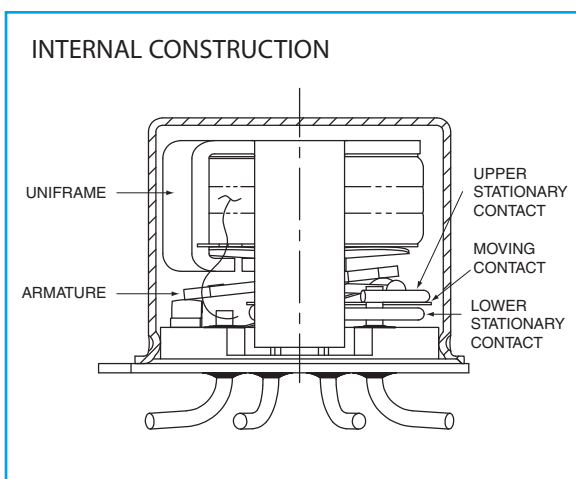# TELEDYNE RELAYS

A Teledyne Technologies Company

NEW!

SURFACE MOUNT, HIGH REPEATABILITY, BROADBAND TO-5 RELAYS DPDT

SERIES
SRF300 SRF303

SERIES DESIGNATION	RELAY TYPE
SRF300	Repeatable, RF TO-5 relay
SRF303	Sensitive, repeatable, RF TO-5 relay

INTERNAL CONSTRUCTION

UNIFRAME

ARMATURE

UPPER STATIONARY CONTACT

MOVING CONTACT

LOWER STATIONARY CONTACT

DESCRIPTION

The ultraminiature SRF300 and SRF303 relays are designed to provide a practical surface-mount solution with improved RF signal repeatability over the frequency range. 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.
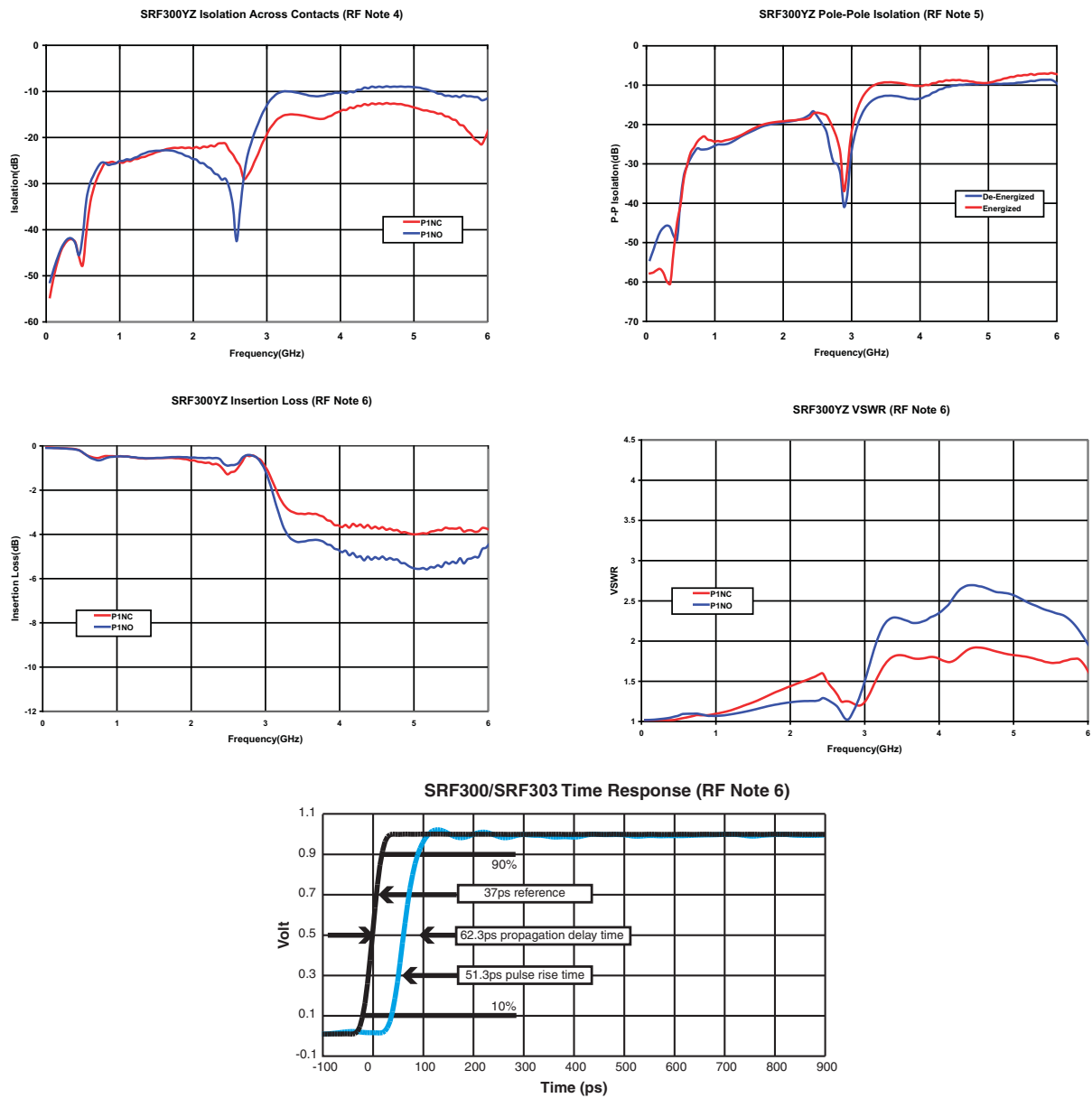
The SRF300 and SRF303 feature:

- 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
- Hermetically sealed
- Solder Dipped Leads

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS		
Temperature (Ambient)	Storage	−65°C to +125°C
	Operating	−55°C to +85°C
Vibration (General Note 1)		10 g's to 500 Hz
Shock (General Note 1)		30 g's, 6ms half sine
Enclosure		Hermetically sealed
Weight	SRF300	0.09 oz. (2.55g) max.
	SRF303	0.16 oz. (4.5g) max.

SRF300YZ Isolation Across Contacts (RF Note 4)

SRF300YZ Pole-Pole Isolation (RF Note 5)

SRF300YZ Insertion Loss (RF Note 6)

SRF300YZ VSWR (RF Note 6)

SRF300/SRF303 Time Response (RF Note 6)

90%

37ps reference

62.3ps propagation delay time

51.3ps pulse rise time

10%

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.
   fe 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.

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

SRF300SRF303\042009\Q2

SERIES SRF300 AND SRF303
GENERAL ELECTRICAL SPECIFICATIONS (@25°C unless otherwise noted) (Notes 2 & 3)

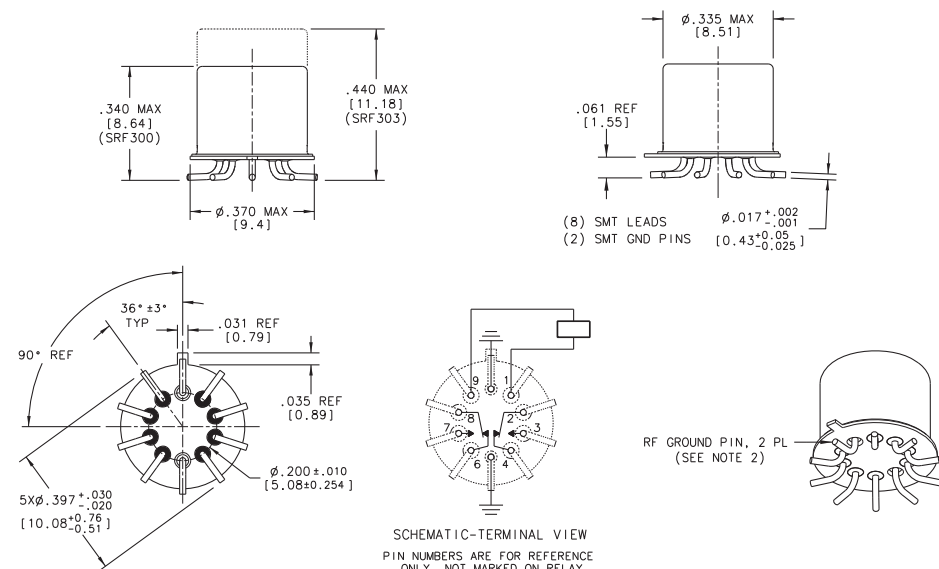| Contact Arrangement	2 Form C (DPDT)
Rated Duty	Continuous
Contact Resistance	0.15 Ω max.
Contact Load Rating	Resistive: 1Amp/28Vdc Low level: 10 to 50 µA @ 10 to 50 mV
Contact Life Ratings	10,000,000 cycles (typical) at low level
Coil Operating Power	SRF300-5: 500 mW typical @ nominal rated voltage SRF300-12: 370 mW typical @ nominal rated voltage SRF303-5: 250 mW typical @ nominal rated voltage SRF303-12: 169 mW typical @ nominal rated voltage
Operate Time	SRF300: 4.0 mS max. SRF303: 6.0 mS max.
Release Time	SRF300: 3.0 mS max. SRF303: 3.0 mS max.
Intercontact Capacitance	0.4 pf typical
Insulation Resistance	1,000 MΩ min. between mutually isolated terminals
Dielectric Strength	350 Vrms (60 Hz) @ atmospheric pressure

DETAILED ELECTRICAL SPECIFICATIONS (@25°C)

BASE PART NUMBERS		SRF300-5/SRF303-5	SRF300-12/SRF303-12
Coil Voltage, Nominal (Vdc)		5.0	12.0
Coil Resistance (Ohms ±20%)	SRF300	50	390
	SRF303	100	850
Pick-up Voltage (Vdc max.)		3.6	9.0

GENERAL NOTES
1. Relays will exhibit no contact chatter in excess of 10 µsec or transfer in excess of 1 µsec.
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. Terminals coated with SN60 or SN63 solder.

OUTLINE DIMENSIONS

.340 MAX [8.64] (SRF300)
.440 MAX [11.18] (SRF303)
ø.370 MAX [9.4]
ø.335 MAX [8.51]
.061 REF [1.55]
(8) SMT LEADS
(2) SMT GND PINS
ø.017 +.002 -.001 [0.43 +0.05 -0.025]

36° ±3° TYP
90° REF
.031 REF [0.79]
.035 REF [0.89]
ø.200 ±.010 [5.08±0.254]
5Xø.397 +.030 -.020 [10.08 +0.76 -0.51]

RF GROUND PIN, 2 PL (SEE NOTE 2)

SCHEMATIC-TERMINAL VIEW
PIN NUMBERS ARE FOR REFERENCE ONLY, NOT MARKED ON RELAY

NOTES:
1. DIMENSIONS ARE IN INCHES, METRIC EQUIVALENTS SHOWN IN [ ].
2. FOR BEST RF PERFORMANCE, SOLDER ENDS OF RF GROUND PINS TO PCB RF GROUND PLANE.
3. POSTITIONS 5 AND 10 ARE FOR UNINSULATED CASE GROUND OPTIONS.
4. DRAWING SHOWS: SRF300YZ