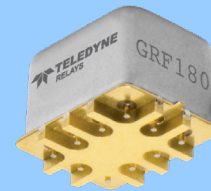


SURFACE MOUNT, MAGNETIC-LATCHING BROADBAND RF RELAYS DPDT



SERIES	RELAY TYPE
GRF180	SMT, DPDT, Magnetic-Latching Relay with Ground Shield

DESCRIPTION

The Series GRF180 relay is the first hermetically sealed, ultraminiature RF relay designed from inception for surface mount applications. This magnetic-latching relay features extremely low internal circuit losses for exceptional time and frequency domain response characteristics through and beyond the UHF spectrum and into the S band. The GRF180 features a unique ground shield that isolates and shields each lead to ensure excellent contact-to-contact and pole-to-pole isolation. This ground shield provides a ground interface that results in improved high-frequency performance as well as parametric repeatability. The GRF180 extends performance advantages over similar RF devices that simply offer formed leads for surface mounting.

The GRF180 is robust to shock, vibration and temperature extremes for use in space applications and other demanding environments. It is engineered for use in RF attenuators, RF switch matrices, automated test equipment, spacecraft and

other applications that require dependable high-frequency, signal fidelity and performance. Its low profile and .100" grid spaced terminals make the GRF180 ideal for applications where extreme packaging density and/or close PC board spacing are required.

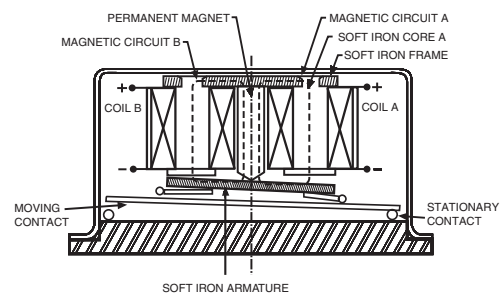
Unique features and manufacturing techniques include:

- Positive mounting means to RF ground plane.
- Unique uniframe design provides 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 dc and RF signal switching, as well as low and stable insertion loss.
- Robust to high temperature solder reflow environments.

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

Temperature (Ambient)	Storage	-65°C to +125°C
	Operating	-55°C to +85°C
Vibration (Note 1)		30 g's to 500 Hz
Shock (Note 1)		100 g's, 6 ms, half sine
Enclosure		Hermetically sealed
Weight		0.10 oz. (2.9g) max.

INTERNAL CONSTRUCTION



GENERAL ELECTRICAL SPECIFICATIONS (-55°C to +85°C unless otherwise noted)(Notes 2 & 3)

Contact Arrangement	2 Form C (DPDT)
Rated Duty	Continuous
Contact Resistance	0.15 Ω max.; 0.25 Ω max. afterlife at 0.25A / 28 Vdc
Contact Load Rating (DC)	Resistive: 0.25 A/ 28 Vdc 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 all other loads specified above
Contact Overload Rating	0.5A/28 Vdc Resistive (100 cycles min.)
Coil Operating Power	GRF180-5: 410 mW typical @ nominal rated voltage
	GRF180-12: 288 mW typical @ nominal rated voltage
	GRF180-26: 351 mW typical @ nominal rated voltage
Contact Carry Rating	Contact Factory
Operate Time	2.0 ms max. @ nominal rated coil voltage
Minimum Operatue Pulse	6.0 ms width @ rated voltage
Intercontact Capacitance	0.2 pf typical
Insulation Resistance	1,000 MΩ min. between mutually isolated terminals
Dielectric Strength	350 Vrms (60 Hz) @ atmospheric pressure

DETAILED ELECTRICAL SPECIFICATIONS (-55°C to +85°C unless otherwise noted)(Note 3)

BASE PART NUMBERS (RF180)		RF180-5	RF180-12	RF180-26
Coil Voltage (Vdc)	Nom.	5.0	12.0	26.5
	Max.	6.0	16.0	32.0
Coil Resistance (Ohms ±20%)		61	500	2,000
Set and Reset Voltage (Vdc)	Max.	3.5	9.0	18.0

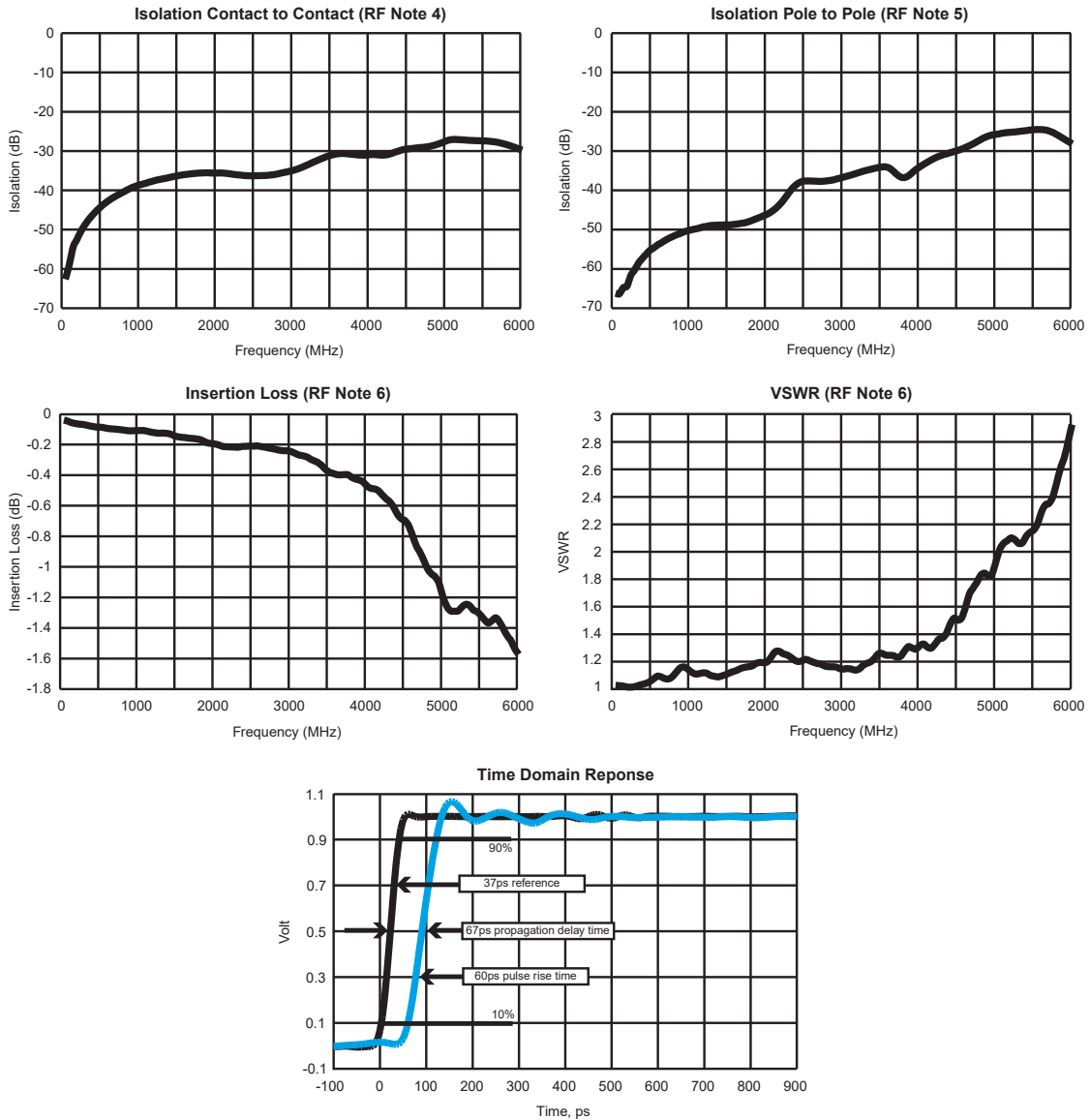
Part Numbering System (Note 4)



NOTES

1. Relay contacts will exhibit no chatter in excess of 10 μs or transfer in excess of 1 μs.
2. Characteristics shown as "typical" are based on available data and are best estimates. No ongoing verification tests are performed.
3. Unless otherwise specified, parameters are initial values.
4. Parts ordered will be provided with Gold-Plated leads which have a typical plating thickness of 25-40 μin.
5. Using an operate voltage less than the specified minimum may result in unreliable operation.
6. Relay temperature during soldering shall not exceed 250°C, and reflow temperature shall not exceed 250°C, 3 passes, 1 minute each.

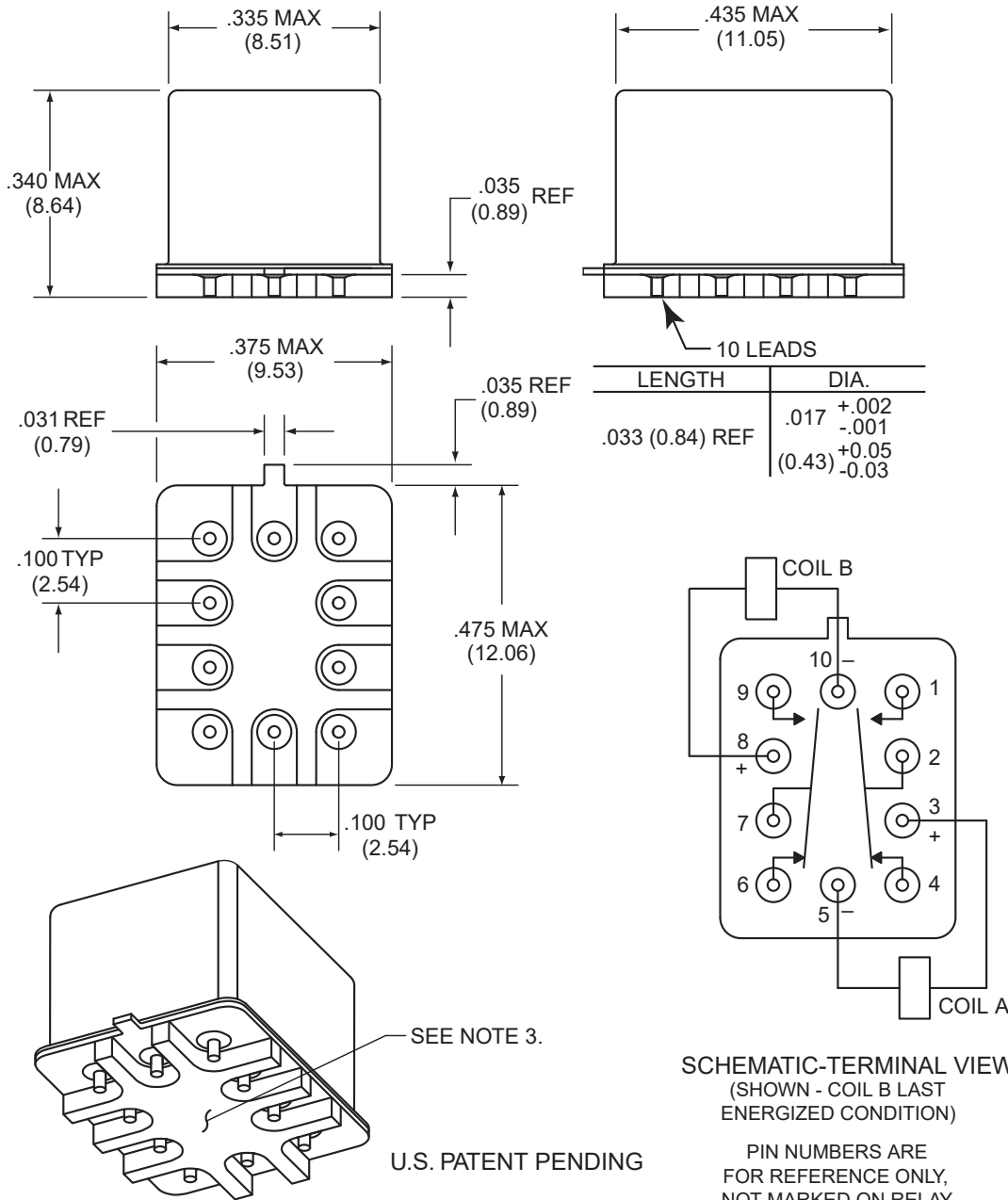
TYPICAL RF CHARACTERISTICS



RF NOTES

- Test conditions:
 - Fixture: .031" copper clad, reinforced PTFE, RT/duroid® 6002 with SMA connectors. (RT/duroid® is a registered trademark of Rogers Corporation.)
 - RF ground shield is soldered to PCB RF ground plane.
 - Room ambient temperature.
 - Terminals not tested were terminated with 50-ohm load.
 - Contact signal level: -10 dBm.
 - No. of test samples: 3.
- Data presented herein represents typical characteristics and is not intended for use as specification limits.
- Data is per pole, except for pole-to-pole data.
- Data is the average from readings taken on all open contacts.
- Data is the average from readings taken on poles after Coil A is energized then Coil B is energized.
- Data is the average from readings taken on all closed contacts.
- Test fixture effect de-embedded from frequency and time response data.

OUTLINE DIMENSIONS



NOTES:

1. DIMENSIONS ARE IN INCHES. METRIC EQUIVALENTS IN MILLIMETERS ARE SHOWN IN ().
2. UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE $.010 \text{ INCH}$ (0.025 mm).
3. FOR OPTIMAL RF PERFORMANCE, SOLDER BOTTOM OF GROUND SHIELD TO PCB RF GROUND PLANE.