



Series	RF522	CCR-33M	CCR-33	CCR-33
<b>Configuration</b>	DPDT	SPDT	SPDT	SPDT
<b>Switch Function</b>	Latching	Failsafe & Latching	Failsafe & Latching	Failsafe & Latching
<b>Frequency</b>	DC to 10 GHz	DC to 3 GHz	DC to 18 GHz DC to 22 GHz	DC to 18 GHz DC to 22 GHz
<b>Coil Voltage</b>	5, 12	12, 15, 28	12, 15, 28	12, 15, 28
<b>Connector</b>	SMT	SMB	SMA	SMA
<b>Temperature Range</b>	<b>Commercial Model</b> <b>Elite Model</b>			
	-55°C to +85°C —	-25°C to +65°C —	-25°C to +65°C -54°C to +85°C	-25°C to +65°C -54°C to +85°C
<b>Special Feature</b>	Miniature SMT Lead Free	75-Ohm Impedance	Compact package	50-Ohm Termination
<b>Typical Contact Life</b>	1,000,000 cycles	5,000,000 cycles	5,000,000 cycles	5,000,000 cycles
<b>Typical RF Performance</b>	<b>VSWR (max)</b>	See Figure 13	DC-1 GHz to 1.20:1 1-3 GHz to 1.30:1 See Figure 14	DC-6 GHz to 1.25:1 6-12 GHz to 1.40:1 12-18 GHz to 1.50:1 See Figure 15
	<b>Insertion Loss (max)</b>	See Figure 13	DC-1 GHz to 0.20 dB 1-3 GHz to 0.30 dB See Figure 14	DC-6 GHz to 0.20 dB 6-12 GHz to 0.40 dB 12-18 GHz to 0.50 dB See Figure 15
	<b>Isolation (min)</b>	See Figure 13	DC-1 GHz to 80 dB 1-3 GHz to 70 dB See Figure 14	DC-6 GHz to 70.0 dB 6-12 GHz to 60.0 dB 12-18 GHz to 60.0 dB See Figure 15
<b>Options</b>	<b>Self Cutoff (Latching Only)</b>	—	✓	✓
	<b>Indicator Contacts</b>	—	✓	✓
	<b>Self Cutoff and Indicator Contacts (Latching Only)</b>	—	✓	✓
	<b>TTL Interface</b>	—	✓	✓
	<b>TTL Interface with Decoder</b>	—	—	—
	<b>Moisture Seal</b>	—	✓	✓
<b>Narrow Body</b>	—	✓	✓	—
<b>Typical Mechanical Outline</b>	.709 x .709 x .349 in. 18 x 18 x 8.86 mm See Figure 1	1.50 x 1.92 x .52 in. 38.1 x 48.8 x 13.2 mm See Figure 2	1.50 x 1.82 x .52 in. 38.1 x 46.2 x 13.2 mm See Figure 3	2.06 x 2.27 x .56 in. 52.3 x 57.7 x 14.2 mm See Figure 4
<b>Shock</b>	Direction of Contact/Drive Motion: 20 g's, 4 msec, half-sine Transverse Directions: 40 g's, 6 msec, half-sine	MIL-STD-202 Method 213, Condition D (500G Non Operating)	MIL-STD-202 Method 213, Condition D (500G Non Operating)	MIL-STD-202 Method 213, Condition D (500G Non Operating)
<b>Vibration</b>	Lesser of 0.06" double-amplitude or 10 g's, 10-2000 Hz	MIL-STD-202 Method 214, Condition D (10G RMS Non Operating)	MIL-STD-202 Method 214, Condition D (10G RMS Non Operating)	MIL-STD-202 Method 214, Condition D (10G RMS Non Operating)

## Model Number

This guide shows the model numbers for Teledyne Relays switches. For technical support or custom switches for specific applications, call (800) 284-7007.

**XXX-XX**   **X**   **X**   **X**   **X - X**   **X**   **X - X**  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨  
 Multi-throw  
 Only

Example: CCR-33S10-T (Commercial SPDT, S=SMA, 28 Vdc, Failsafe, TTL)

①	<b>Switch Model Series Type and Description</b>						
	See tables on pages 1–5 for series name.						
②	<b>Connector Type</b>						
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><b>M</b> Mini SMB</td> <td style="width: 50%; border: none;"><b>S</b> SMA Female</td> </tr> <tr> <td style="border: none;"><b>N</b> N Female</td> <td style="border: none;"><b>T</b> TCN Female</td> </tr> </table>	<b>M</b> Mini SMB	<b>S</b> SMA Female	<b>N</b> N Female	<b>T</b> TCN Female		
<b>M</b> Mini SMB	<b>S</b> SMA Female						
<b>N</b> N Female	<b>T</b> TCN Female						
③	<b>Actuator Voltage</b>						
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><b>1</b> 28 Vdc – Failsafe (Normally Open if single-pole multi-throw)</td> <td style="width: 50%; border: none;"><b>6</b> 28 Vdc – Latching*</td> </tr> <tr> <td style="border: none;"><b>2</b> 15 Vdc – Failsafe (Normally Open if single-pole multi-throw)</td> <td style="border: none;"><b>7</b> 15 Vdc – Latching*</td> </tr> <tr> <td style="border: none;"><b>3</b> 12 Vdc – Failsafe (Normally Open if single-pole multi-throw)</td> <td style="border: none;"><b>8</b> 12 Vdc – Latching*</td> </tr> </table>	<b>1</b> 28 Vdc – Failsafe (Normally Open if single-pole multi-throw)	<b>6</b> 28 Vdc – Latching*	<b>2</b> 15 Vdc – Failsafe (Normally Open if single-pole multi-throw)	<b>7</b> 15 Vdc – Latching*	<b>3</b> 12 Vdc – Failsafe (Normally Open if single-pole multi-throw)	<b>8</b> 12 Vdc – Latching*
<b>1</b> 28 Vdc – Failsafe (Normally Open if single-pole multi-throw)	<b>6</b> 28 Vdc – Latching*						
<b>2</b> 15 Vdc – Failsafe (Normally Open if single-pole multi-throw)	<b>7</b> 15 Vdc – Latching*						
<b>3</b> 12 Vdc – Failsafe (Normally Open if single-pole multi-throw)	<b>8</b> 12 Vdc – Latching*						
④	<b>Number Positions for Multi-throw</b>						
	<b>3–8</b> Indicates number of positions on multi-throw switches (skip this number if not single-pole multi-throw)						
⑤	<b>Actuator Type</b>						
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><b>O</b> No cutoff or indicator contacts</td> <td style="width: 50%; border: none;"><b>D</b> Self cutoff only</td> </tr> <tr> <td style="border: none;"><b>C</b> Indicator contacts only</td> <td style="border: none;"><b>E</b> Self cutoff and indicator contacts</td> </tr> </table>	<b>O</b> No cutoff or indicator contacts	<b>D</b> Self cutoff only	<b>C</b> Indicator contacts only	<b>E</b> Self cutoff and indicator contacts		
<b>O</b> No cutoff or indicator contacts	<b>D</b> Self cutoff only						
<b>C</b> Indicator contacts only	<b>E</b> Self cutoff and indicator contacts						
⑥	<b>TTL Driver*</b>						
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><b>T</b> TTL driver with diodes</td> <td style="width: 50%; border: none;"><b>TD</b> Decoders and TTL driver with diodes</td> </tr> </table>	<b>T</b> TTL driver with diodes	<b>TD</b> Decoders and TTL driver with diodes				
<b>T</b> TTL driver with diodes	<b>TD</b> Decoders and TTL driver with diodes						
⑦	<b>Polarity</b>						
	<b>R</b> Positive + Common						
⑧	<b>Narrow Body</b>						
	<b>N</b> SP2T switch only						
⑨	<b>Custom Part Number</b>						
	Assigned by Engineering						

\* Polarity sensitive – contact factory

Note: Normally Open terminated switches are polarity sensitive

**RF522**

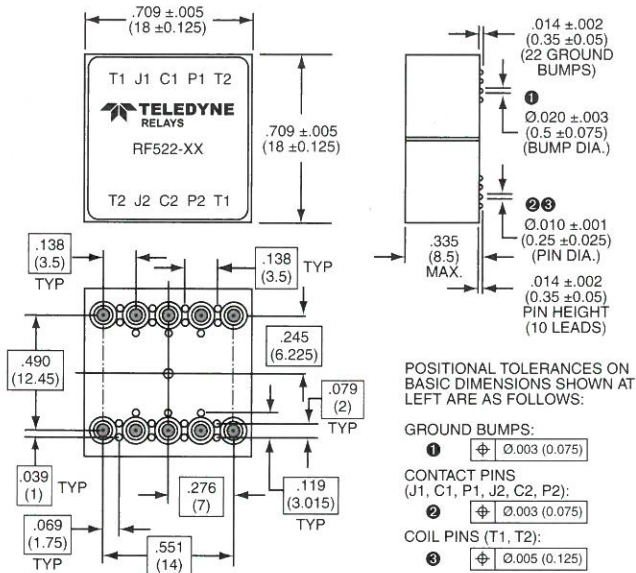


Figure 1

**CCR-33, CCR-53**

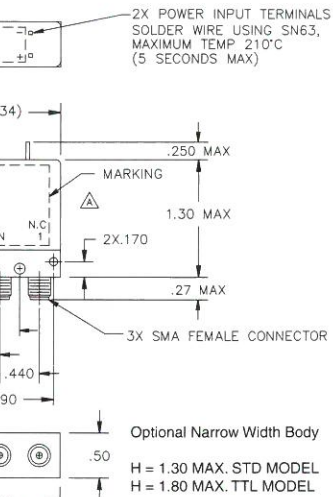
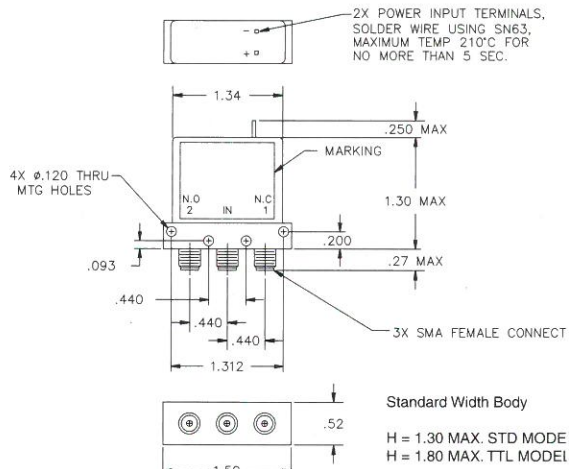


Figure 3

**CCR-33M**

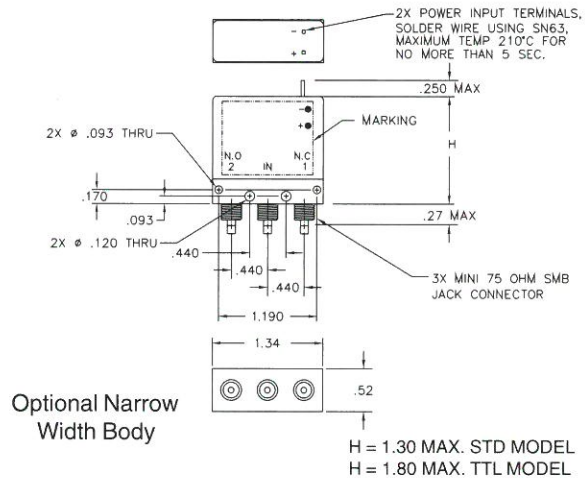
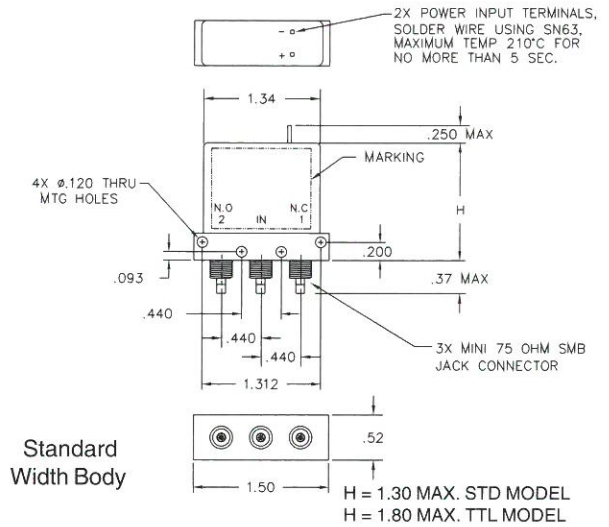


Figure 2

**CCRT-33, CCRT-53**

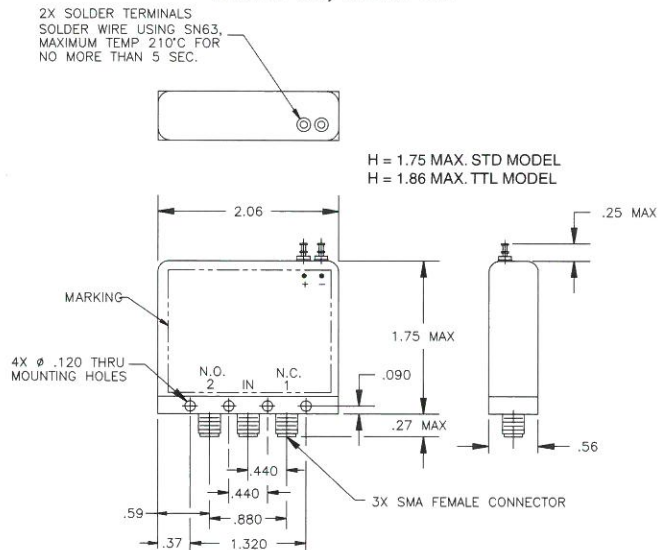
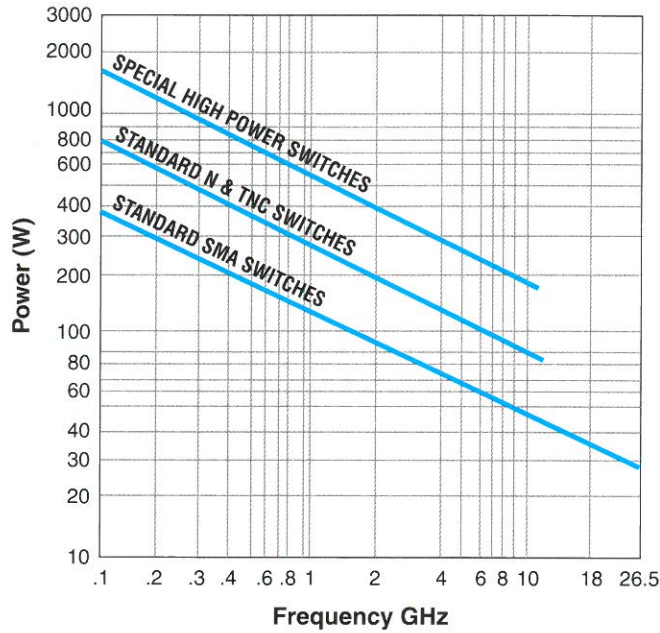


Figure 4

Coaxial Switches

Power Handling vs. Frequency



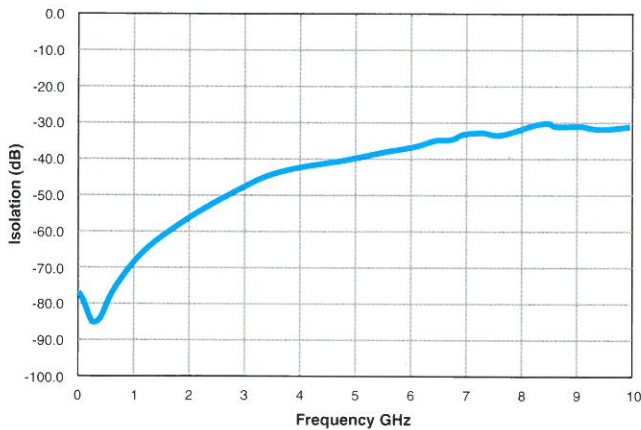
Estimates based on the following reference conditions:

- Ambient temperature of 40°C or less
- Sea level operation
- Load VSWR of 1.20:1 maximum
- No high-power (hot) switching

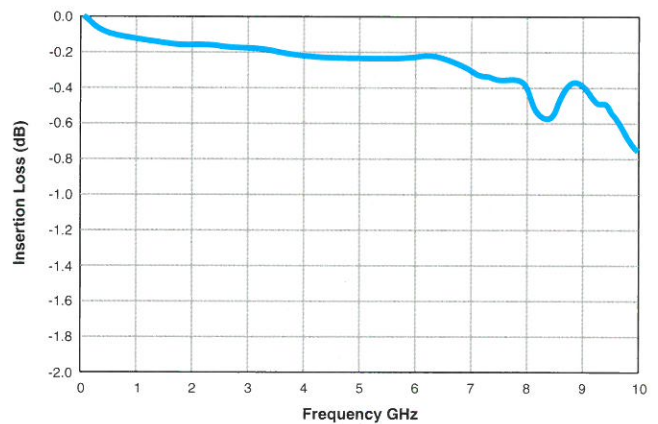
Please contact Teledyne Relays for derating factors when applications do not meet the foregoing reference conditions.

Figure 12

RF522 Across Contact Isolation



RF522 Insertion Loss



RF522 Power Capability Carry Only

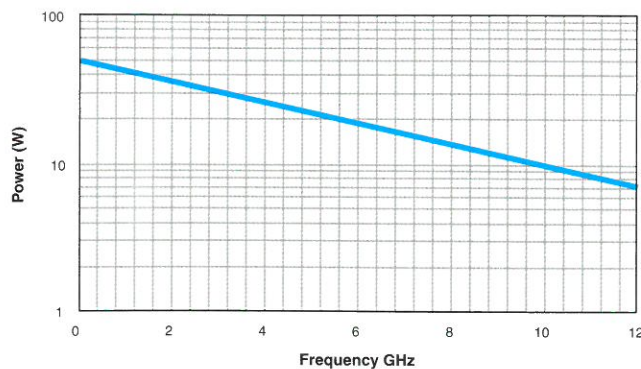


Figure 13

CCR-33M

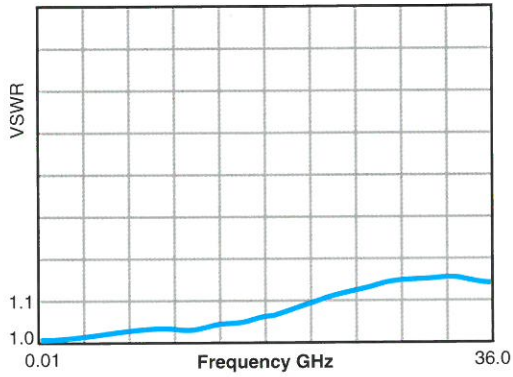
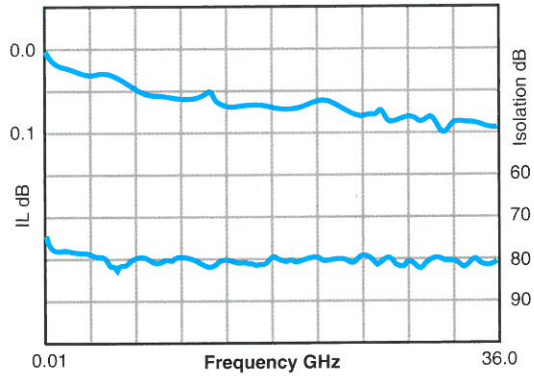


Figure 14

CCR-33, CCRT-33, CCRS-33

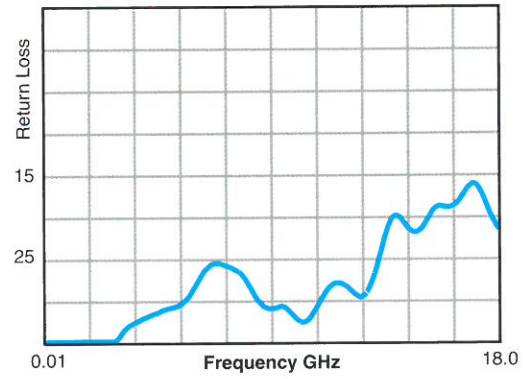
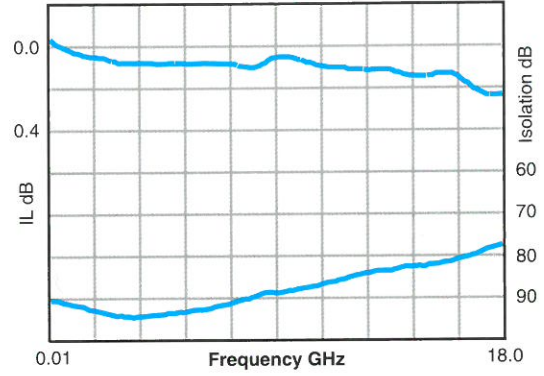


Figure 15

CCR-53, CCRT-53, CCRS-53

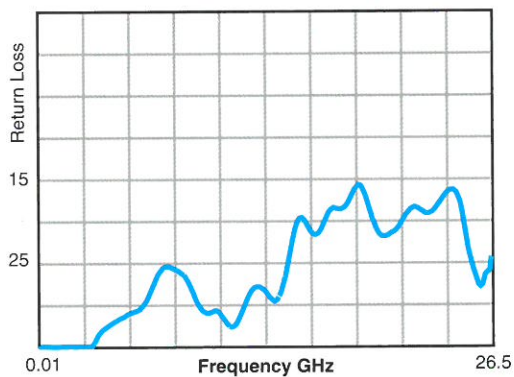
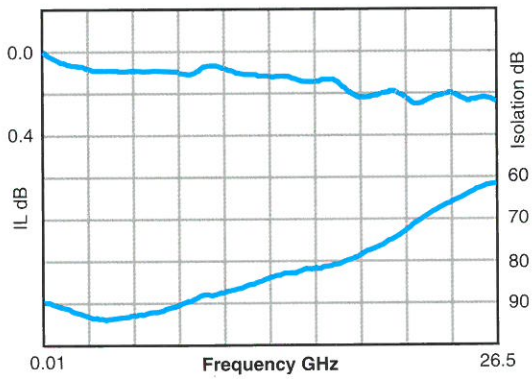


Figure 16

CCS-32, CCS-18

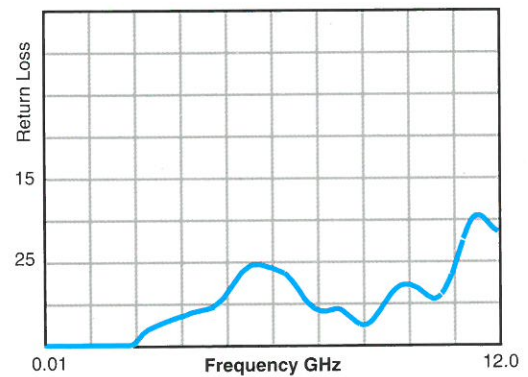
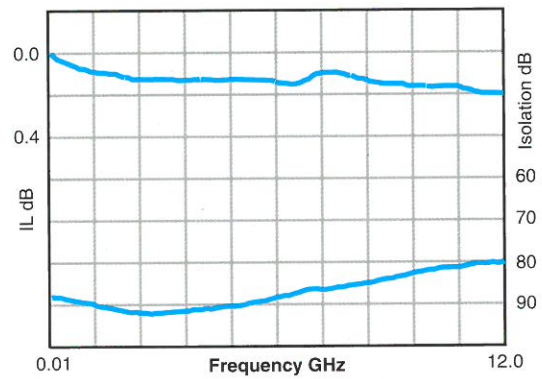


Figure 17