

PART NUMBER	DESCRIPTION
CCT-48K	Commercial Normally Open Multi-throw, DC-40 GHz
CT-48K	Elite Normally Open Multi-throw, DC-40GHz

The CCT-48K/CT-48K is an Internally Terminated broadband, multi-throw, electromechanical coaxial switch designed to switch a microwave signal from a common input to any of 3, 4, 5, or 6 outputs. The characteristic impedance is 50 Ohms. Internal terminations provide an impedance match for the unselected ports. The switches are small using the popular connector spacing on a 1.062" dia. circle. Each position has an individual actuator mechanism allowing random position selection. This also minimizes switching time.

The CCT-48K/CT-48K comes with a normally open actuator. For the normally open actuator, all ports are terminated in 50 Ohms, except the common input port which is open when the switch is de-energized.



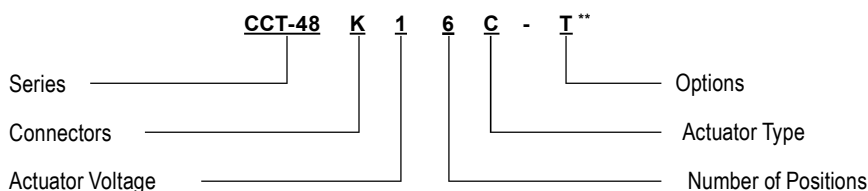
ENVIRONMENTAL AND PHYSICAL CHARACTERISTICS	
Operating Temperature	
Commercial Model, CCT-48K	-25°C to 65°C
Elite Model, CT-48K***	-55°C to 85°C
Vibration (MIL-STD-202 Method 214, Condition D, non-operating)	10 g's RMS
Shock (MIL-STD-202 Method 213, Condition D, non-operating)	500 g's
Standard Actuator Life	5,000,000 cycles
Actuator Life w/ Additional Features	1,000,000 cycles
Connector Type	2.92mm (K)
Humidity (Moisture Seal)	Available
Weight	6 oz. (170.1g) (max.)

ELECTRICAL CHARACTERISTICS	
Form Factor	Multi-Throw,, break before make
Frequency Range	
CCT-48K	DC-40 GHz
CT-48K	DC-40 GHz
Characteristic Impedance	50 Ohms
Terminations	50Ω, 2 Watts CW max.
Operate Time	15 ms (max.)
Release Time	15 ms (max.)
Actuation Voltage Available	12 15 24 28 V
Actuation Current, max. @ ambient	420 350 250 200 mA

PERFORMANCE CHARACTERISTICS						
Frequency	DC-6 GHz	6-12 GHz	12-18 GHz	18-26.5 GHz	26.5-32 GHz	32-40 GHz
Insertion Loss, dB, max.	0.20	0.30	0.60	0.80	.80	1.40
Isolation, dB, min.	80	75	70	70	60	60
VSWR , max.	1.25:1	1.30:1	1.60:1	1.70:1	1.80:1	1.95:1

For maximum limits, please see charts on pages 7-8

**PART NUMBERING SYSTEM**



CONNECTOR	ACTUATOR VOLTAGE	NUMBER OF POSITIONS	ACTUATOR TYPE	OPTIONS
K: 2.92mm FEMALE	1: 28VDC NORMALLY OPEN	3: SP3T	0: NO INDICATOR CONTACTS	T: TTL DRIVERS WITH DIODES
	2: 15VDC NORMALLY OPEN	4: SP4T	C: INDICATOR CONTACTS***	D: COIL TRANSIENT SUPPRESSION DIODES
	3: 12VDC NORMALLY OPEN	5: SP5T		R: POSITIVE + COMMON
	4: 24VDC NORMALLY OPEN	6: SP6T		TD: DECODERS AND TTL DRIVERS WITH DIODES

\*\*SEE PARTS LIST ON PAGE 12-14  
\*\*\*Indicator Contacts Operating Temperature -50°C to 85°C (Elite Model Only)

M: MOISTURE SEAL  
S: D-SUB CONNECTOR\*

For additional options, please contact factory.

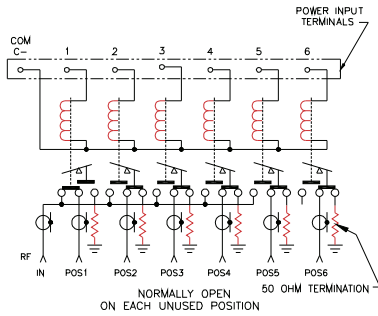
\* D-Sub Connector may be 9 or 15 pin depending on number of throws. (See Connector Pinout page)

# Series CCT-48K/CT-48K

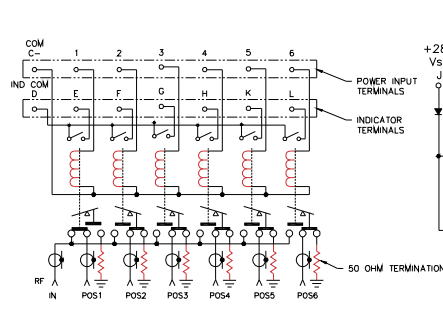
Internal 50Ω Termination DC-40 GHz  
Normally Open Multi-Throw Coaxial Switch



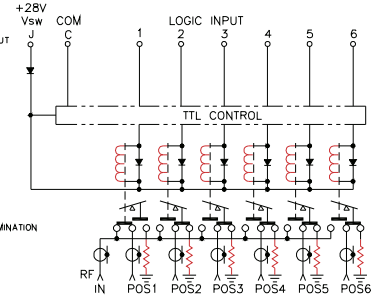
## SCHEMATICS AND MECHANICAL OUTLINE



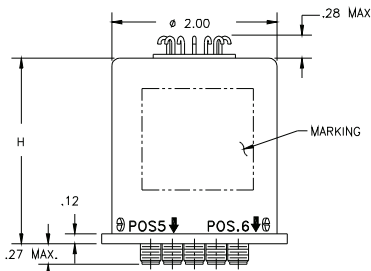
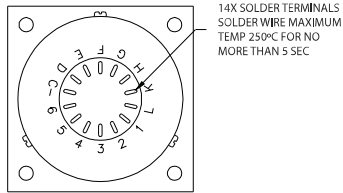
**Analog**



**Indicators**

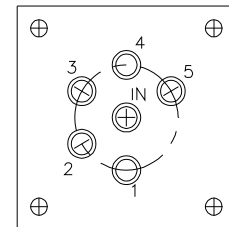
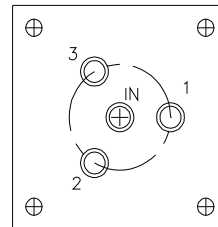


**TTL**



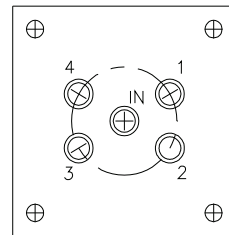
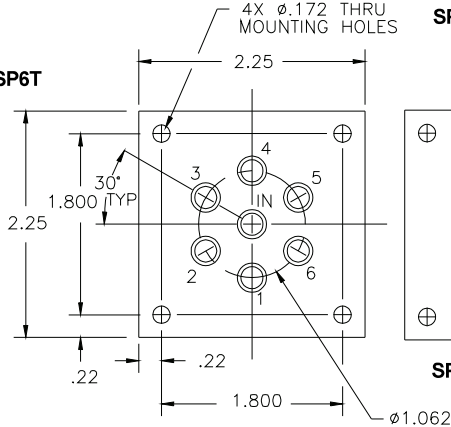
H = 1.85 STD, Indicator & D-Sub Models  
H = 2.50 All OTHER Models

**SP3T**

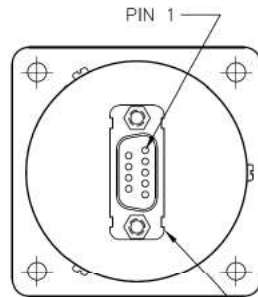
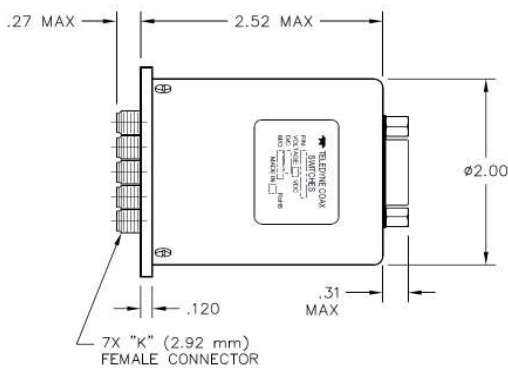


**SP5T**

**SP6T**



**SP4T**

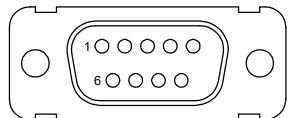


9-PIN D-SUB MINI CONNECTOR

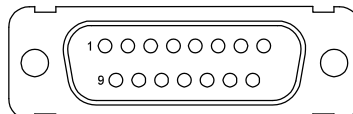
**“-SOPTION” 9-PIN, 15-PIN, 26-PIN D-SUB CONNECTOR (EXAMPLE: CCT-48Ks660-S)**

CONNECTOR PINOUT FOR NORMALLY OPEN SP3T MULTI-THROW SWITCHES						
EXAMPLE	CT-48K130-S	CT-48K13C-S	CT-48K130-TS	CT-48K13C-TS	CT-48K130-TDS	CT-48K13C-TDS
PIN NO	9-PINS	9-PINS	9-PINS	9-PINS	9-PINS	9-PINS
INDICATOR		YES		YES		YES
TTL			YES	YES		
DECODERS & TTL					YES	YES
1	PORT 1	PORT 1	TTL 1	TTL 1	LOGIC 1	LOGIC 1
2	PORT 2	PORT 3	TTL 2	TTL 2	LOGIC 2	LOGIC 2
3	PORT 3	PORT 3	TTL 3	TTL 3		
4		E INDICATOR		E INDICATOR		E INDICATOR
5		F INDICATOR		F INDICATOR		F INDICATOR
6		G INDICATOR		G INDICATOR		G INDICATOR
7	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
8			Vsw	Vsw	Vsw	Vsw
9		D INDICATOR (COM)		D INDICATOR (COM)		D INDICATOR (COM)

CONNECTOR PINOUT FOR NORMALLY OPEN SP4T MULTI-THROW SWITCHES						
EXAMPLE	CT-48K140-S	CT-48K14C-S	CT-48K140-TS	CT-48K14C-TS	CT-48K140-TDS	CT-48K14C-TDS
PIN NO	9-PINS	15-PINS	9-PINS	15-PINS	9-PINS	15-PINS
INDICATOR		YES		YES		YES
TTL			YES	YES		
DECODERS & TTL					YES	YES
1	PORT 1	PORT 1	TTL 1	TTL 1	LOGIC 1	LOGIC 1
2	PORT 2	PORT 3	TTL 2	TTL 2	LOGIC 2	LOGIC 2
3	PORT 3	PORT 3	TTL 3	TTL 3	LOGIC 3	LOGIC 3
4	PORT 4	PORT 4	TTL 4	TTL 4		
5						
6						
7	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
8			Vsw	Vsw	Vsw	Vsw
9		D INDICATOR (COM)		D INDICATOR (COM)		D INDICATOR (COM)
10		E INDICATOR		E INDICATOR		E INDICATOR
11		F INDICATOR		F INDICATOR		F INDICATOR
12		G INDICATOR		G INDICATOR		G INDICATOR
13		H INDICATOR		H INDICATOR		H INDICATOR
14						
15						



**9-PIN D-SUB CONNECTOR**



**15-PIN D-SUB CONNECTOR**

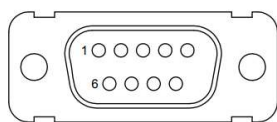
“-S option” 9-pin, 15-pin connector  
(example: [CCT-48KS660-S](#))

**Series CCT-48K/CT-48K**  
 Internal 50Ω Termination DC-40 GHz  
 Normally Open Multi-Throw Coaxial Switch

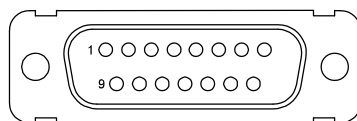


CONNECTOR PINOUT FOR NORMALLY OPEN SP5T MULTI-THROW SWITCHES						
EXAMPLE	CT-48K150-S	CT-48K15C-S	CT-48K150-TS	CT-48K15C-TS	CT-48K150-TDS	CT-48K15C-TDS
PIN NO	9-PINS	15-PINS	9-PINS	15-PINS	9-PINS	15-PINS
INDICATOR		YES		YES		YES
TTL			YES	YES		
DECODERS & TTL					YES	YES
1	PORT 1	PORT 1	TTL 1	TTL 1	LOGIC 1	LOGIC 1
2	PORT 2	PORT 3	TTL 2	TTL 2	LOGIC 2	LOGIC 2
3	PORT 3	PORT 3	TTL 3	TTL 3	LOGIC 3	LOGIC 3
4	PORT 4	PORT 4	TTL 4	TTL 4		
5	PORT 5	PORT 5	TTL 5	TTL 5		
6						
7	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
8			Vsw	Vsw	Vsw	Vsw
9		D INDICATOR (COM)		D INDICATOR (COM)		D INDICATOR (COM)
10		E INDICATOR		E INDICATOR		E INDICATOR
11		F INDICATOR		F INDICATOR		F INDICATOR
12		G INDICATOR		G INDICATOR		G INDICATOR
13		H INDICATOR		H INDICATOR		H INDICATOR
14		K INDICATOR		K INDICATOR		K INDICATOR
15						

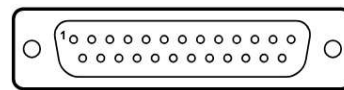
CONNECTOR PINOUT FOR NORMALLY OPEN SP6T MULTI-THROW SWITCHES						
EXAMPLE	CT-48K160-S	CT-48K16C-S	CT-48K160-TS	CT-48K16C-TS	CT-48K160-TDS	CT-48K16C-TDS
PIN NO	9-PINS	15-PINS	9-PINS	15-PINS	9-PINS	15-PINS
INDICATOR		YES		YES		YES
TTL			YES	YES		
DECODERS & TTL					YES	YES
1	PORT 1	PORT 1	TTL 1	TTL 1	LOGIC 1	LOGIC 1
2	PORT 2	PORT 3	TTL 2	TTL 2	LOGIC 2	LOGIC 2
3	PORT 3	PORT 3	TTL 3	TTL 3	LOGIC 3	LOGIC 3
4	PORT 4	PORT 4	TTL 4	TTL 4		
5	PORT 5	PORT 5	TTL 5	TTL 5		
6	PORT 6	PORT 6	TTL 6	TTL 6		
7	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
8			Vsw	Vsw	Vsw	Vsw
9		D INDICATOR (COM)		D INDICATOR (COM)		D INDICATOR (COM)
10		E INDICATOR		E INDICATOR		E INDICATOR
11		F INDICATOR		F INDICATOR		F INDICATOR
12		G INDICATOR		G INDICATOR		G INDICATOR
13		H INDICATOR		H INDICATOR		H INDICATOR
14		K INDICATOR		K INDICATOR		K INDICATOR
15		L INDICATOR		L INDICATOR		L INDICATOR



**9-PIN D-SUB CONNECTOR**



**15-PIN D-SUB CONNECTOR**



**25-PIN D-SUB CONNECTOR**

“-S option” 9-pin, 15-pin, 25-pin connector  
 (example: [CCT-48KS660-S](#))

TRUTH TABLE Normally Open  
CCT-48KX3C-T

Logic Input			RF Path			Indicator Switches		
1	2	3	J1	J2	J3	E	F	G
1	0	0	On	Off	Off	C	0	0
0	1	0	Off	On	Off	0	C	0
0	0	1	Off	Off	On	0	0	C

TRUTH TABLE Normally Open  
CCT-48KX3C-TD

Logic Input		RF Path			Indicator Switches		
1	2	J1	J2	J3	E	F	G
0	0	On	Off	Off	C	0	0
1	0	Off	On	Off	0	C	0
0	1	Off	Off	On	0	0	C
1	1	Off	Off	Off	0	0	0

TRUTH TABLE Normally Open  
CCT-48KX4C-T

Logic Input				RF Path				Indicator Switches			
1	2	3	4	J1	J2	J3	J4	E	F	G	H
1	0	0	0	On	Off	Off	Off	C	0	0	0
0	1	0	0	Off	On	Off	Off	0	C	0	0
0	0	1	0	Off	Off	On	Off	0	0	C	0
0	0	0	1	Off	Off	Off	On	0	0	0	C

TRUTH TABLE Normally Open  
CCT-48KX4C-TD

Logic Input			RF Path				Indicator Switches			
1	2	3	J1	J2	J3	J4	E	F	G	H
0	0	0	On	Off	Off	Off	C	0	0	0
1	0	0	Off	On	Off	Off	0	C	0	0
0	1	0	Off	Off	On	Off	0	0	C	0
1	1	0	Off	Off	Off	On	0	0	0	C
1	1	1	Off	Off	Off	Off	0	0	0	0

**Series CCT-48K/CT-48K**  
 Internal 50Ω Termination DC-40 GHz  
 Normally Open Multi-Throw Coaxial Switch



**TRUTH TABLE Normally Open  
 CCT-48KX5C-T**

Logic Input					RF Path					Indicator Switches				
1	2	3	4	5	J1	J2	J3	J4	J5	E	F	G	H	K
1	0	0	0	0	On	Off	Off	Off	Off	C	0	0	0	0
0	1	0	0	0	Off	On	Off	Off	Off	0	C	0	0	0
0	0	1	0	0	Off	Off	On	Off	Off	0	0	C	0	0
0	0	0	1	0	Off	Off	Off	On	Off	0	0	0	C	0
0	0	0	0	1	Off	Off	Off	Off	On	0	0	0	0	C

**TRUTH TABLE Normally Open  
 CCT-48KX5C-TD**

Logic Input			RF Path					Indicator Switches				
1	2	3	J1	J2	J3	J4	J5	E	F	G	H	K
0	0	0	On	Off	Off	Off	Off	C	0	0	0	0
1	0	0	Off	On	Off	Off	Off	0	C	0	0	0
0	1	0	Off	Off	On	Off	Off	0	0	C	0	0
1	1	0	Off	Off	Off	On	Off	0	0	0	C	0
0	0	1	Off	Off	Off	Off	On	0	0	0	0	C
1	1	1	Off	Off	Off	Off	Off	0	0	0	0	0

**TRUTH TABLE Normally Open  
 CCT-48KX6C-T**

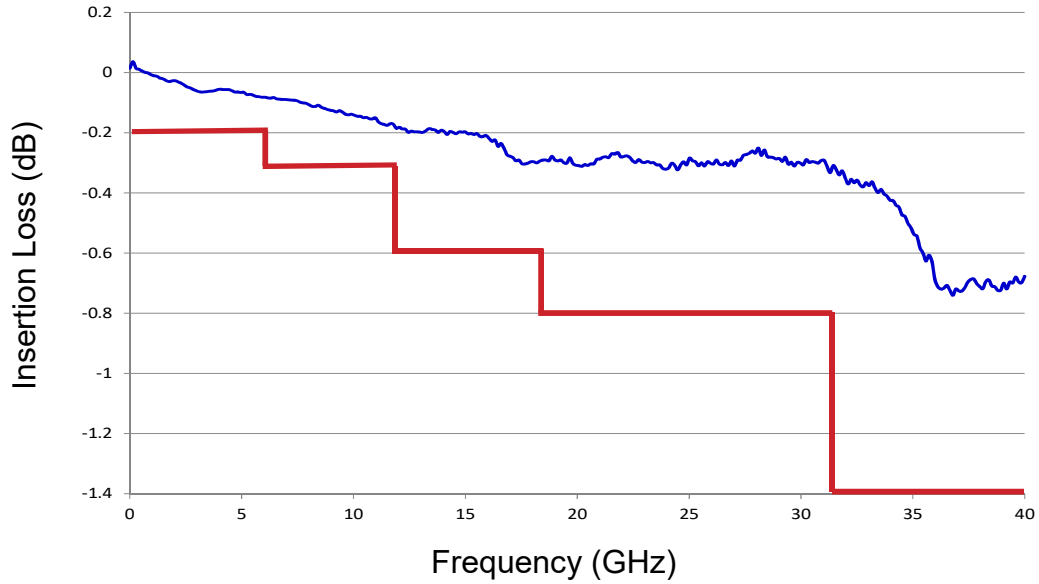
Logic Input						RF Path						Indicator Switches					
1	2	3	4	5	6	J1	J2	J3	J4	J5	J6	E	F	G	H	K	L
1	0	0	0	0	0	On	Off	Off	Off	Off	Off	C	0	0	0	0	0
0	1	0	0	0	0	Off	On	Off	Off	Off	Off	0	C	0	0	0	0
0	0	1	0	0	0	Off	Off	On	Off	Off	Off	0	0	C	0	0	0
0	0	0	1	0	0	Off	Off	Off	On	Off	Off	0	0	0	C	0	0
0	0	0	0	1	0	Off	Off	Off	Off	On	Off	0	0	0	0	C	0
0	0	0	0	0	1	Off	Off	Off	Off	Off	On	0	0	0	0	0	C

**TRUTH TABLE Normally Open  
 CCT-48KX6C-TD**

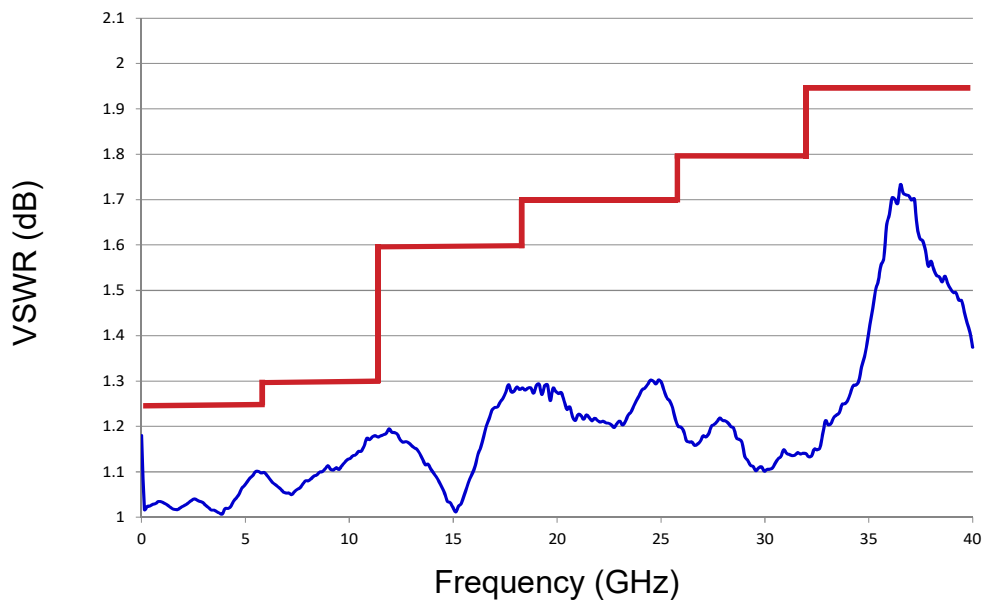
Logic Input			RF Path						Indicator Switches					
1	2	3	J1	J2	J3	J4	J5	J6	E	F	G	H	K	L
0	0	0	On	Off	Off	Off	Off	Off	C	0	0	0	0	0
1	0	0	Off	On	Off	Off	Off	Off	0	C	0	0	0	0
0	1	0	Off	Off	On	Off	Off	Off	0	0	C	0	0	0
1	1	0	Off	Off	Off	On	Off	Off	0	0	0	C	0	0
0	0	1	Off	Off	Off	Off	On	Off	0	0	0	0	C	0
1	0	1	Off	Off	Off	Off	Off	On	0	0	0	0	0	C
1	1	1	Off	Off	Off	Off	Off	Off	0	0	0	0	0	0

**TYPICAL RF PERFORMANCE CURVES**

**INSERTION LOSS**

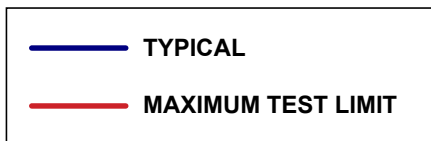
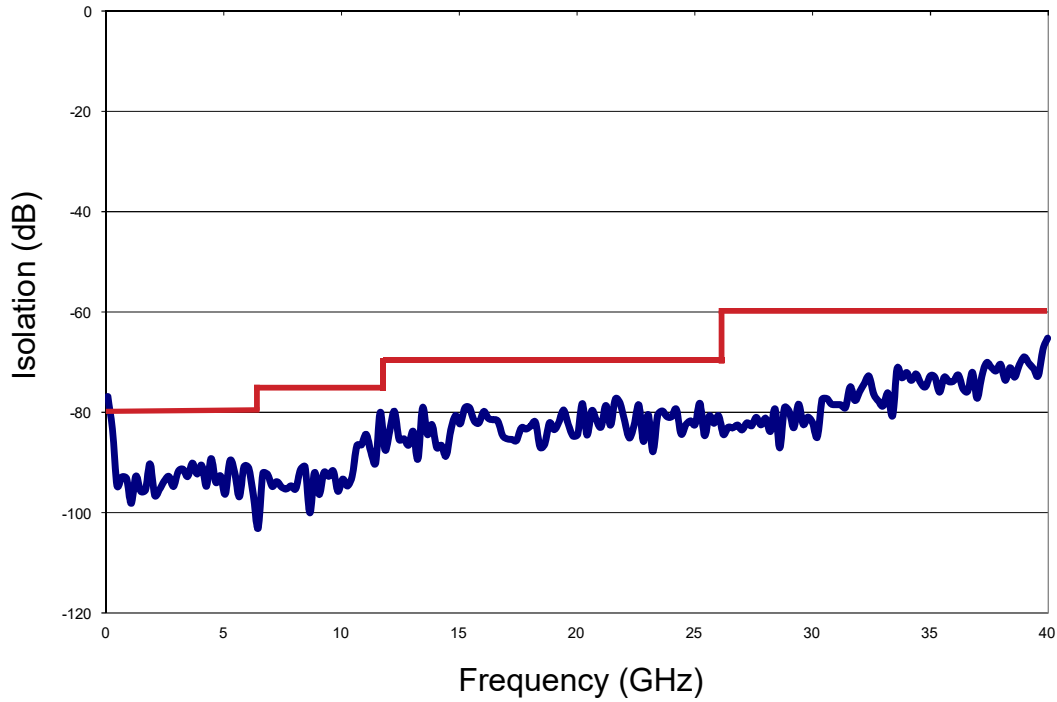


**VSWR**



**TYPICAL RF PERFORMANCE CURVES**

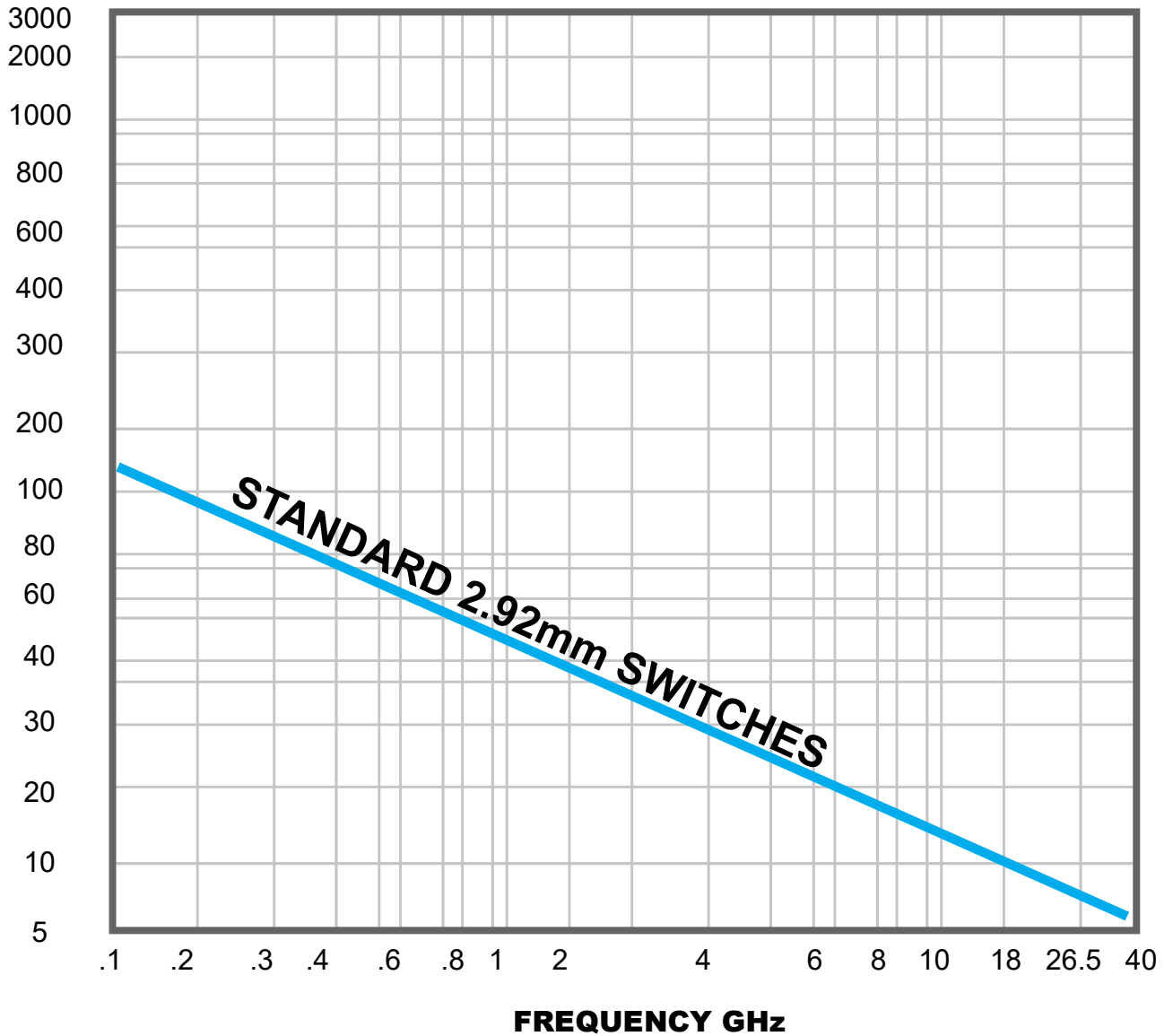
### ISOLATION





TYPICAL POWER PERFORMANCE CURVE

# 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 Coax Switches for derating factors when applications do not meet the foregoing reference conditions.