

**TELEDYNE  
RELAYS**

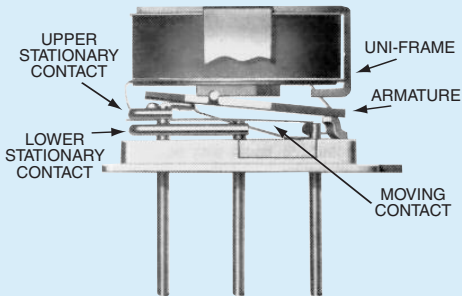
A Teledyne Technologies Company

**CENTIGRID®  
COMMERCIAL RELAYS  
DPDT**

**SERIES  
172**

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

**INTERNAL CONSTRUCTION**



**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:

- 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 (see Figure 1). Applications include telecommunications, test instruments, mobile communications, attenuators, and automatic test equipment.

| ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS |                  |                              |
|---|------------------|------------------------------|
| <b>Temperature</b><br>(Ambient)           | <b>Storage</b>   | -65°C to +125°C              |
|   | <b>Operating</b> | -55°C to +85°C               |
| <b>Vibration</b><br>(General Note 1)      |                  | 10 g's to 500 Hz             |
| <b>Shock</b><br>(General Note 1)          |                  | 30 g's,<br>6 msec, half-sine |
| <b>Enclosure</b>                          |                  | Hermetically sealed          |
| <b>Weight</b>                             |                  | 0.15 oz. (4.3g) max.         |

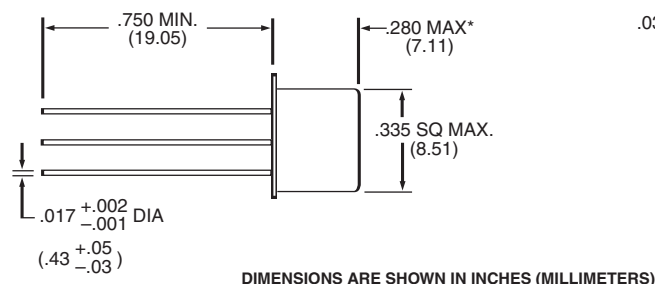
**SERIES 172**  
**GENERAL ELECTRICAL SPECIFICATIONS (@25°C) (Notes 2 & 3)**

|   |   |
|---|---|
| <b>Contact Arrangement</b>  | 2 Form C (DPDT)   |
| <b>Rated Duty</b>   | Continuous  |
| <b>Contact Resistance</b>   | 0.15 ohm max. before life; 0.3 ohm max. after life at 1A/28Vdc (measured 1/8" from header)  |
| <b>Contact Load Ratings (DC)</b><br>(See Fig. 1 for other DC resistive voltage/current ratings) | Resistive: 1 Amp/28Vdc<br>Inductive: 200 mA/28Vdc (320 mH)<br>Lamp: 100 mA/28Vdc<br>Low Level: 10 to 50 $\mu$ A/10 to 50mV                            |
| <b>Contact Life Ratings</b>   | 5,000,000 cycles (typical) at low level<br>500,000 cycles (typical) at 0.5A/28Vdc resistive<br>100,000 cycles min. at all other loads specified above |
| <b>Contact Overload Rating</b>  | 2A/28Vdc Resistive (100 cycles min.)  |
| <b>Contact Carry Rating</b>   | Contact factory   |
| <b>Operate Time</b>   | 6.0 msec max. at nominal rated coil voltage   |
| <b>Release Time</b>   | 172: 3.0 msec max. 172D: 6.0 msec max.  |
| <b>Intercontact Capacitance</b>   | 0.4 pf typical  |
| <b>Insulation Resistance</b>  | 1,000 megohms min. between mutually isolated terminals  |
| <b>Dielectric Strength</b>  | Atmospheric pressure: 300 Vrms/60Hz   |
| <b>Negative Coil Transient 172</b>  | 2.0 Vdc Max.  |
| <b>Diode P.I.V. 172D</b>  | 60 Vdc Min.   |

**DETAILED ELECTRICAL SPECIFICATIONS (@25°C) (Note 3)**

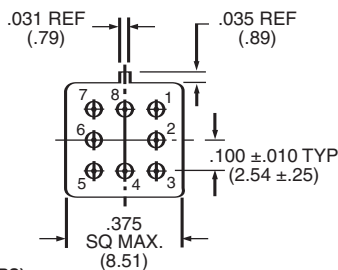
| BASE PART NUMBERS   | ➔    | 172-3  | 172-5  | 172-12  | 172-26  |
|---|------|--------|--------|---------|---------|
|   |      | 172D-3 | 172D-5 | 172D-12 | 172D-26 |
| <b>Coil Voltage (Vdc)</b>                                   | Nom. | 3.0    | 5.0    | 12.0    | 26.5    |
|   | Max. | 3.6    | 5.8    | 16.0    | 32.0    |
| <b>Coil Resistance (Ohms <math>\pm</math>20%)</b>           |      | 39     | 64     | 400     | 1600    |
| <b>Pick-up Voltage (Vdc, Max.) Pulse Operation</b>          |      | 2.25   | 3.8    | 9.0     | 18.0    |
| <b>Coil Operating Power at Nominal Voltage (Milliwatts)</b> |      | 235    | 405    | 360     | 440     |

**OUTLINE DIMENSIONS (Note 4)**

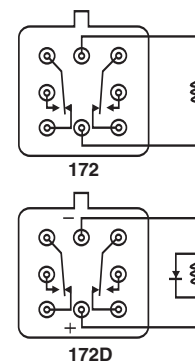


\*Unless otherwise specified, 0.280 (7.11) or 0.380 (9.65) height may be supplied. To order the lower profile exclusively, add /28 to the part number, e.g. 172-26/28 (Note: /28 not marked on part).

**TERMINAL LOCATIONS**  
(Viewed from Terminals, Numbers for Reference Only)

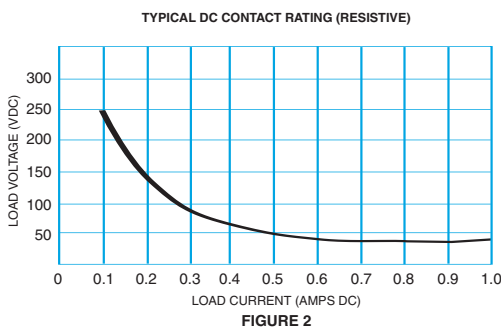
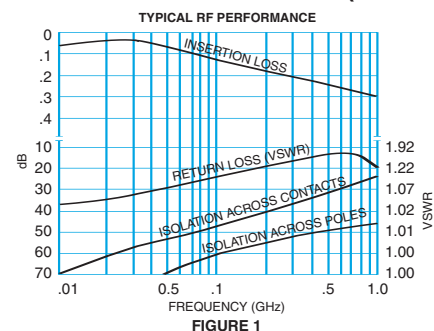


**SCHEMATIC DIAGRAM**



SCHEMATIC IS VIEWED FROM TERMINALS

**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.