



# TELEDYNE RELAYS

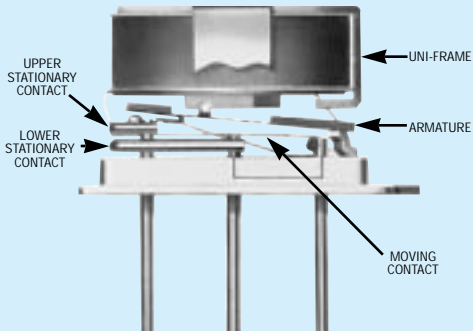
## CENTIGRID<sup>®</sup> ESTABLISHED RELIABILITY RELAY DPDT

SERIES  
**114**



SERIES DESIGNATION	RELAY TYPE
114	DPDT basic relay
114D	DPDT relay with internal diode for coil transient suppression
114DD	DPDT relay with internal diodes for coil transient suppression and polarity reversal protection

### INTERNAL CONSTRUCTION



### DESCRIPTION

The 114 series Centigrid<sup>®</sup> Relay is an ultraminiature, hermetically sealed, armature relay. Its low profile height (.275") 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 design and internal construction are similar to the Teledyne standard 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.

The 114D and 114DD Series utilizes internal discrete silicon diodes for coil suppression and polarity reversal protection.

By virtue of its inherently low intercontact capacitance and contact circuit losses, the 114 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 114 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).

### 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	0.09 oz (2.55 gms.) max.

**SERIES 114**

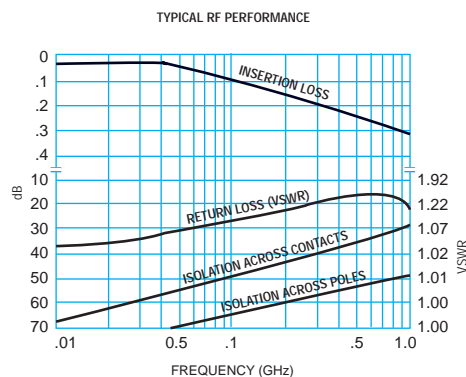
**GENERAL ELECTRICAL SPECIFICATIONS** (-65°C to +125°C unless otherwise noted) (Notes 2 & 7)

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 µA/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	
Coil Operating Power	450 milliwatts typical at nominal rated voltage @ 25°C	
Operate Time	2.0 msec max. at nominal rated coil voltage	
Release Time	114 Series: 1.5 msec max.	114D, 114DD Series: 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	
Dielectric Strength	Atmospheric pressure: 500 VRMS/60 Hz	70,000 ft.: 125 VRMS/60Hz
Diode P.I.V. (114D, 114DD)	100 VDC min.	
Negative Coil Transient (114D,	1.0 VDC max.	

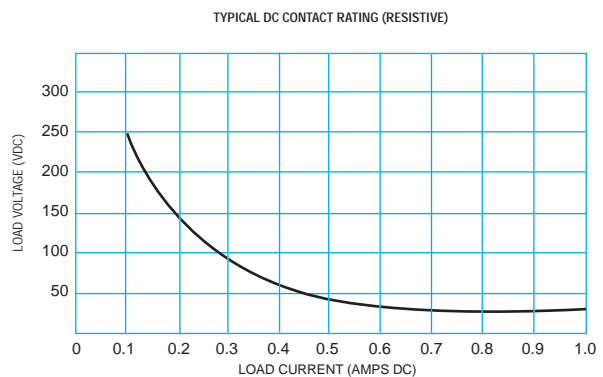
**DETAILED ELECTRICAL SPECIFICATIONS** (-65°C to +125°C unless otherwise noted) (Note 7)

BASE PART NUMBERS (See Note 9 for full P/N Example)		➔		114-5	114-6	114-9	114-12	114-18	114-26		
		114D-5	114DD-5	114D-6	114DD-6	114D-9	114DD-9	114D-12	114DD-12	114D-18	114DD-18
Coil Voltage (VDC)	Nom.			5.0	6.0	9.0	12.0	18.0	26.5		
	Max.			5.8	8.0	12.0	16.0	24.0	32.0		
Coil Resistance (Ohms ± 10% @ 25°C)	114, 114D			50	98	220	390	880	1560		
	114DD (Note 3)			39	78	220	390	880	1560		
Coil Current (mADC @ 25°C) (114DD Series)	Min.			93.2	58.3	33.0	25.6	17.5	14.8		
	Max.			128.2	78.3	42.9	32.8	22.1	18.5		
Pick-up Voltage (VDC, Max.)	114, 114D			3.5	4.5	6.8	9.0	13.5	18.0		
	114DD			4.0	5.0	7.8	10.0	14.5	19.0		
Drop-out Voltage (VDC)	114 & 114D	Min.			0.14	0.18	0.35	0.41	0.59	0.89	
		Max.			2.3	3.2	4.9	6.5	10.0	13.0	
	114DD	Min.			0.6	0.7	0.8	0.9	1.1	1.4	
		Max.			2.8	3.4	5.3	6.5	10.0	13.0	

**PERFORMANCE CURVES**  
(NOTE 2)

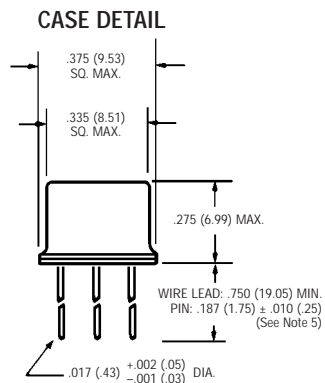


**FIGURE 1**



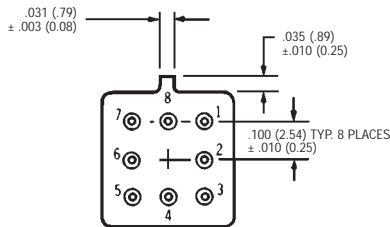
**FIGURE 2**

OUTLINE DIMENSIONS



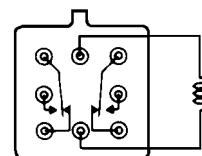
TERMINAL LOCATIONS

(Viewed from Terminals, Numbers for Reference only)

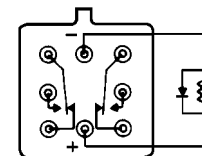


DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)

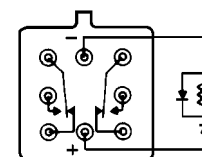
SCHEMATIC DIAGRAMS



114



114D



114DD

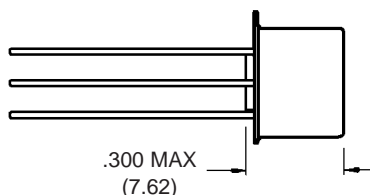
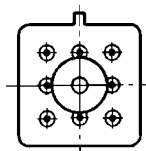
SCHEMATICS ARE VIEWED FROM TERMINALS

SPACER PAD

Relays can be supplied with a spacer pad attached to the relay header. The pad M4 permits the relay to be spaced away from the mounting surface facilitating solder joint inspection. To order add **M4** to Part Number. Example: 114M4-26.

NOTES:

1. Material: Polyester film.
2. Add 0.01 ohm to contact resistance with mounting pad.



NOTES:

1. Relays contacts will exhibit no chatter in excess of 10 μsec or transfer in excess of 1 μsec.
2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
3. For reference only. Coil resistance not directly measurable at relays terminals due to internal series semiconductor. 114DD only.
4. Screened HI-REL versions available. Contact factory.
5. Unless otherwise specified, relays will be supplied with leads as follows: Length will be standard 0.75" (19.05) minimum and will be either gold plated or solder coated. Contact your local representative for ordering information.
6. The slash and character(s) appearing after are not marked on the relay.
7. Unless otherwise specified, parameters are initial values.

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

9. **Teledyne Part Numbering System for Established Reliability Relays (See T<sup>2</sup>R<sup>®</sup> Program Introduction)**

**EXAMPLE:** ER 114 D Z M4 - 26 A / SQ

Established Reliability Designator — ER

Relay Series — 114

D = Diode Suppression  
DD = Diode Suppression and Polarity Protection

Mounting Variant  
Ground Pin (See page 112) — Z

M4 = Spacer Pad

Coil Voltage — 26

Reliability and Screening Level (Note 8) — A

Termination Variant  
Q = Solder Coated Leads (Notes 5 and 6)  
S = .187" Leads (Notes 5 and 6) — SQ