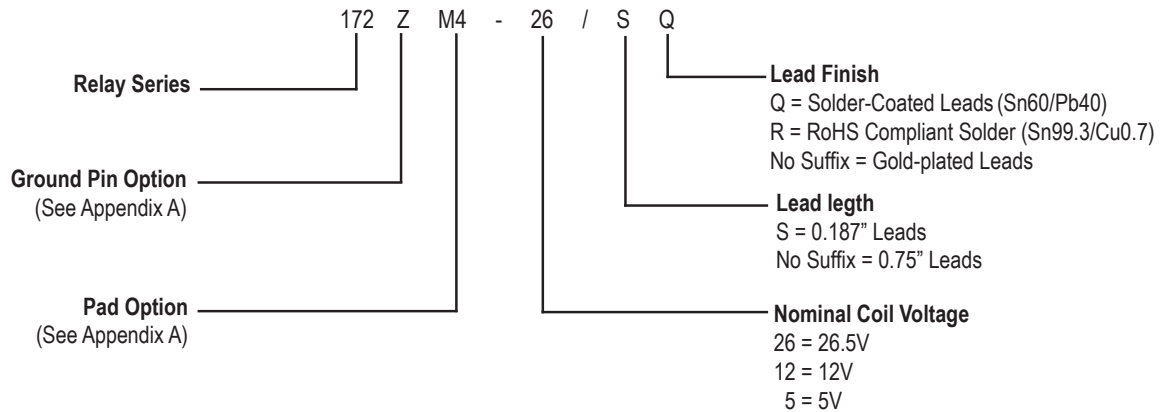
### ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

|                                 |                                |
|---------------------------------|--------------------------------|
| <b>Temperature</b><br>(Ambient) | –65°C to +125°C                |
| <b>Vibration</b><br>(Note 1)    | 10 g's to 500 Hz               |
| <b>Shock</b><br>(Note 1)        | 30 g's,<br>6 ms, half sine     |
| <b>Enclosure</b>                | Hermetically sealed            |
| <b>Weight</b>                   | 0.15 oz. (4.3g) max.           |
| <b>Reflow Temperature</b>       | 260°C max. temp.<br>1 min. max |

### INTERNAL CONSTRUCTION



### Part Numbering System (Notes 4 & 5)



#### NOTES:

1. Relay contacts will exhibit no chatter in excess of 10  $\mu$ s or transfer in excess of 1  $\mu$ s.
2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
3. Unless otherwise specified, parameters are initial values.
4. Unless otherwise specified, relays will be supplied with gold-plated leads.
5. The slash and characters appearing after the slash are not marked on the relay.

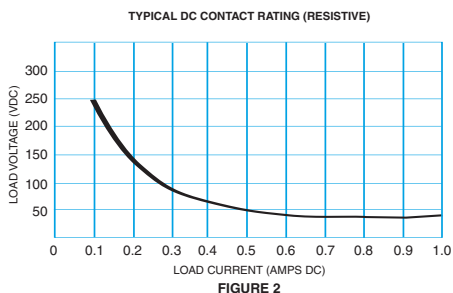
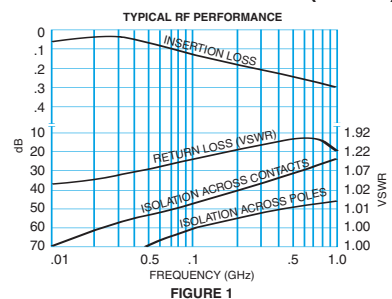
**GENERAL ELECTRICAL SPECIFICATIONS** (-65 °C to 125 °C unless otherwise noted. See notes 2 & 3.)

|                                                 |                                                                                                                                                                                 |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contact Arrangement</b>                      | 2 Form C (DPDT)                                                                                                                                                                 |
| <b>Rated Duty</b>                               | Continuous                                                                                                                                                                      |
| <b>Contact Resistance</b>                       | 0.15 $\Omega$ max.                                                                                                                                                              |
| <b>Contact Load Rating</b>                      | Resistive: 1 A / 28 V <sub>dc</sub><br>Inductive: 200 mA / 28 V <sub>dc</sub> (320mH)<br>Lamp: 100 mA / 28 V <sub>dc</sub> (320mH)<br>Low level: 10 to 50 $\mu$ A @ 10 to 50 mV |
| <b>Contact Life Ratings</b>                     | 5,000,000 cycles (typical) at low level<br>500,000 cycles (typical) at 0.5 A / 28 V <sub>dc</sub> resistive<br>100,000 cycles min. at all other loads specified above           |
| <b>Contact Overload Rating</b>                  | 2 A / 28 V <sub>dc</sub> Resistive (100 cycles min.)                                                                                                                            |
| <b>Contact Carry Rating</b>                     | Contact Factory                                                                                                                                                                 |
| <b>Operate Time</b>                             | 6.0 ms max. @ nominal rated coil voltage                                                                                                                                        |
| <b>Release Time</b>                             | 172: 3.0 ms max.      172D: 6.0 ms max.                                                                                                                                         |
| <b>Intercontact Capacitance</b>                 | 0.4 pf typical                                                                                                                                                                  |
| <b>Insulation Resistance</b>                    | 1,000 M $\Omega$ min. between mutually isolated terminals                                                                                                                       |
| <b>Dielectric Strength</b>                      | 300 Vrms (60 Hz) @ atmospheric pressure                                                                                                                                         |
| <b>Negative Coil Transient (V<sub>dc</sub>)</b> | 2.0 V <sub>dc</sub> Max.                                                                                                                                                        |
| <b>Diode P.I.V. (V<sub>dc</sub>)</b>            | 60 V <sub>dc</sub> Min.                                                                                                                                                         |

**DETAILED ELECTRICAL SPECIFICATIONS** (-65 °C to 125 °C unless otherwise noted. See note 3.)

| BASE PART NUMBERS (172, 172D)                                 |             | 172-5<br>172D-5 | 172-12<br>172D-12 | 172-26<br>172D-26 |
|---------------------------------------------------------------|-------------|-----------------|-------------------|-------------------|
| <b>Coil Voltage</b>                                           | <b>Nom.</b> | 5.0             | 12.0              | 26.5              |
|                                                               | <b>Max.</b> | 5.8             | 16.0              | 32.0              |
| <b>Coil Resistance (Ohms <math>\pm</math>20%)</b>             |             | 64              | 400               | 1600              |
| <b>Pick-up Voltage (V<sub>dc</sub>, Max.) Pulse Operation</b> |             | 3.8             | 9.0               | 18.0              |
| <b>Coil Operating Power at Nominal Voltage (mW)</b>           |             | 405             | 360               | 440               |

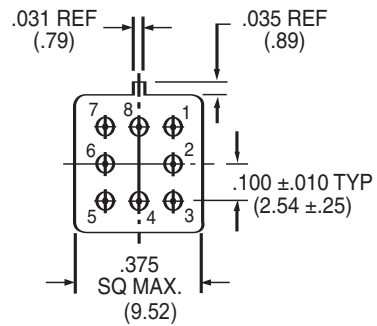
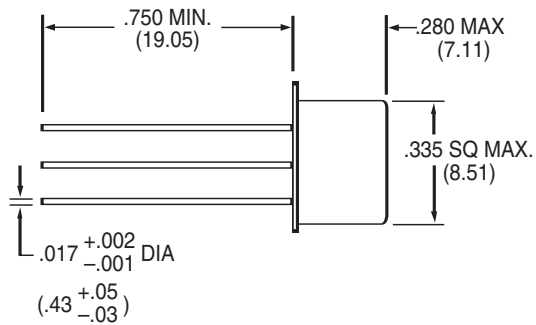
**PERFORMANCE CURVES (Note 2)**



**GENERAL NOTES**

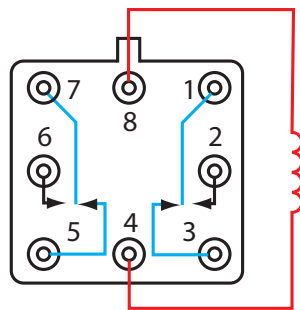
1. Relay contacts will exhibit no chatter in excess of 10  $\mu$ sec or transfer in excess of 1  $\mu$ sec.
2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
3. Unless otherwise specified, parameters are initial values.
4. Relays can be supplied with a spacer pad. See appendix.

## OUTLINE DIMENSIONS

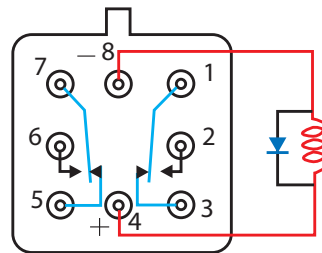


(Viewed From Terminals)

## SCHEMATIC DIAGRAMS

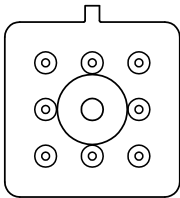
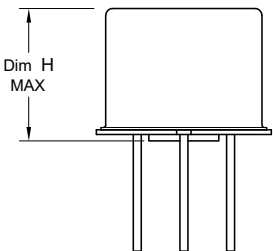


172



172D

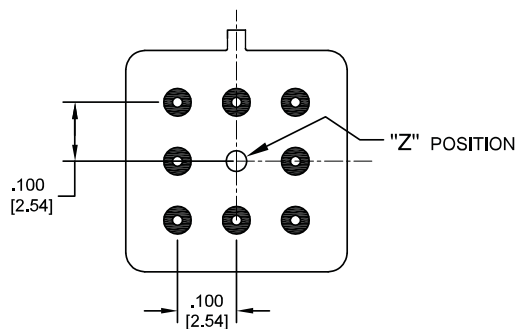
## APPENDIX A : Spacer Pads

| Pad designation and bottom view dimensions                                                                              | Height                                                                            | For use with the following: | Dim. H Max. |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------|-------------|
|  <p>"M4" Spacer Pad for Centigrid®</p> |  | 172                         | .305 (7.75) |

**Notes:**

1. Spacer pad material: Polyester film.
2. To specify an "M4" spacer pad, refer to the mounting variants portion of the part numbering example in the applicable datasheet.
3. Dimensions are in inches (mm).
4. Unless otherwise specified, tolerance is  $\pm .010$  (.25 mm).
5. Add 10 m $\Omega$  to the contact resistance shown in the datasheet.
6. Add 0.01 oz. (0.25 g) to the weight of the relay assembly shown in the datasheet.

## APPENDIX A : Ground Pin Positions



**Centigrid® Relays:**  
RF100, RF103, ER114, ER134, 172

Indicates ground pin position

Indicates glass insulated lead position

Indicates ground pin or lead position depending on relay type

**NOTES**

1. Terminal views shown
2. Dimensions are in inches (mm)
3. Tolerances:  $\pm .010$  ( $\pm .25$ ) unless otherwise specified
4. Ground pin positions are within .015 (0.38) dia. of true position
5. Ground pin head dia., 0.035 (0.89) ref: height 0.010 (0.25) ref.
6. Lead dia. 0.017 (0.43) nom.