



**TELEDYNE  
RELAYS**

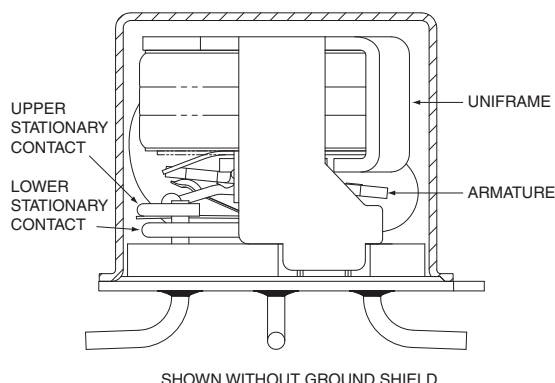
A Teledyne Technologies Company

## SURFACE MOUNT, HIGH REPEATABILITY, BROADBAND CENTIGRID® RELAYS DPDT

**SERIES  
SGRF100  
SGRF103**

SERIES DESIGNATION	RELAY TYPE
SGRF100	Repeatable, RF Centigrad® relay
SGRF103	Sensitive, repeatable, RF Centigrad® relay

### INTERNAL CONSTRUCTION



### DESCRIPTION

The ultraminiature SGRF100 and SGRF103 relays are designed to provide a practical surface-mount solution with improved RF signal repeatability over the frequency range. SGRF100 and SGRF103 relays feature 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 SGRF100 and SGRF103 extend performance advantages over similar RF devices that simply offer formed leads for surface mounting.

These relays are engineered for use in RF attenuator, RF switch matrices, ATE and other applications that require dependable high frequency signal fidelity and performance.

The SGRF100 and SGRF103 feature:

- High repeatability
- Broader bandwidth
- Metal enclosure for EMI shielding
- High isolation between control and signal paths
- High resistance to ESD

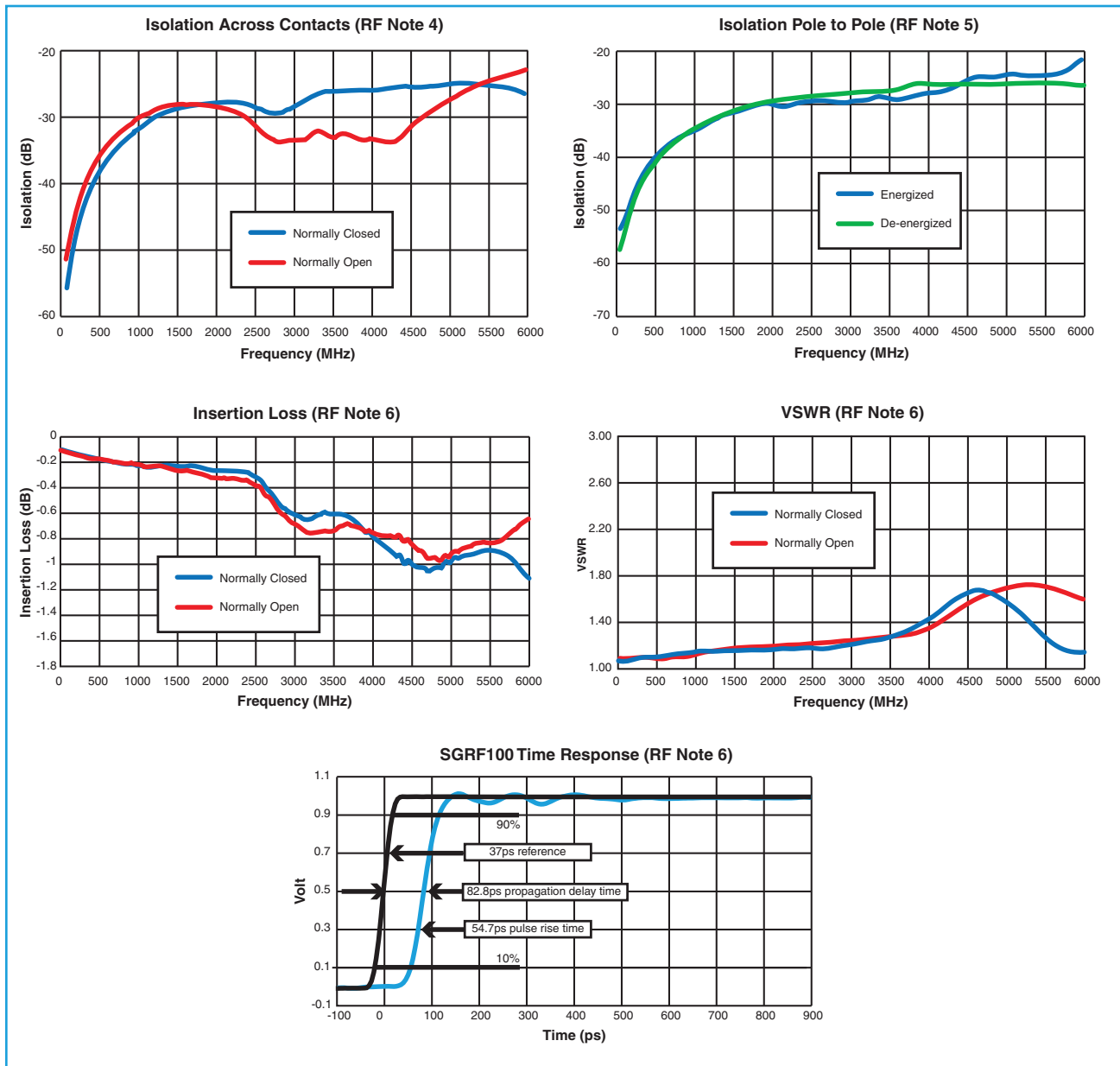
The following unique construction features and manufacturing techniques provide excellent robustness to environmental extremes and overall high reliability:

- Uniframe 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

<b>Temperature</b> (Ambient)	<b>Storage</b>	–65°C to +125°C
	<b>Operating</b>	–55°C to +85°C
<b>Vibration</b> (General Note 1)		10 g's to 500 Hz
<b>Shock</b> (General Note 1)		30 g's, 6ms half sine
<b>Enclosure</b>		Hermetically sealed
<b>Weight</b>	<b>SGRF100</b>	0.09 oz. (2.55g) max.
	<b>SGRF103</b>	0.16 oz. (4.5g) max.

## SERIES SGRF100 AND SGRF103 TYPICAL RF CHARACTERISTICS (See RF Notes)



### 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: 2.
- 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 with coil energized and de-energized.
- Data is the average from readings taken on all closed contacts.
- Test fixture effect de-embedded from frequency and time response data.

# SERIES SGRF100 AND SGRF103

## GENERAL ELECTRICAL SPECIFICATIONS (@25°C unless otherwise noted) (Notes 2 & 3)

<b>Contact Arrangement</b>	DPDT
<b>Rated Duty</b>	Continuous
<b>Contact Resistance</b>	0.100 $\Omega$ max. initial
<b>Contact Load Rating</b>	Low level: 10 to 50 $\mu$ A @ 10 to 50 mV
<b>Contact Life Ratings</b>	10,000,000 cycles (typical) at low level
<b>Coil Operating Power</b>	SGRF100-5: 500 mW typical @ nominal rated voltage SGRF100-12: 369 mW typical @ nominal rated voltage SGRF103-5: 250 mW typical @ nominal rated voltage SGRF103-12: 180 mW typical @ nominal rated voltage
<b>Operate Time</b>	SGRF100: 4.0 mS max. SGRF103: 6.0 mS max.
<b>Release Time</b>	SGRF100: 3.0 mS max. SGRF103: 3.0 mS max.
<b>Intercontact Capacitance</b>	0.4 pf typical
<b>Insulation Resistance</b>	1,000 M $\Omega$ min. between mutually isolated terminals
<b>Dielectric Strength</b>	350 Vrms (60 Hz) @ atmospheric pressure

## DETAILED ELECTRICAL SPECIFICATIONS (@25°C)

BASE PART NUMBERS		SGRF100-5/SGRF103-5	SGRF100-12/SGRF103-12
<b>Coil Voltage, Nominal (Vdc)</b>		5.0	12.0
<b>Coil Resistance (Ohms <math>\pm</math>20%)</b>	<b>SGRF100</b>	50	390
	<b>SGRF103</b>	100	800
<b>Pick-up Voltage (Vdc max.)</b>		3.6	9.0

## GENERAL NOTES

1. Relays will exhibit no contact chatter in excess of 10  $\mu$ sec or transfer in excess of 1  $\mu$ sec.
2. Unless otherwise specified, parameters are initial values.
3. Relays may be subjected to 260°C, peak solder reflow temperature, 1 minute, 3 passes.
4. Butt-lead ends are coplanar within .003" (0.08).
5. Application notes available for PCB layout and mounting information.
6. Add "R" to end of part number for RoHS compliant solder coated pins (Sn99.3/Cu0.7).

## OUTLINE DIMENSIONS

