



**HIGH REPEATABILITY,
TO-5 RELAYS
DPDT**



SERIES	RELAY TYPE
RF700	Repeatable, RF relay
RF703	Sensitive, repeatable, RF relay

DESCRIPTION

The ultraminiature RF700 and RF703 relays are designed to provide improved RF signal switching 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 RF700 and RF703 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:

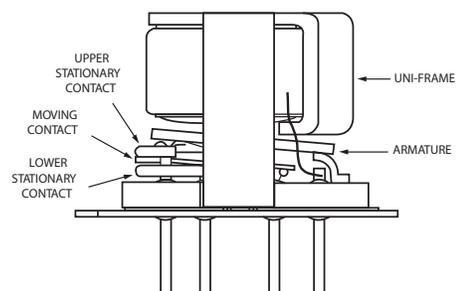
- Uniframe motor design provides high magnetic efficiency and mechanical rigidity
- Minimum mass components and welded construction provide maximum resistance to shock and vibration
- Advanced cleaning techniques provide maximum assurance of internal cleanliness
- Hermetically sealed
- Solder Dipped Leads, (RoHS compliant solder option available)

The Series RF700D/RF703 relays have internal discrete silicon diodes for coil suppression and polarity reversal protection. This hybrid package reduces required PC board floor space by reducing the number of external components needed to drive the relay.

**ENVIRONMENTAL AND
PHYSICAL SPECIFICATIONS**

Temperature (Ambient)	Storage	-55°C to +85°C
	Operating	-45°C to +65°C
Vibration (Note 1)		10 g's to 500 Hz
Shock (Note 1)		30 g's, 6ms half sine
Enclosure		Hermetically sealed
Weight	RF700	0.09 oz. (2.55g) max.
	RF703	0.16 oz. (4.5g) max.

INTERNAL CONSTRUCTION



GENERAL ELECTRICAL SPECIFICATIONS (@25°C)

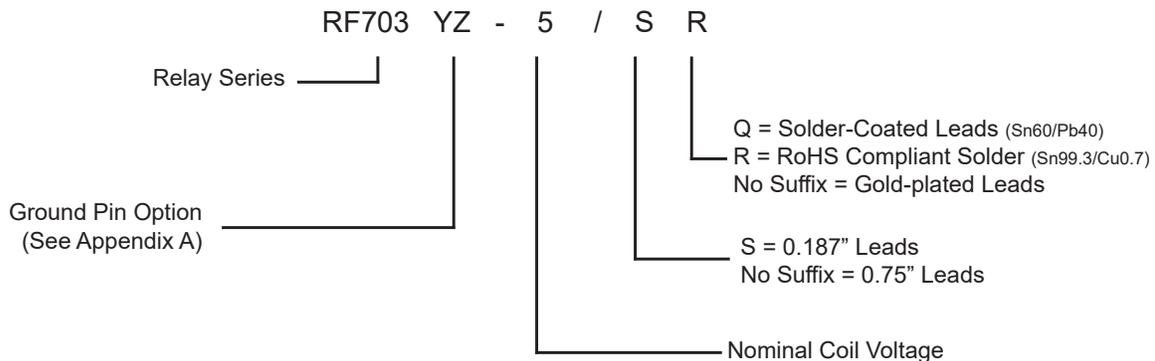
Contact Arrangement	2 Form C (DPDT)
Rated Duty	Continuous
Contact Resistance	0.15 Ω max.
Contact Load Rating	Resistive: 1Amp/28Vdc Low level: 10 to 50 μA @ 10 to 50 mV
Contact Life Ratings	5,000,000 cycles (typical) at low level
Coil Operating Power	RF700-5: 500 mW @ nominal coil RF703-5: 250 mW @ nominal coil
Operate Time	RF700: 4.0 mS max. RF703: 6.0 mS max.
Release Time	RF700: 3.0 mS max. RF703: 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 (RF700)	RF700-5	RF700-12
Coil Voltage, Nominal (Vdc)	5.0	12.0
Coil Resistance (Ohms ±20%)	50	390

BASE PART NUMBERS (RF703)	RF703-5	RF703-12
Coil Voltage, Nominal (Vdc)	5.0	12.0
Coil Resistance (Ohms ±20%)	100	850

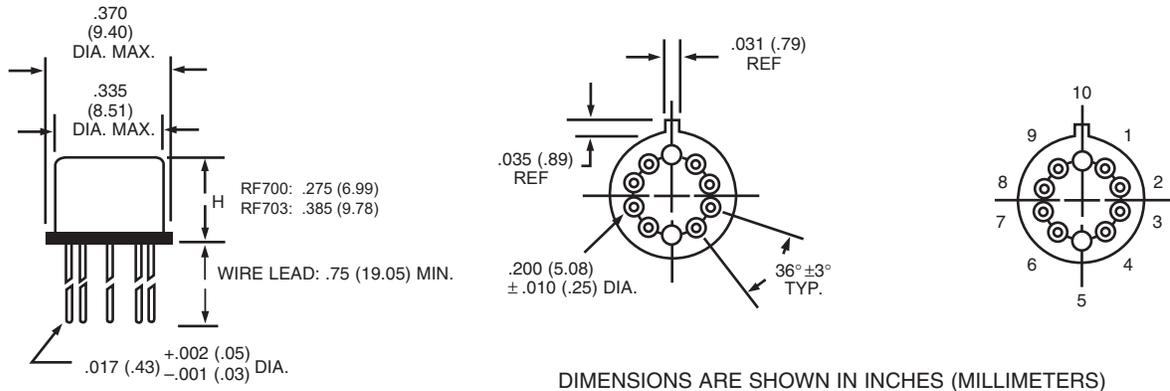
Part Numbering System (Notes 3 & 4)



NOTES

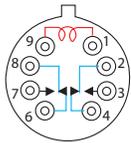
1. Relays will exhibit no contact chatter in excess of 10 μsec or transfer in excess of 1 μsec.
2. For reference only. Coil resistance not directly measurable at relay terminals due to internal series diode.
3. The slash and characters appearing after the slash are not marked on the relay.
4. Unless otherwise specified, relays will be supplied with either gold-plated leads.

OUTLINE DIMENSIONS



DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)
(Viewed from Terminals)

SCHEMATIC DIAGRAMS

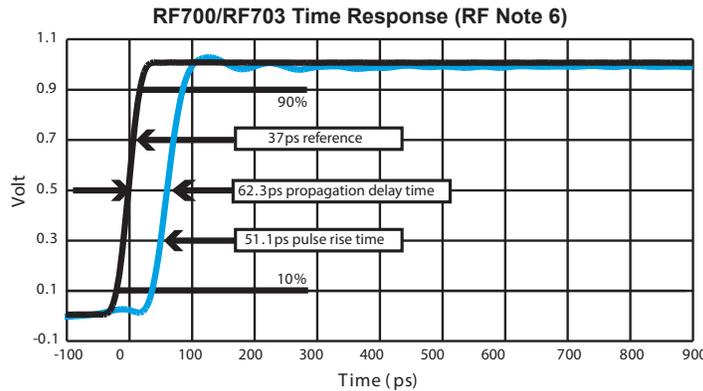
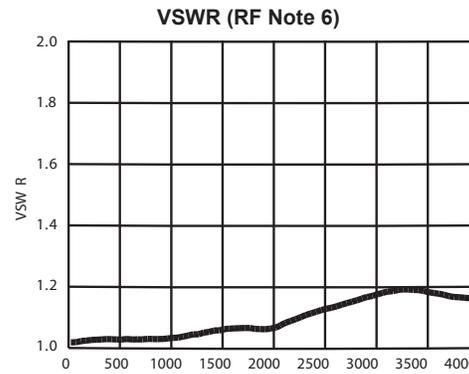
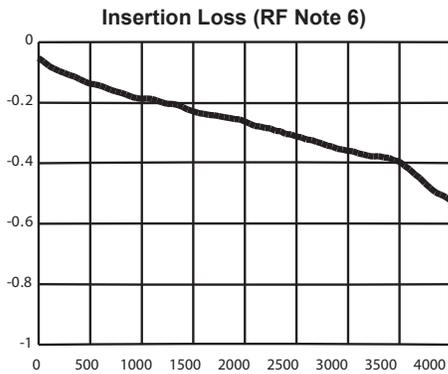
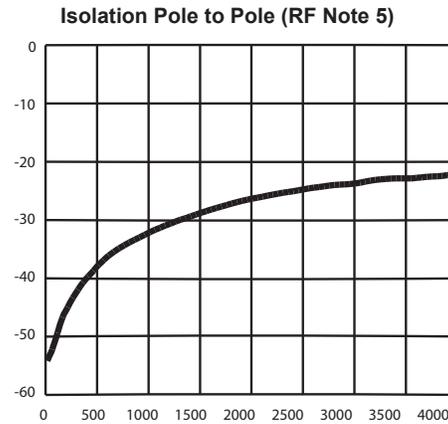
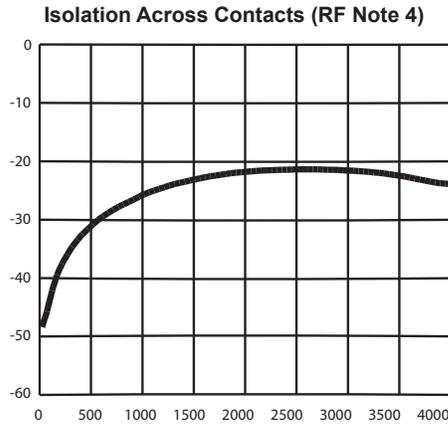


RF700/RF703

NOTES:

1. DIMENSIONS ARE IN INCHES, METRIC EQUIVALENTS SHOWN IN ().
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, AFTER THE SERIES DESIGNATOR, ADD "Y" TO THE PART NUMBER FOR POSITION 5 OR "Z" TO THE PART NUMBER FOR POSITION 10.

RF CHARACTERISTICS (See RF Notes)

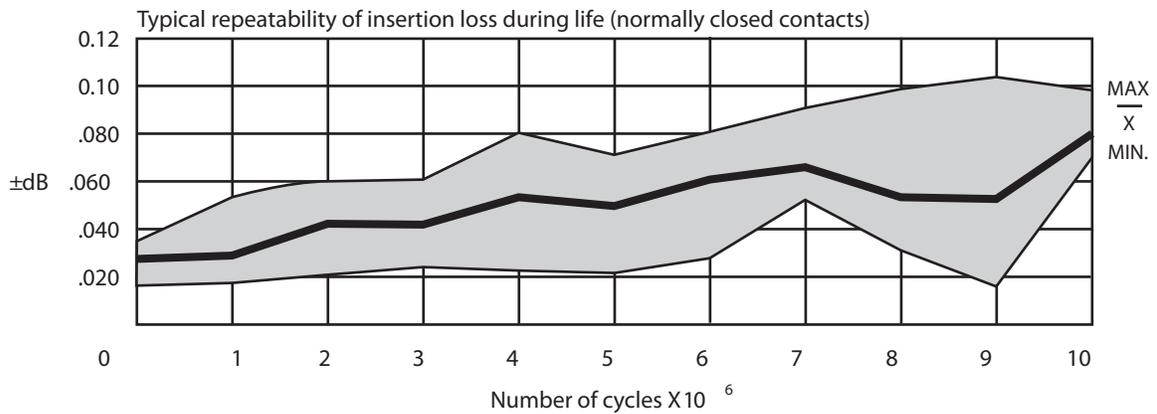
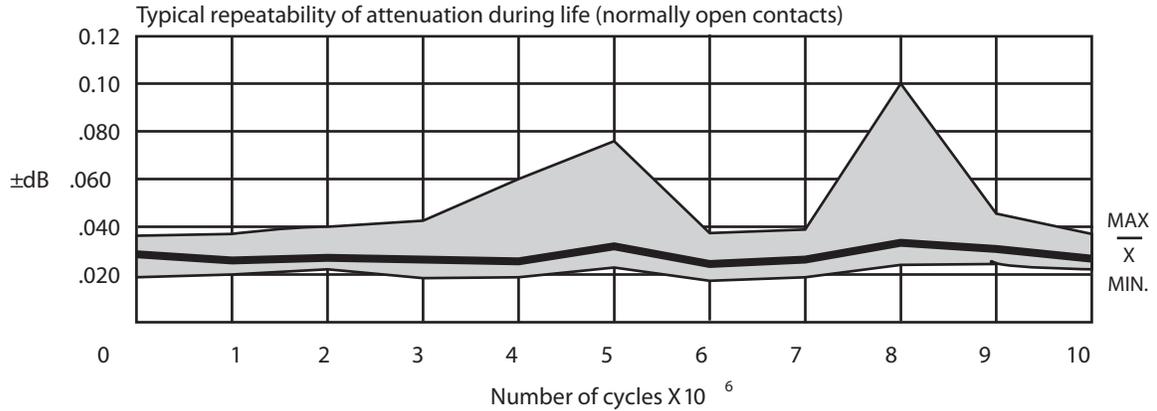


RF NOTES

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.

RF REPEATABILITY PERFORMANCE (See RF Notes 1,2 and 3)

1 Million Cycle Repeatability ±0.1 dB from DC to 3GHz



RF NOTES

1. One million cycle repeatability data is based upon 396 observations with an average repeatability ±0.033 dB and a range of ±0.093 dB.
2. Repeatability of attenuation values were obtained from tests conducted in a 20 dB attenuator network with a 0 dBm input signal.
3. Relay operates at frequencies higher than 3 GHz with reduced RF performance characteristics.
4. Curves were developed from tests performed on a 0.031" copper clad, reinforced PTFE circuit board at 20°C (ref). The unutilized contacts were terminated in 50 ohms; characteristic impedance of measuring equipment is 50 ohms. The relays were mounted flush to the circuit board ground plane without the relay header soldered to the ground plane.

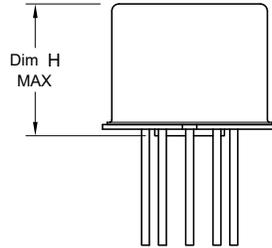
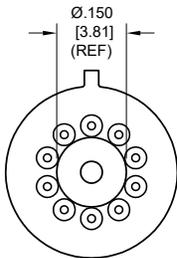
APPENDIX A : Spacer Pads

Pad designation and bottom view dimensions

Height

For use with the following:

Dim. H Max.



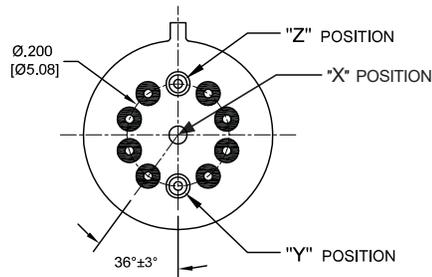
"M4" Spacer Pad for TO-5

ER412, J412	.295 (7.49)
712, RF300, RF700	.300 (7.62)
ER422, J422, 722	.305 (7.75)
ER432, J432	.400 (10.16)
732, RF303	.410 (10.41)
RF312	.350 (8.89)

Notes:

1. Spacer pad material: Polyester film.
2. To specify an "M4" spacer pad, refer to the mounting variants portion of the part numbering example in the applicable datasheet.
3. Dimensions are in inches (mm).
4. Unless otherwise specified, tolerance is $\pm .010"$ (.25 mm).
5. Add 10 m Ω to the contact resistance shown in the datasheet.
6. Add 0.01 oz. (0.25 g) to the weight of the relay assembly shown in the datasheet.

APPENDIX A : Ground Pin Positions



TO-5 Relays:

ER412, ER412T, ER422, ER432, ER432T, 712, 712TN, 400H, 400K, 400V, RF300, RF303, RF341, RF312, RF332, RF700, RF703

- 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: $\pm .010$ ($\pm .25$) 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.
7. "X" and "Z" Positions are not applicable for JAN Relays