
TELEDYNE RELAYS
CENTIGRID®
ESTABLISHED RELIABILITY RELAY
DPDT

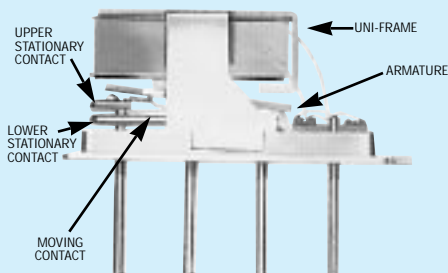
CMOS COMPATIBLE

SERIES
116C



| SERIES DESIGNATION | RELAY TYPE |
|--------------------|--|
| 116C | DPDT general purpose relay with internal power MOSFET driver, Zener diode gate protection and diode coil suppression |

INTERNAL CONSTRUCTION



DESCRIPTION

The 116C Centigrid® relay is an ultraminiature, hermetically sealed, armature relay capable of being directly driven by most IC logic families. Its low profile height and .100" grid spaced terminals, which precludes the need for spreader pads, make it ideal for applications where extreme packaging density and/or close PC board spacing are required.

The basic concept and internal structure are similar to the Teledyne DPDT TO-5 relay (412 Series). The following 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.

By virtue of its inherently low intercontact capacitance and contact circuit losses, the Centigrid® relay has shown itself to be an excellent ultraminiature RF switch for frequency ranges well into the UHF spectrum. A typical RF application for the Centigrid® relay is in hand held radio transceivers, wherein the combined features of good RF performance, small size, low coil power dissipation and high reliability make it a preferred method of Transmit-Receive switching (see Figure 1).

The 116C Series utilizes internal silicon diode for coil suppression, a Zener diode to protect the MOSFET gate input, and an N-channel enhancement mode MOSFET chip which enables direct relay interfacing with most Microprocessor and IC logic families (CMOS, TTL and MOS).

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

| | |
|------------------------------|---------------------------------------|
| Temperature (Ambient) | -65°C to +125°C |
| Vibration | 30 g's to 3000 Hz (Note 1) |
| Shock | 75 g's for 6 msec. (Note 1) half-sine |
| Acceleration | 50 g's (Note 1) |
| Enclosure | All welded, hermetically sealed |
| Weight | 0.11 oz (3.12 gms.) max. |

GENERAL ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted) (Notes 2 & 7)

| | | |
|---|--|--------------------|
| Contact Arrangement | 2 Form C (DPDT) | |
| Rated Duty | Continuous | |
| Contact Resistance | 0.1 ohm max. before life; 0.2 ohm max. after life at 1A/28VDC, (measured 1/8" from header) | |
| Contact Load Rating (DC) (See Fig. 2 for other DC resistive voltage/current ratings) | Resistive: 1 Amp/28VDC Inductive: 200 mA/28VDC (320 mH) Lamp: 100 mA/28VDC Low Level: 10 to 50 μ A/10 to 50 mV | |
| Contact Load Ratings (AC) | Resistive: 250 mA/115VAC, 60 and 400Hz (Case not grounded) 100 mA/115VAC, 60 and 400Hz (Case grounded) | |
| Contact Life Ratings | 10,000,000 cycles (typical) at low level 1,000,000 cycles (typical) at 0.5A/28VDC resistive 100,000 cycles min. at all other loads specified above | |
| Contact Overload Rating | 2A/28VDC Resistive (100 cycles min.) | |
| Contact Carry Rating | Contact factory | |
| Operate Time | 2.5 msec max. at nominal rated coil voltage | |
| Release Time | 4.0 msec max. | |
| Contact Bounce | 1.5 msec max. | |
| Intercontact Capacitance | 0.4 pf typical | |
| Insulation Resistance | 10,000 megohms min. between mutually isolated terminals (Note 3) | |
| Dielectric Strength | Atmospheric pressure: 500 VRMS/60 Hz 70,000 ft.: 125 VRMS/60Hz (Note 3) | |
| Diode P.I.V. (VDC) | | 100 min. |
| Negative Coil Transient (VDC) | | 1.0 max. |
| Zener Voltage (VDC) | | 17 min. to 23 max. |
| Zener Leakage Current (μ A @ 15.2 VDC) | | 2.5 max. |
| Power FET Characteristics -65°C to +125°C | Gate Voltage to Turn Off (VDC, Max.) | 0.5 |
| | Gate Voltage to Turn On (VDC, Min.) | 3.8 (Note 4) |
| | Drain-Source Voltage (VDC, Max.) | 55 |

DETAILED ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted) (Note 7)

| BASE PART NUMBERS (See Note 10 for full P/N Example) | | 116C-5 | 116C-6 | 116C-9 | 116C-12 | 116C-18 | 116C-26 |
|---|------|--------|--------|--------|---------|---------|---------|
| Coil Voltage (VDC) | Nom. | 5.0 | 6.0 | 9.0 | 12.0 | 18.0 | 26.5 |
| | Max. | 5.6 | 8.0 | 12.0 | 16.0 | 24.0 | 32.0 |
| Coil Current (mADC @ 25°C) | Max. | 132.3 | 83.9 | 47.1 | 36.1 | 24.1 | 19.9 |
| | Min. | 96.5 | 60.3 | 33.1 | 24.9 | 16.1 | 12.9 |
| Nominal Coil Operating Power @ 25°C (Milliwatts) | | 641 | 462 | 368 | 369 | 368 | 450 |
| Pick-up Voltage (VDC) (Note 4) | Max. | 4.0 | 4.9 | 7.3 | 9.8 | 14.6 | 19.5 |
| Drop-out Voltage (VDC) (Note 4) | Min. | 0.13 | 0.18 | 0.27 | 0.36 | 0.54 | 0.72 |
| | Max. | 2.3 | 3.2 | 4.9 | 6.5 | 9.8 | 13.0 |

PERFORMANCE CURVES
(NOTE 2)

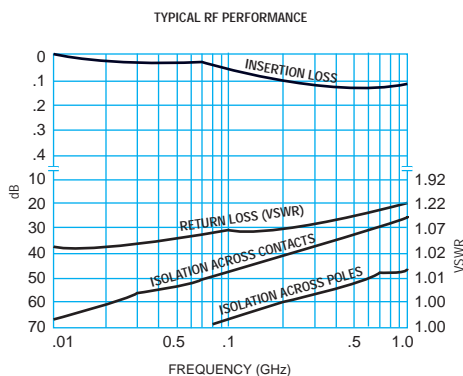


FIGURE 1

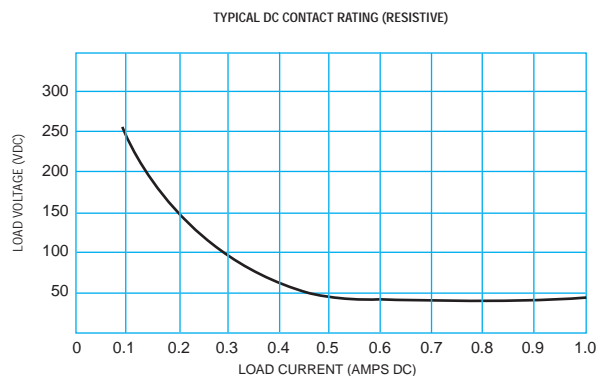
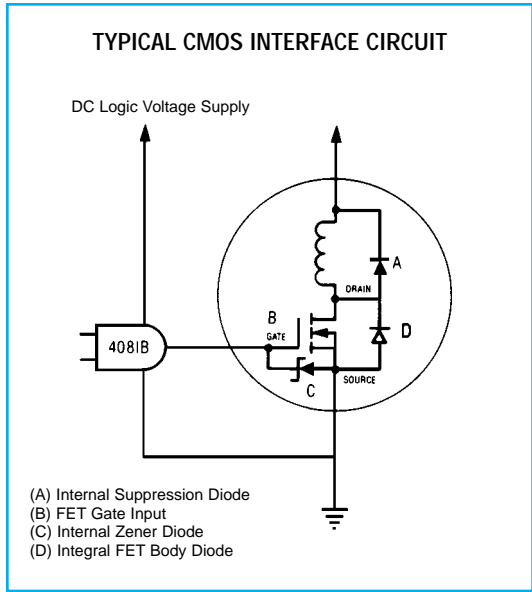
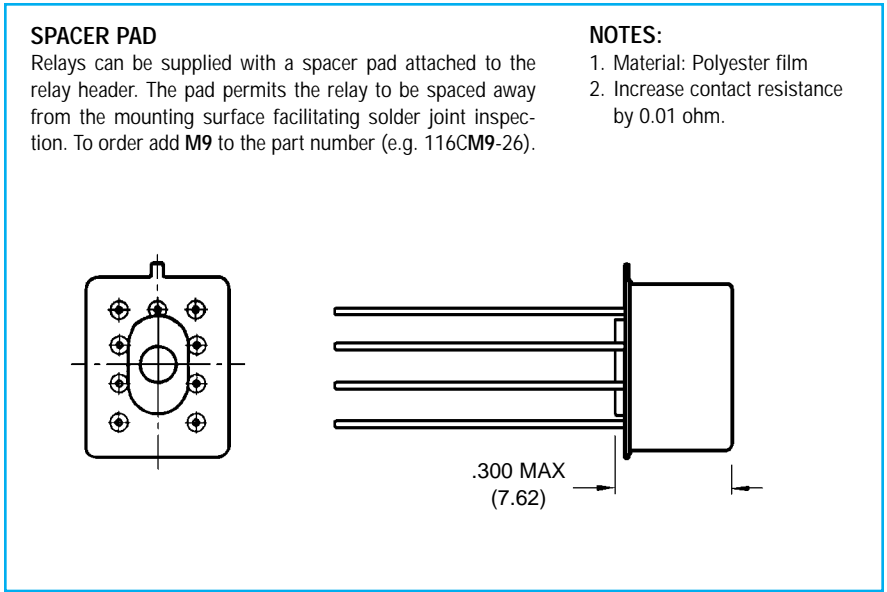
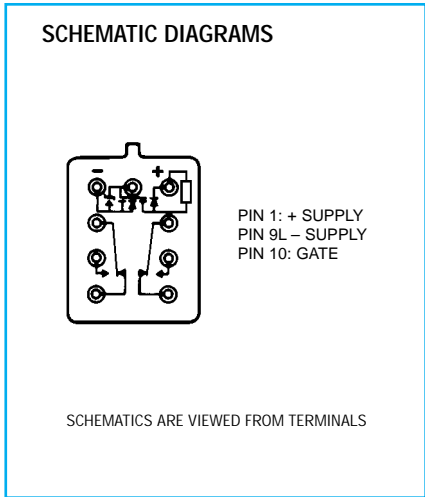
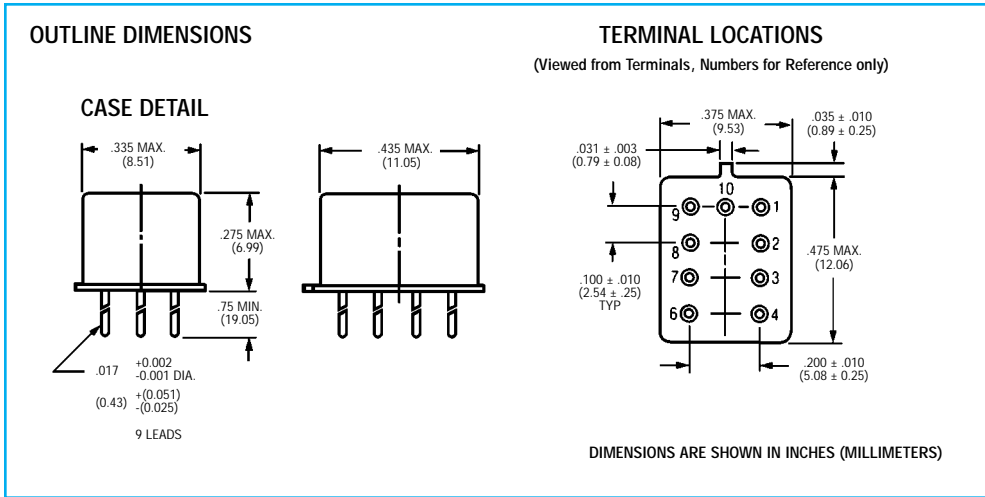


FIGURE 2



- ### NOTES:
1. Relays contacts will exhibit no chatter in excess of 10 μ sec or transfer in excess of 1 μ sec.
 2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
 3. Pins 9 and 10 must be shorted when tested for Insulation Resistance and Dielectric Withstanding Voltage.
 4. Maximum rated gate voltage = 15 Vdc.
 5. Unless otherwise specified, relays will be supplied with either gold plated or solder coated leads. Contact your local representative for ordering information.
 6. The slash and characters appearing after the slash are not marked on the relay.
 7. Unless otherwise specified, parameters are initial values.
 8. Screened HI-REL versions available. Contact factory.

| RELIABILITY LEVEL | FAILURE RATE %/10,000 CYCLES |
|-------------------|------------------------------|
| A | 1.5 |
| B | 0.75 |

