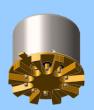


HIGH REPEATABILITY, DC-8 GHz/20Gbps TO-5 RELAYS, DPDT



SERIES	RELAY TYPE	
GRF312	DPDT Non- latching, Repeatable, Surface-Mount RF relay	

DESCRIPTION

The ultra miniature GRF312 is designed to improve upon the GRF300 relay's high frequency performance. The GRF312 offers monotonic insertion loss to 8 GHz. This improvement in RF insertion loss over the frequency range, makes these relays highly suitable for use in attenuator and other RF circuits.

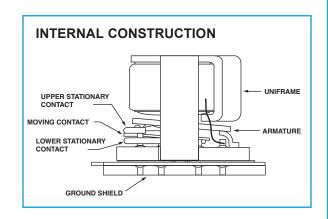
- · High repeatability.
- · Broader bandwidth.
- · Metal enclosure for EMI shielding.
- · High isolation between control and signal paths.
- · Highly resistant to ESD.

CONSTRUCTION FEATURES

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

- · Uni-frame motor design provides high magnetic efficiency and mechanical rigidity.
- · Minimum mass components and welded construction provide maximum resistance to shock and vibration.
- Advanced cleaning techniques provide maximum assurance of internal cleanliness.
- · Gold-plated precious metal alloy contacts ensure reliable switching.
- · Hermetically sealed.

	ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS				
Temperature	Storage	–65°C to +125°C			
(Ambient)	Operating	–55°C to +85°C			
Vibration (Note 1)		10 g's to 500 Hz			
Shock (Note 1)		30 g's, 6ms half sine			
Enclosure		Hermetically sealed			
Weight		0.09 oz. (2.55g) max.			





GENERAL ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted)(Notes 2 & 3)

Contact Arrangement	2 Form C (DPDT)
Rated Duty	Continuous
Contact Resistance	0.15 Ω max.
Contact Load Rating	Resistive: 1Amp/28Vdc Low level: 10 to 50 μA @ 10 to 50 mV
Contact Life Ratings	1,000,000 cycles (typical) at low level contact load
Coil Operating Power	450 mW typical at nominal rated voltage
Operate Time	4.0 ms max.
Release Time	3.0 ms max.
Intercontact Capacitance	0.4 pf typical
Insulation Resistance	1,000 M Ω min. between mutually isolated terminals
Dielectric Strength	350 Vrms (60 Hz) @ atmospheric pressure

DETAILED ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted)(Note 3)

BASE PART NUMBERS (GRF312)	GRF312-5	GRF312-12
Coil Voltage, Nominal (Vdc)	5.0	12.0
Coil Resistance (Ohms ±20%)	50	390
Pick-up Voltage (Vdc max.)	3.6	9.0

Part Numbering System (Note 4)

- 1. Relays will exhibit no contact chatter in excess of 10 μs or transfer in excess of 1 μs .
- 2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
- 3. Unless otherwise specified, parameters are initial values.
- 4. Unless otherwise specified, relays will be supplied with gold-plated leads.



SMT DPDT Non-Latching Electromechanical Relay Signal Integrity up to 20Gbps

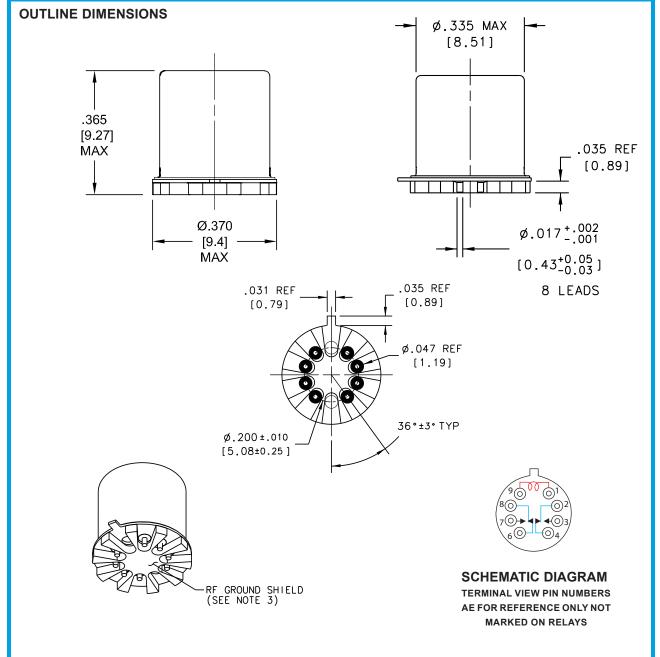
TYPICAL RF CHARACTERISTICS (See RF Notes) Isolation Across Contacts (RF Note 4) Isolation Pole to Pole (RF Note 5) nally Closed -30 -40 Frequency (GHz) Insertion Loss (RF Note 6) VSWR (RF Note 6) 3.4 3.2 Loss 2.8 -1.5 1.6 Frequency (GHz) GRF312 Time Response (RF Note 6) 0.9 0.7 0.5 0.3 0.1 Time (ps)

RF NOTES

- 1. Test conditions: a. Fixture: .031" copper clad, reinforced PTFE, RT/duroid® 6002 with SMA connectors. (RT/duroid® is a registered trademark of Rogers Corporation.)
 - b. Room ambient temperature.
 - c. Terminals not tested were terminated with 50-ohm load.
 - d. Contact signal level: -10 dBm.
 - e. No. of test samples: 4.
- 2. Data presented herein represents typical characteristics and is not intended for use as specification limits.
- 3. Data is per pole, except for pole-to-pole data.
- 4. Data is the average from readings taken on all open contacts.
- 5. Data is the average from readings taken on poles with coil energized and de-energized.
- 6. Data is the average from readings taken on all closed contacts.
- 7. Test fixture effect de-embedded from frequency and time response data.



SMT DPDT Non-Latching Electromechanical Relay Signal Integrity up to 20Gbps

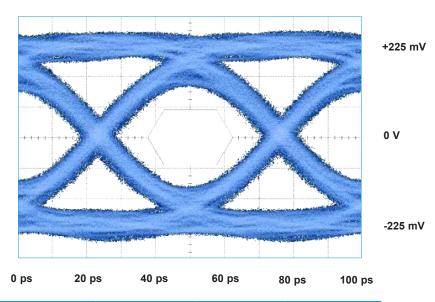


NOTES

- 1. DIMENSIONS ARE IN INCHES, METRIC EQUIVALENTS SHOWN IN [].
- 2. POSTITIONS 5 AND 10 ARE FOR UNINSULATED CASE GROUND OPTIONS.
- 3. NO PROTRUSION BELOW BOTTOM OF HEADER WHEN GROUND PINS ARE INSTALLED
- 4. TO ORDER THE CASE GROUND OPTION, AFTER THE SERIES DESIGNATOR, ADD "Y" TO THE PART NUMBER FOR POSITION 5 OR "Z" TO THE PART NUMBER FOR POSITION 10.



TYPICAL Single-Ended Signal Integrity Characteristics @ 20 Gbps



Bit Rate	Eye Height	Eye Width	Jitter _{P-P}
20 Gbps	182 mV	40.6 ps	11.56 ps