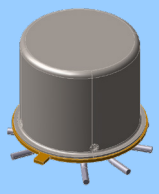
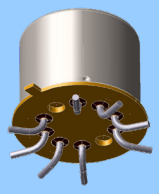


SURFACE MOUNT HIGH REPEATABILITY, BROADBAND 6GHz, TO-5 DPDT RELAYS



SERIES	RELAY TYPE
SRF300	Repeatable, Surface-Mount RF (DC-6GHz) Relay with J-Leads
SRF303	Sensitive Coil, Repeatable, Surface-Mount RF (DC-6GHz) Relay with J-Leads

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.

SRF300 & SRF303 features:

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

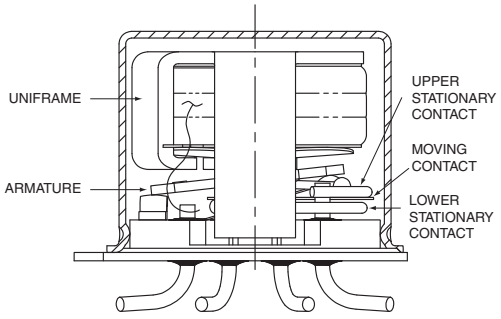
The following unique construction features and manufacturing techniques provide excellent robustness to environmental extremes and overall high reliability:

- 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, (RoHS compliant solder option available)

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

Temperature (Ambient)	**Storage**	–65°C to +125°C
	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	**SRF300**	0.09 oz. (2.55g) max.
	SRF303	0.16 oz. (4.5g) 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.	
Contact Load Rating	Resistive: 1A / 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 @ nominal coil	SRF300-12: 370 mW @ nominal coil
	SRF303-5: 250 mW @ nominal coil	SRF303-12: 169 mW @ nominal coil
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 (-55°C to +85°C unless otherwise noted)(Note 3)

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

Part Numbering System (Notes 4 & 5)

SRF300 YZ - 5 / R

Relay Series
SRF300
SRF303

Ground Pin Optional
Y = Ground Pin at Position 5
Z = Ground Pin at Position 10

Coil Voltage
5 = 5V
12 = 12V

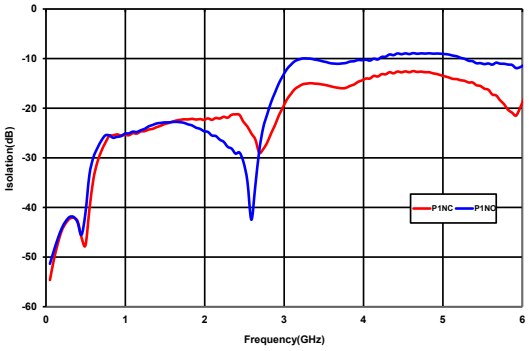
Lead Finish
Q = Solder-Coated Leads (Sn60/Pb40)
R = RoHS Compliant Solder (Sn99.3/Cu0.7)

NOTES

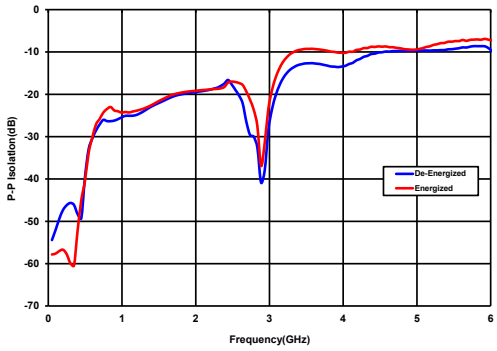
1. Relays will exhibit no contact chatter in excess of 10 µs or transfer in excess of 1 µs.
2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
3. Unless otherwise specified, parameters are initial values.
4. The slash and characters appearing after the slash are not marked on the relay.
5. Unless otherwise specified, relays will be supplied with solder-coated leads.
6. Using an operate voltage less than the specified minimum may result in unreliable operation.
7. 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 (See RF Notes)

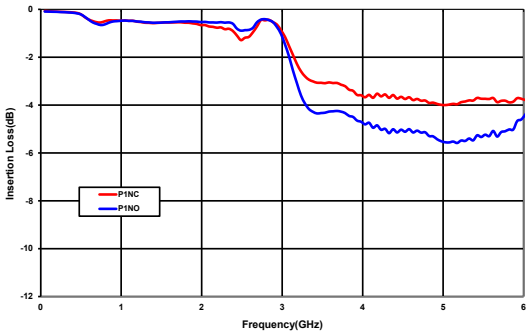
SRF300YZ Isolation Across Contacts (RF Note 4)



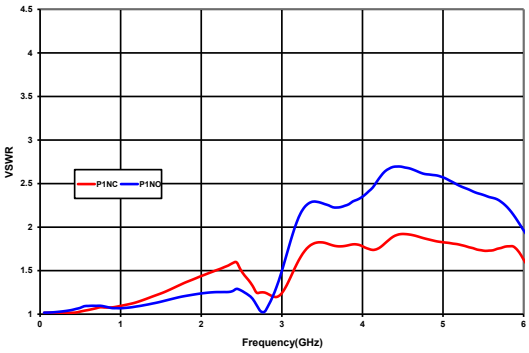
SRF300YZ Pole-Pole Isolation (RF Note 5)



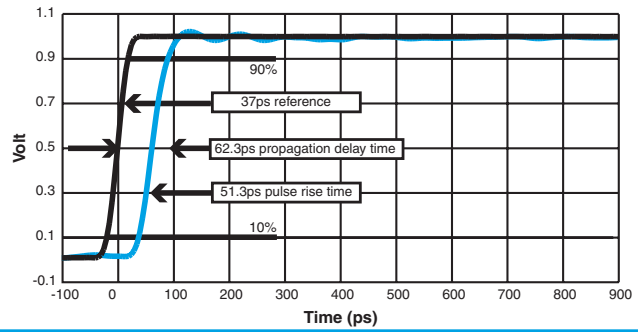
SRF300YZ Insertion Loss (RF Note 6)



SRF300YZ VSWR (RF Note 6)



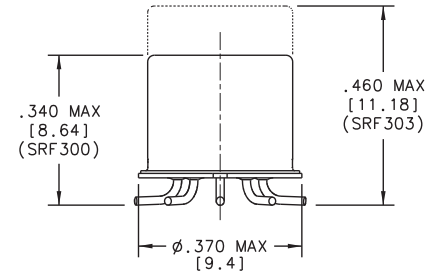
SRF300/SRF303 Time Response (RF Note 6)

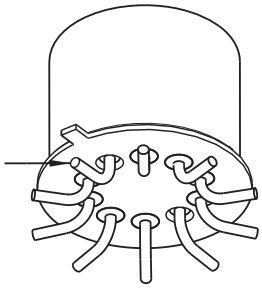


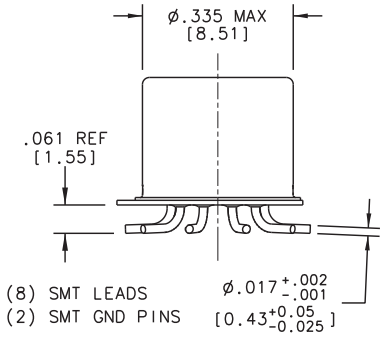
RF NOTES

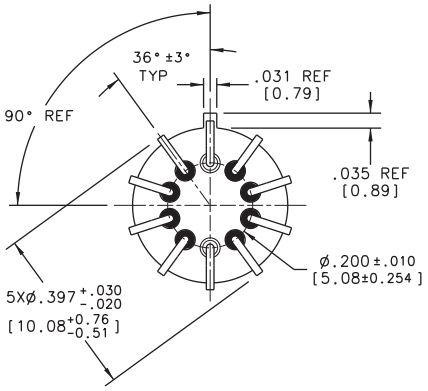
1. Test conditions:
   - *a.* Fixture: .031” copper clad, reinforced PTFE, RT/duroid® 6002 with SMA connectors. (RT/duroid® is a registered trademark of Rogers Corporation.)
   - *b.* RF ground shield is soldered to PCB RF ground plane.
   - *c.* Room ambient temperature.
   - *d.* Terminals not tested were terminated with 50-ohm load.
   - *e.* Contact signal level: –10 dBm.
   - *f.* No. of test samples: 2.
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.

OUTLINE DIMENSIONS



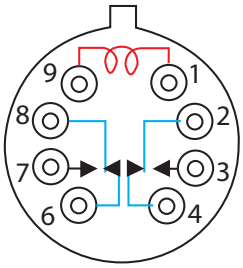






(Viewed From Terminals)

SCHEMATIC DIAGRAMS



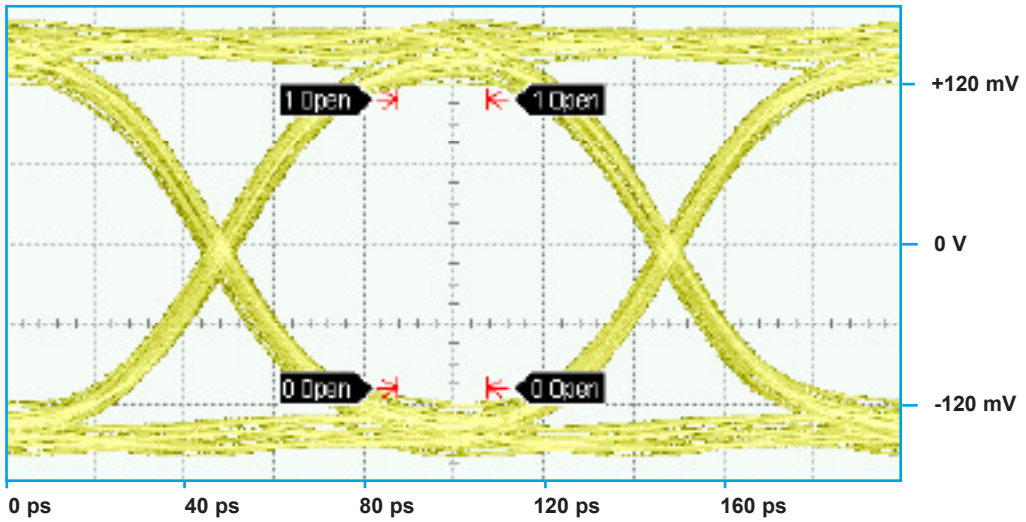
SRF300/RF303

NOTES

1. Dimensions are in inches, metric equivalents shown in (mm).
2. Positions 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, add “Y” to the part number for position 5 or “Z” to the part number for position 10.

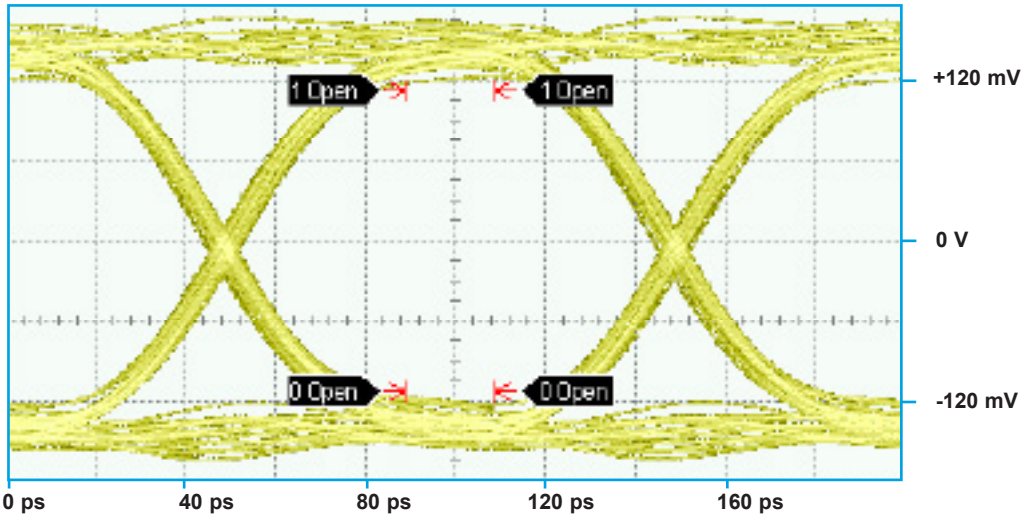
TYPICAL SIGNAL INTEGRITY CHARACTERISTICS @ 10 Gbps

Normally Closed (Typ.)



Bit Rate	Eye Height	Eye Width	Jitter$_{P-P}$
10 Gbps	137.9 mV	85.83 ps	13.33 ps

Normally Open (Typ.)

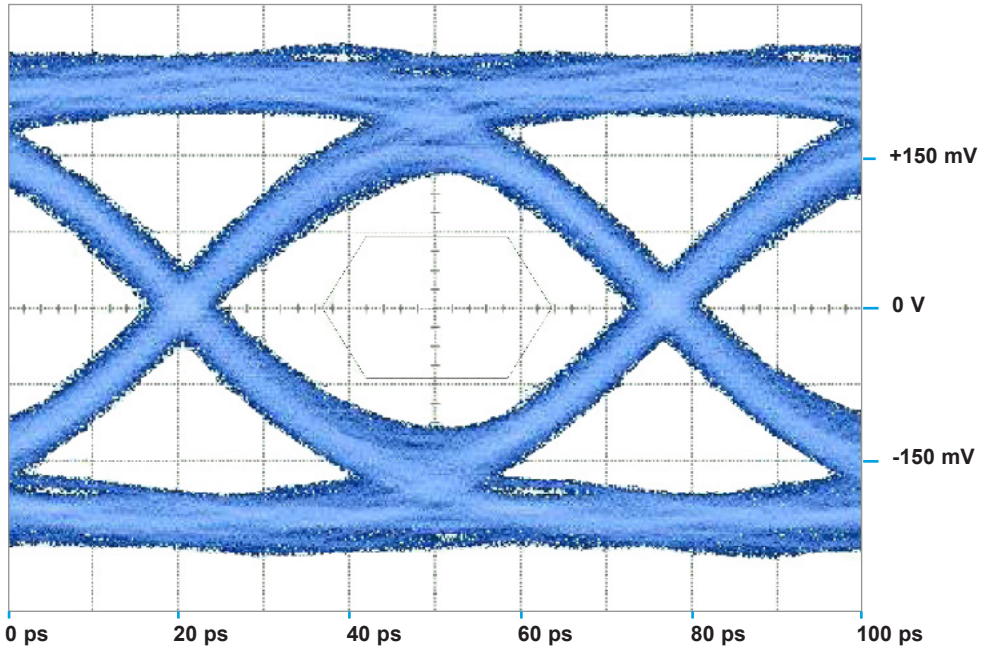


Bit Rate	Eye Height	Eye Width	Jitter$_{P-P}$
10 Gbps	72.8 mV	88.1 ps	8.00 ps

PATTERN GENERATOR SETTINGS

- 10 Gbps Random Pulse Pattern Generator
- 2^{31} - 1 PRBS signal
- PRBS output of 300 mV$_{P-P}$ (nominal)
- RF PCB effect (negligible) not removed from measurement
- Data shown is typical of both poles

SERIES SRF300/SRF303
TYPICAL SIGNAL INTEGRITY CHARACTERISTICS @ 18 Gbps

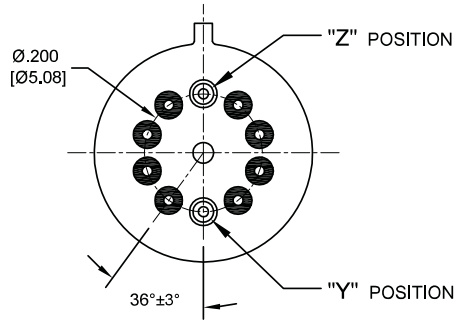


Bit Rate	Eye Height	Eye Width	$Jitter_{P-P}$
18 Gbps	185 mV	46.4 ps	10.44 ps

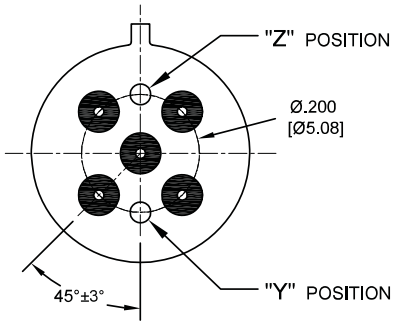
PATTERN GENERATOR SETTINGS

- 18 Gbps Random Pulse Pattern Generator
- 2^{31} - 1 PRBS signal
- PRBS output of 300 mV_{P-P} (nominal)
- RF PCB effect (negligible) not removed from measurement
- Data shown is typical of both poles

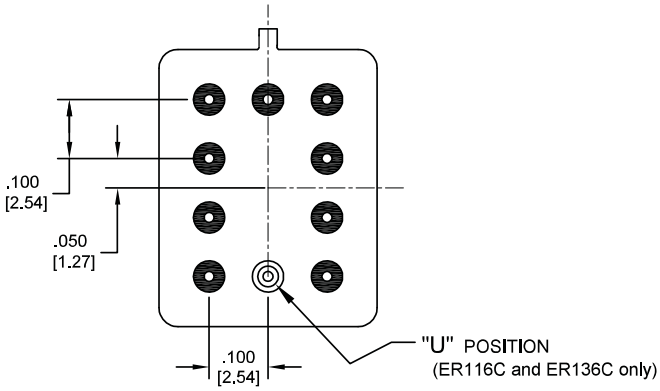
APPENDIX A : Ground Pin Positions



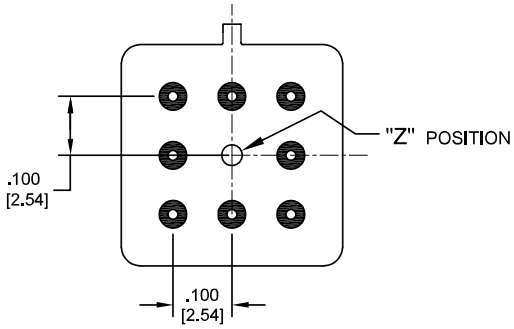
TO-5 Relays:
ER412, ER412T, ER422, ER432, ER432T, 712, 712TN, 400H, 400K, 400V, RF300, RF303, RF341, RF312, RF332, RF310, RF313, RF320, RF323, SI800, SI803, RF700, RF703



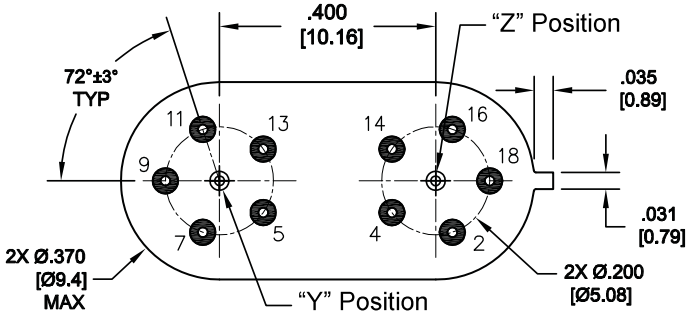
TO-5 Relays:
ER411, RF311, RF331



Centigrid® Relays:
RF180, ER116C, 122C, ER136C



Centigrid® Relays:
RF100, RF103, ER114, ER134, 172



Loopback Relays:
LB363

○ Indicates ground pin position

● Indicates glass insulated lead position

◎ Indicates ground pin or lead position depending on relay type

NOTES
1. Terminal views shown
2. Dimensions are in inches (mm)
3. Tolerances: ± .010 (±.25) unless otherwise specified
4. Ground pin positions are within .015 (0.38) dia. of true position
5. Ground pin head dia., 0.035 (0.89) ref: height 0.010 (0.25) ref.
6. Lead dia. 0.017 (0.43) nom.