

Cryogenic Coax Directional Coupler

1-4GHz/30dB Coupling/SMA

Model: TC-1040-30S-Cryo

TC-1040-30S-Cryo is a cryogenic coax directional coupler is a microwave device used to sample high-frequency signals in cryogenic environments. It is a four-port passive device that can couple a portion of the power from the main transmission line to the auxiliary line in a directional manner.

Features:

- Output Frequency: 1-4GHz
- Max Power: 30W
- Capable of operation at 10 mK
- Stackable mechanical design
- Machined OFHC block
- 50 Ohm Matched Input / Output

Applications:

- Cryogenic systems
- Quantum computer
- Dilution refrigerator

电气特性 Electrical Characteristics:

参数 Parameter	Min	Typ	Max	单位 Units
工作频率 Frequency Range	1		4	GHz
驻波 VSWR			1.25	:1
插入损耗 Insertion Loss(Excl Coupling)		0.2	0.3	dB
耦合损耗 Nominal coupling loss		0.004		dB
耦合度 Coupling		30±1		dB
方向性 Directivity	20	22		dB
耐功率 Power Handling			30	W
阻抗 Impedance		50		Ohms

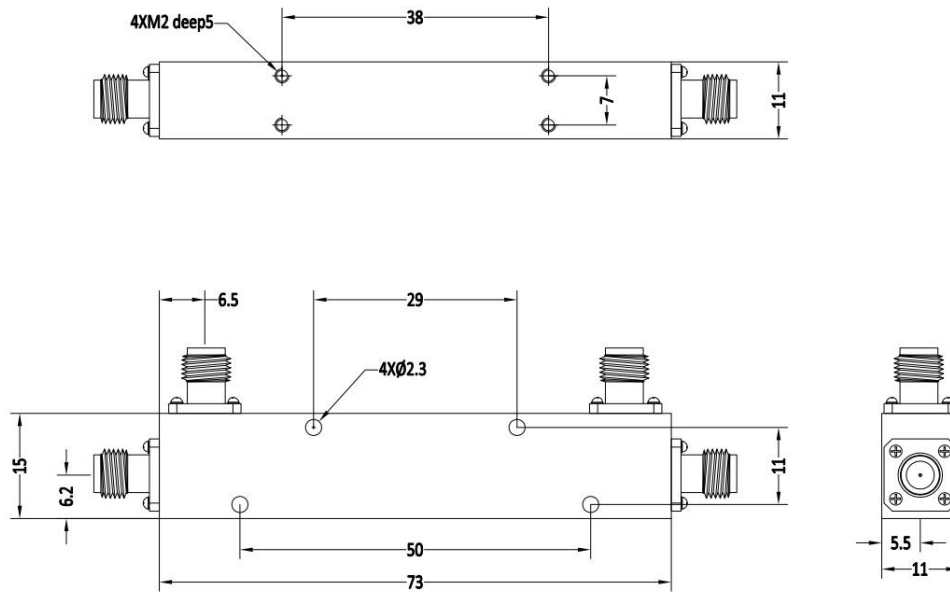
Note: The isolation port is equipped with the Talent microwave standard low-temperature load:TT2-18-SM-Cryo.

机械特性 Mechanical Specifications:

参数 Parameter	指标 Value	单位 Units
RF接口 RF Connector	SMA Female	
外壳材质 Csa Material	OFHC Copper	
表面 Finish	Gold plated	
尺寸 Size	73*15*11	mm

外形图 Outline Drawing:

Unit:mm



ESD Protection: Strictly adhere to ESD precautions to prevent electrostatic damage.

温度环境 Environmental Conditions:

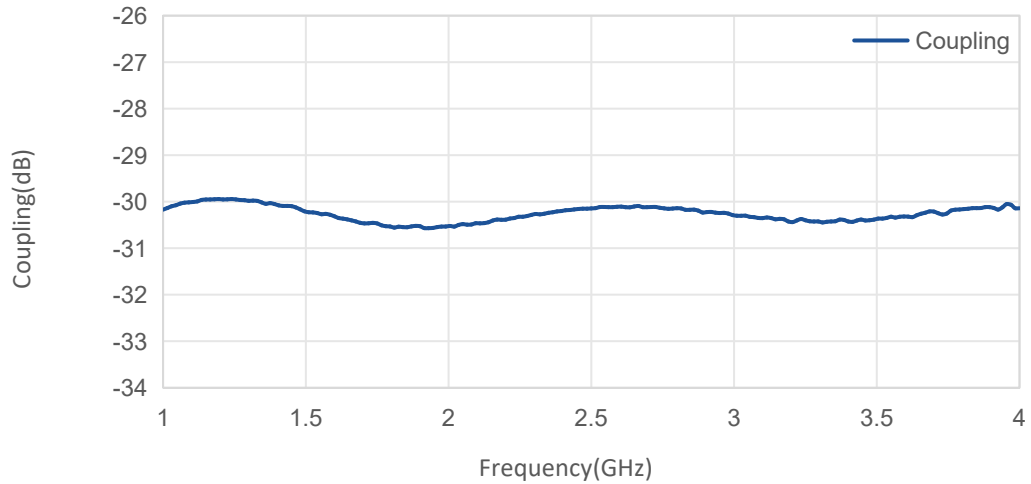
参数 Parameter	Min	Typ	Max	单位 Units
操作温度 Operating Temperature	10mK		+85°C	
存储温度 Non-operating Temperature	-45		+85	°C
相对湿度 Relative humidity	100% RH at 35c, 95%RH at 40°C			%
海拔 Altitude	50,000			feet
震动 Shock / Vibration(MIL-STD-810F)	25g rms (15 degree 2KHz) endurance, 1 hour per axis			
冲击 Shock(non operating)	20G for 11msc half sin wave,3 axis both directions			

订货信息 Ordering Information:

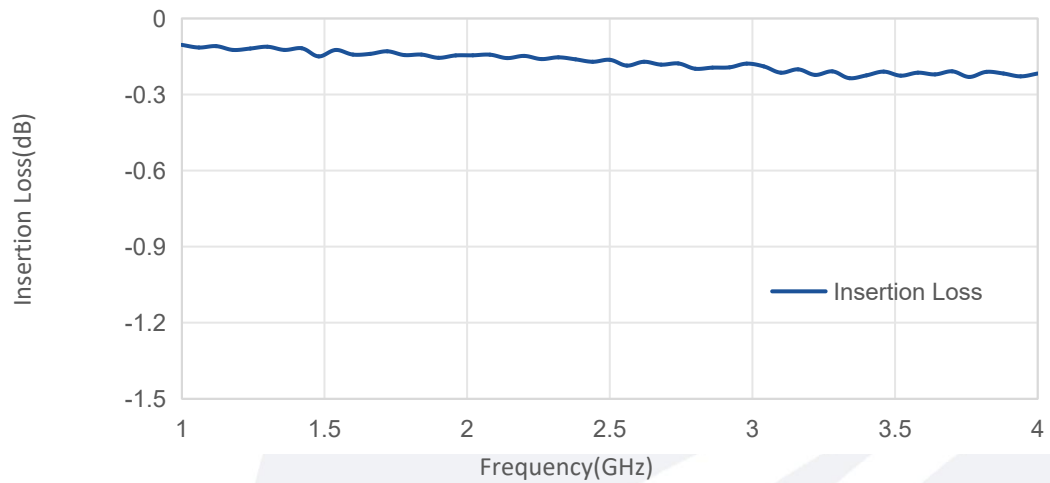
标准型号 Base Number	描述 Description	版本号 Revision
TC-1040-30S-Cryo	Cryogenic Coax Directional Coupler 1-4 GHz, Coupling:30dB, SMA Female	Rev.1.1

典型曲线 Typical Performance Data(TEM=298K):

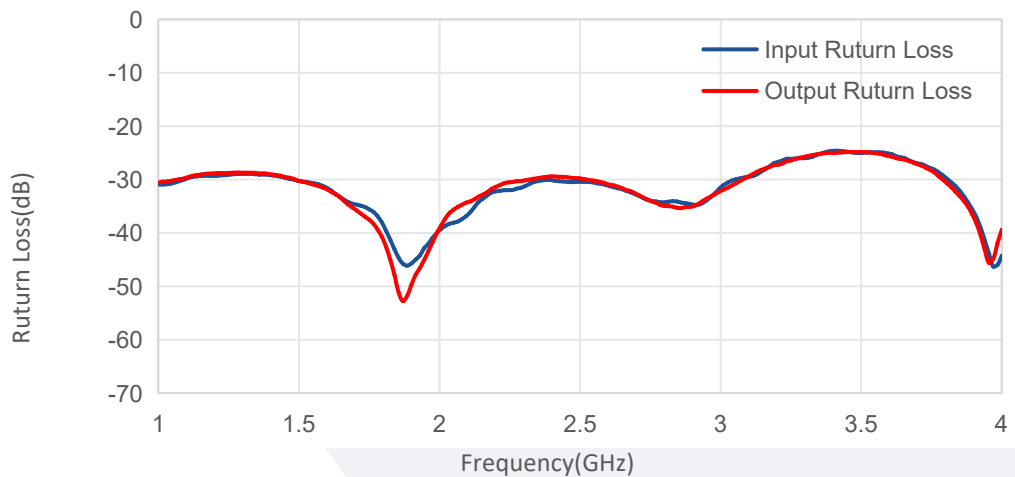
Coupling vs Frequency



Insertion Loss vs Frequency



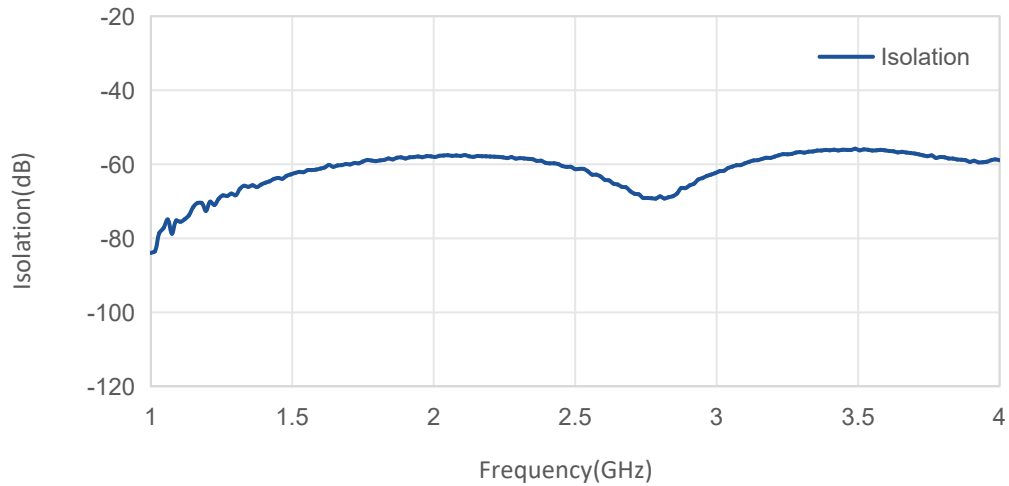
Ruturn Loss vs Frequency



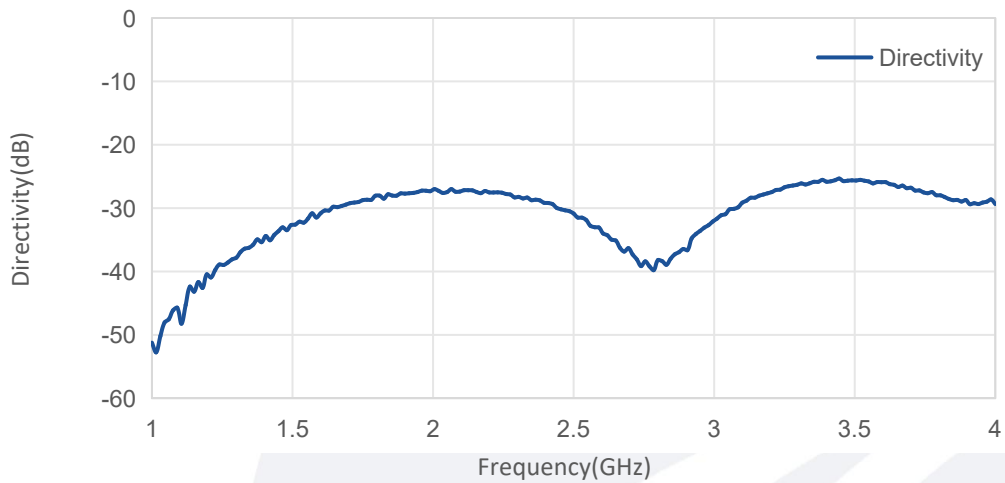
Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

典型曲线 Typical Performance Data(TEM=298K):

Isolation vs Frequency



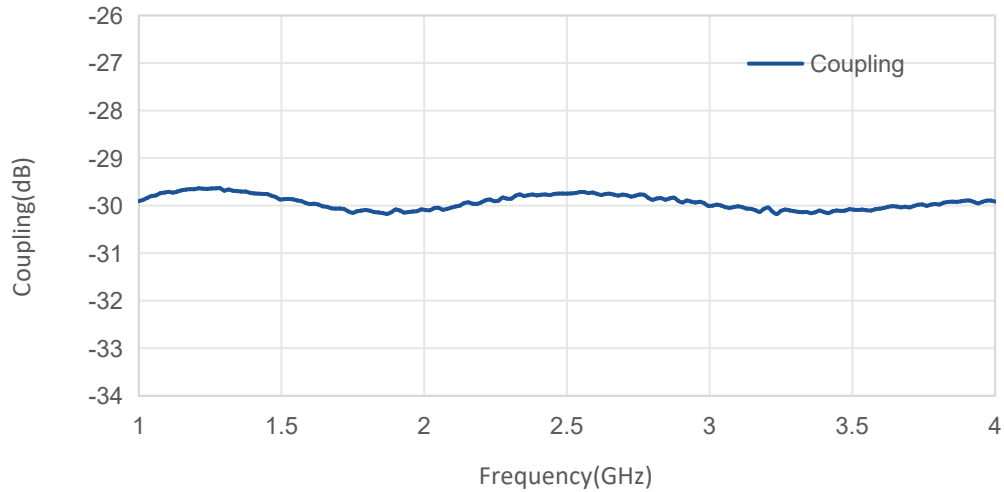
Directivity vs Frequency



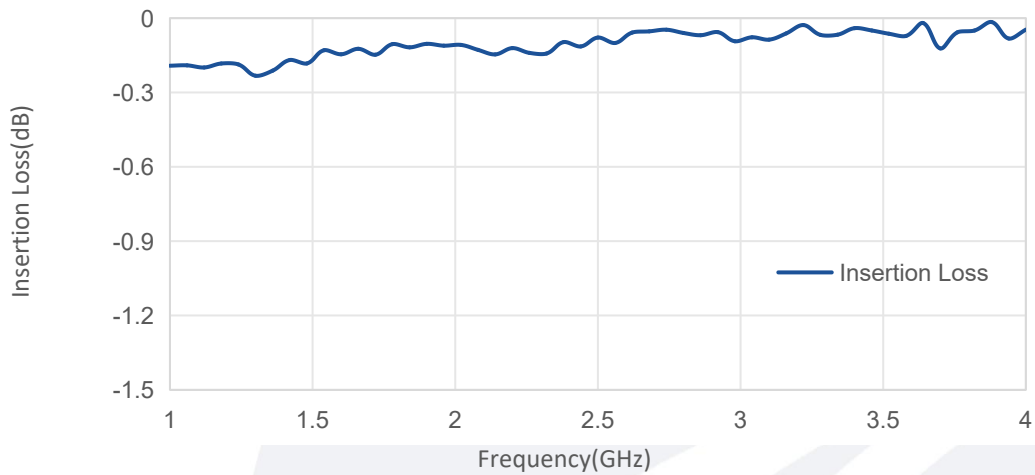
Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

典型曲线 Typical Performance Data(TEM=77K):

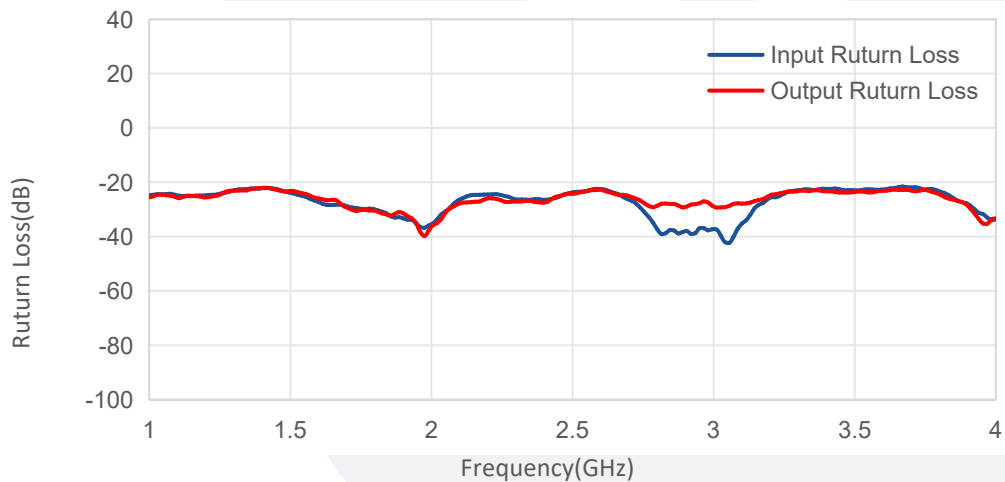
Coupling vs Frequency



Insertion Loss vs Frequency



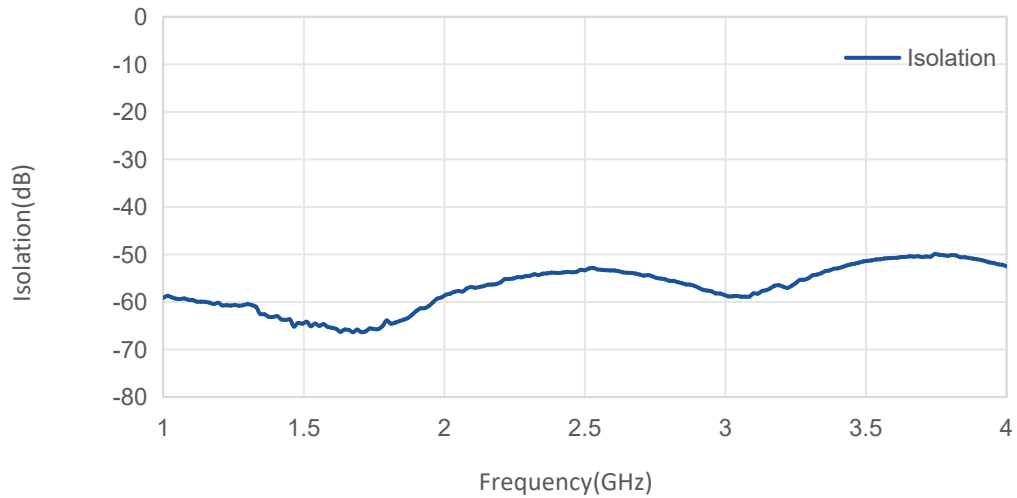
Ruturn Loss vs Frequency



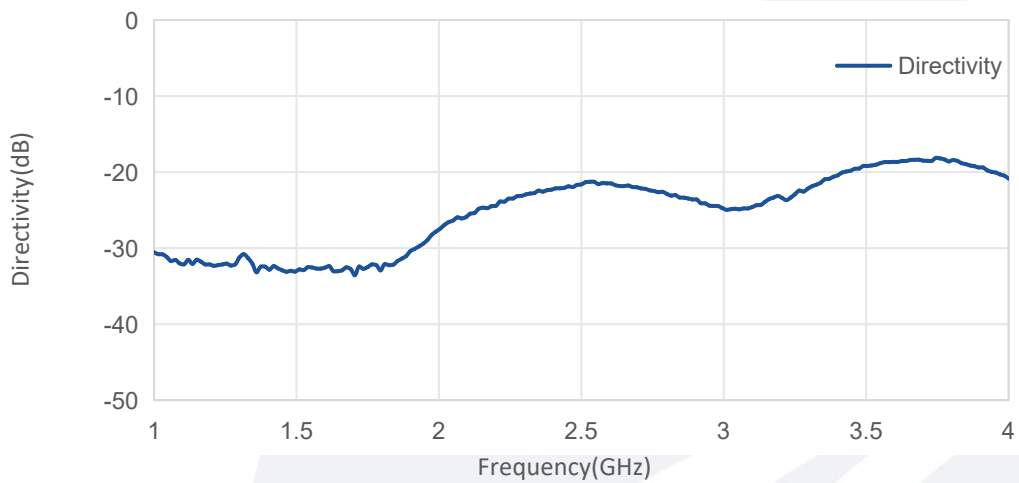
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典型曲线 Typical Performance Data(TEM=77K):

Isolation vs Frequency



Directivity vs Frequency



Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.