

TELEDYNE RELAYS

AEROSPACE CENTIGRID® MAGNETIC-LATCHING R.F. RELAYS

DPDT

SERIES

RF120

DESCRIPTION

The RF120 Series relay is an ultraminiature, hermetically sealed, magnetic-latching relay featuring extremely low intercontact capacitance for exceptional R.F. performance over the full UHF spectrum. Its low profile height and .100" grid spaced terminals (precluding 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 structure are similar to the TO-5 421 Series relay. The relay is capable of meeting Teledyne Relays' $T^2R^®$ requirements. The RF120 design has been optimized for use in RF attenuators, RF switch matrices, and other applications requiring high isolation, low insertion loss, and low VSWR.

Unique construction features and manufacturing techniques provide overall high reliability and excellent resistance to environmental extremes.

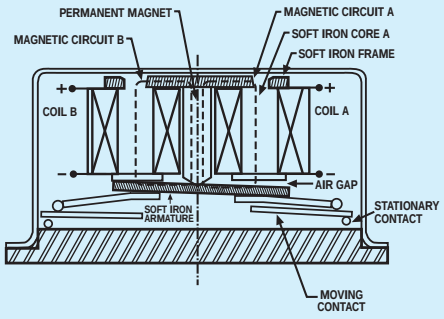
- All welded construction.
- Unique uni-frame design providing high magnetic efficiency and mechanical rigidity.
- High force/mass ratios for resistance to shock and vibration.
- Advanced cleaning techniques provide maximum assurance of internal cleanliness.
- Gold plated precious metal alloy contacts ensure reliable d.c. switching from dry-circuit to 1/4 amp, as well as low, stable insertion loss.

The RF120 relay is ideally suited for applications where power dissipation must be minimized. The relays can be operated with a short-duration pulse. After the contacts have transferred, no external holding power is required.

The magnetic-latching feature of the RF120 Series provides a "memory" capability, since the relays will not reset upon removal of coil power.

PRINCIPLE OF OPERATION

Energizing Coil B produces a magnetic field opposing the holding flux of the permanent magnet in Circuit B. As this net holding force decreases, the attractive force in the air gap of Circuit A, which also results from the flux of the permanent magnet, becomes great enough to break the armature free of Core B, and snap it into a closed position against Core A. The armature then remains in this position upon removal of power from Coil B, but will snap back into position B upon energizing Coil A. Since operation depends upon cancellation of a magnetic field, it is necessary to apply the correct polarity to the relay coils as indicated on the relay schematic.



When latching relays are installed in equipment, the latch and reset coils should not be pulsed simultaneously. Coils should not be pulsed with less than the nominal coil voltage and the pulse width should be a minimum of three times the specified operate time of the relay. If these conditions are not followed, it is possible for the relay to be in the magnetically neutral position.

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS	
Temperature (Ambient)	-65°C to + 125°C
Vibration	30 g's to 3000 Hz (Note 3)
Shock	100 g's for 6 msec. (Note 3) half-sine
Acceleration	50 g's (Note 3)
Enclosure	All welded, hermetically sealed
Weight	0.10 oz. (2.84 gms.) max.

SERIES RF120

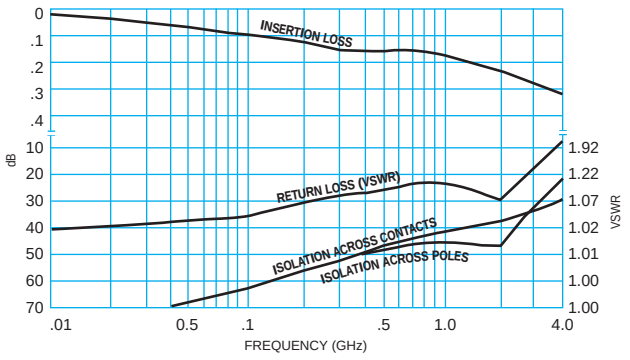
GENERAL ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted) (Notes 1 & 2)

Contact Arrangement	2 Form C (DPDT)	
Rated Duty	Continuous	
Contact Resistance	0.125 ohm max. before life; 0.225 ohm max. after life at 0.25A/28VDC, (measured 1/8" from header)	
Contact Load Rating (DC)	Resistive: 0.25 Amp/28VDC Low Level: 10 to 50 µA/10 to 50 mV	
Contact Life Ratings	10,000,000 cycles (typical) at low level 100,000 cycles min. at 0.25 Amp/28VDC	
Contact Overload Rating	0.5A/28VDC Resistive (100 cycles min.)	
Contact Carry Rating	Contact factory	
Coil Operating Power	290 milliwatts typical at nominal rated voltage @ 25°C	
Operate Time	1.5 msec max. at nominal rated coil voltage	
Contact Bounce	2.0 msec max.	
Minimum Operate Pulse	4.5 msec @ nominal voltage	
Intercontact Capacitance	0.02 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

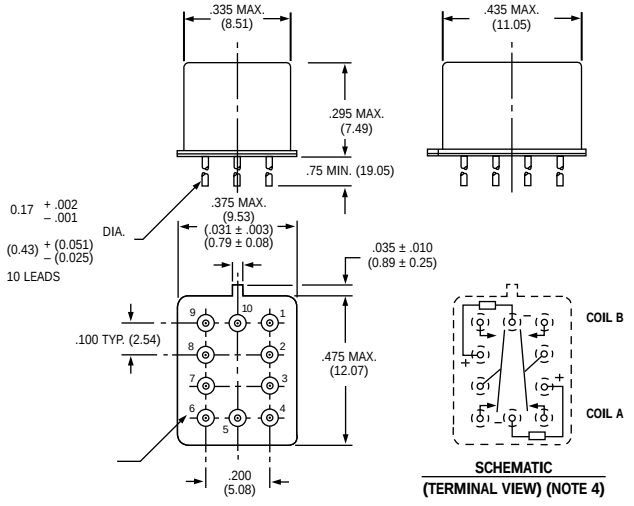
DETAILED ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted) (Note 2)

		BASE PART NUMBERS (Note 5)	RF120-5	RF120-6	RF120-9	RF120-12	RF120-18	RF120-26
Coil Voltage (VDC)	Nom.		5.0	6.0	9.0	12.0	18.0	26.5
	Max.		6.0	8.0	12.0	16.0	24.0	32.0
Coil Resistance (Ohms ± 10% @ 25°C)			61	120	280	500	1130	2000
Set & Reset Voltage (VDC, Max.)			3.5	4.5	6.8	9.0	13.5	18.0

TYPICAL R.F. PERFORMANCE (NOTE 1)



OUTLINE DIMENSIONS



DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)

NOTES:

1. Characteristics shown as "typical" are based on available data and are best estimates. No on-going verification tests are performed.
2. Unless otherwise specified, parameters are initial values.
3. Relays will exhibit no contact chatter in excess of 10 µsec or transfer in excess of 1 µsec.
4. Contacts shown in position resulting when Coil A last energized.
5. Screened hi rel versions available on special order. Contact factory.

©1996
TELEDYNE RELAYS
12525 Daphne Avenue
Hawthorne, California 90250