



CENTIGRID® ESTABLISHED RELIABILITY MILITARY DPDT



SERIES	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

DESCRIPTION

The series 114 Centigrid® relay is an ultraminiature, hermetically sealed, armature relay. Its low profile height (.275") and .100-inch grid spaced terminals, which precludes the need for spreader pads, make the 114 relay ideal for applications where extreme packaging density and /or close PCB spacing are required.

The following unique construction features and manufacturing techniques provide excellent resistance to environmental extremes and overall high reliability:

The 114 feature:

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

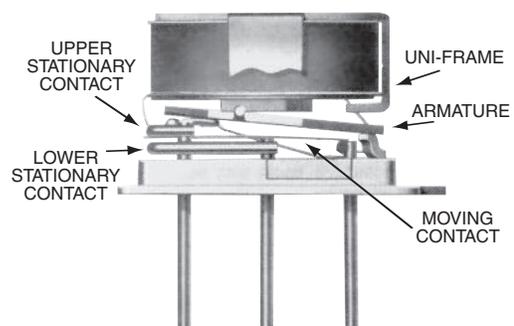
The Series 114D and 114DD have internal discrete silicon diodes for coil suppression and polarity reversal protection.

By virtue of its inherently low intercontact capacitance and contact circuit losses, the 114 relay has proven 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 handheld 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

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

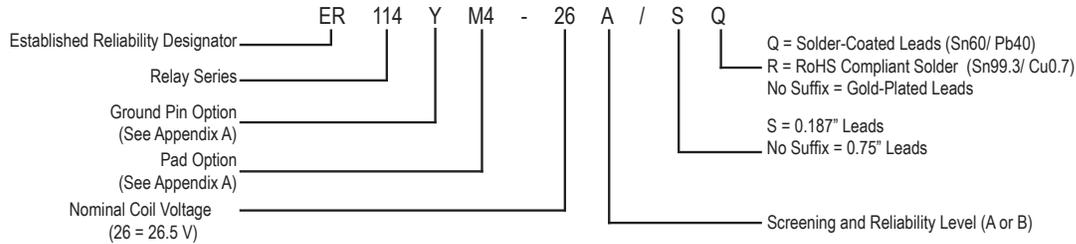
Temperature (Ambient)	-65°C to +125°C
Vibration (Note 1)	30 g's to 3000 Hz
Shock (Note 1)	75 g's, 6ms half sine
Acceleration	50 g's
Enclosure	Hermetically sealed
Weight	0.09 oz. (2.55g) max.
Reflow Temperature	260°C max. temp. 1 min. max

INTERNAL CONSTRUCTION

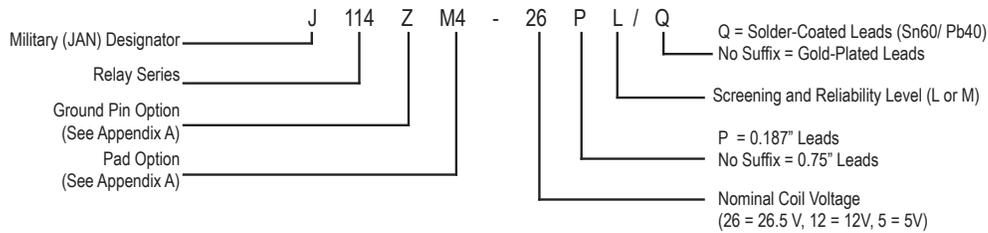


Part Numbering System (Note 5 & 6)

T²R Established Reliability Relays



Military Qualified (JAN) Relays



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

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/28V _{dc}	
Contact Load Rating (DC)	Resistive: 1 A / 28 V _{dc} Inductive: 200 mA / 28 V _{dc} (320mH) Lamp: 100 mA / 28 V _{dc} (320mH) Low level: 10 to 50 μA @ 10 to 50 mV	
Contact Load Rating (AC)	Resistive: 250 mA / 115V _{ac} , 60 and 400 Hz (Case not grounded) 100 mA / 115 V _{ac} , 60 and 400 Hz (Case grounded)	
Contact Life Ratings	10,000,000 cycles (typical) at low level 1,000,000 cycles (typical) at 0.5 A / 28 V _{dc} resistive 100,000 cycles min. at all other loads specified above	
Contact Overload Rating	2 A / 28 V _{dc} Resistive (100 cycles min.)	
Contact Carry Rating	Contact Factory	
Operate Time	2.0 ms max. at nominal rated coil voltage	
Release Time	114	1.5 ms max.
	114D	4.0 ms max
	114DD	
Contact Bounce	1.5 ms max.	
Intercontact Capacitance	0.4 pf typical	
Insulation Resistance	10,000 MΩ min. between mutually isolated terminals	
Dielectric Strength (V_{rms} /60 Hz)	Atmospheric pressure: 500 V _{rms}	70,000 ft: 125
Negative Coil Transient (V_{dc})	114D 114DD	1.0 V _{dc} Max.
Diode P.I.V. (V_{dc})	114D 114DD	100 V _{dc} Min.

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

BASE PART NUMBERS (114, 114D, 114DD)		114-5 114D-5 114DD-5	114-12 114D-12 114DD-12	114-26 114D-26 114DD-26
Coil Voltage (V_{dc})	Nom.	5.0	12.0	26.5
	Max.	5.8	16.0	32.0
Coil Resistance (Ohms $\pm 10\%$ @25°C)	114, 114D	50	390	1560
	114DD (Note 4)	39	390	1560
Coil Current (114DD) (mA _{dc} @25°C)	Min.	93.2	25.6	14.8
	Max.	128.2	32.8	18.5
Pick-up Voltage (V_{dc} , Max)	114, 114D	3.5	9.0	18.0
	114DD	4.0	10.0	19.0
Drop-out Voltage (V_{dc})	114, 114D	Min.	0.14	0.41
		Max.	2.3	6.5
	114DD	Min.	0.6	0.9
		Max.	2.8	6.5

PERFORMANCE CURVES (Note 2)

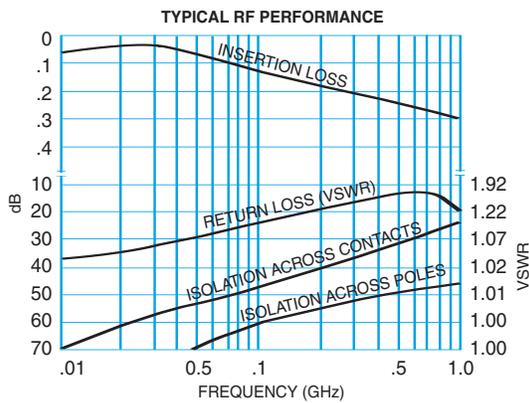


FIGURE 1

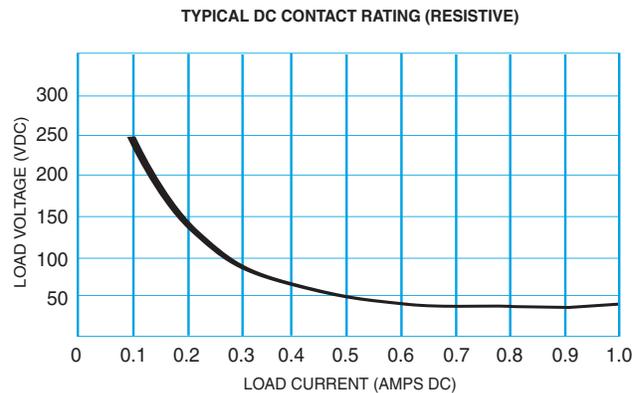
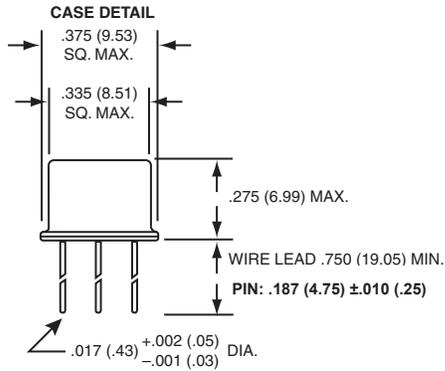


FIGURE 2

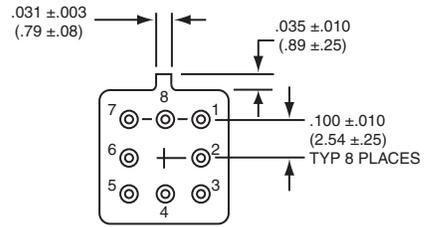
NOTES:

- Relay contacts will exhibit no chatter in excess of 10 μ s or transfer in excess of 1 μ s.
- "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
- Unless otherwise specified, parameters are initial values.
- For reference only. Coil resistance not directly measurable at relay terminals due to internal series semiconductor, 114DD only
- Unless otherwise specified, relays will be supplied with gold-plated leads.
- The slash and characters appearing after the slash are not marked on the relay.

**SERIES 114
OUTLINE DIMENSIONS**

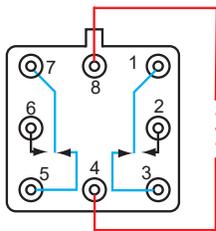


Dimensions: in. (mm)

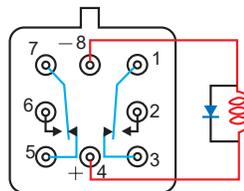


(Viewed From Terminals)

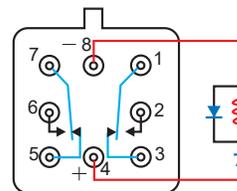
SCHEMATIC DIAGRAMS



114



114D



114DD

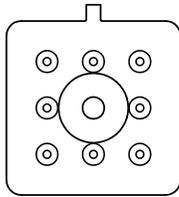
APPENDIX A : Spacer Pads

Pad designation and bottom view dimensions

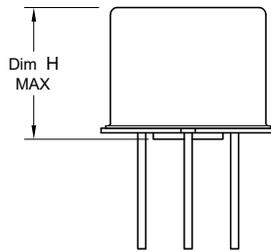
Height

For use with the following:

Dim. H Max.



"M4" Spacer Pad for Centigrad®

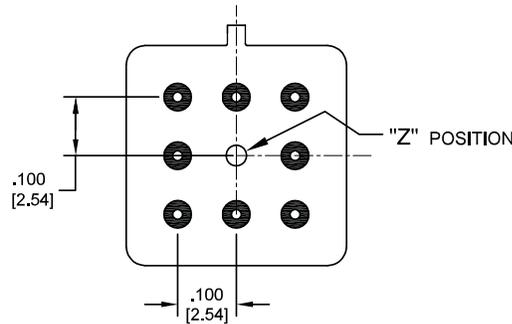


172	.305 (7.75)
ER114, J114	.300 (7.62)
ER134, J134	.400 (10.16)
RF100	.315 (8.00)
RF103	.420 (10.67)

Notes:

1. Spacer pad material: Polyester film.
2. To specify a "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 Ω 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



Centigrad® 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.