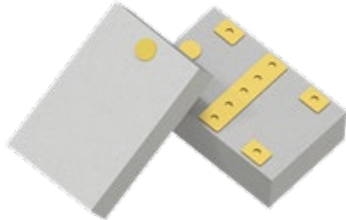




**Directional Coupler
20dB**



Description:

The X4C70J1-20G is a low cost, low profile sub-miniature (0805) high performance 20 dB directional coupler, with a power rating of 10 Watts (AVG) and a peak to average ratio of 12dB, in a new easy to use, Xinger style manufacturing friendly surface mount package. It is designed particularly for 5G, LTE and C-Band applications in all end markets including telecom and COTS Mil-Aero. The X4C70J1-20G is designed particularly for power and frequency detection, as well as for return loss monitoring, where tightly controlled coupling and low insertion loss is required.

Parts have been subjected to rigorous Xinger qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4003 and polyimide. Produced with 6 of 6 RoHS compliant ENIG finish.

Features:

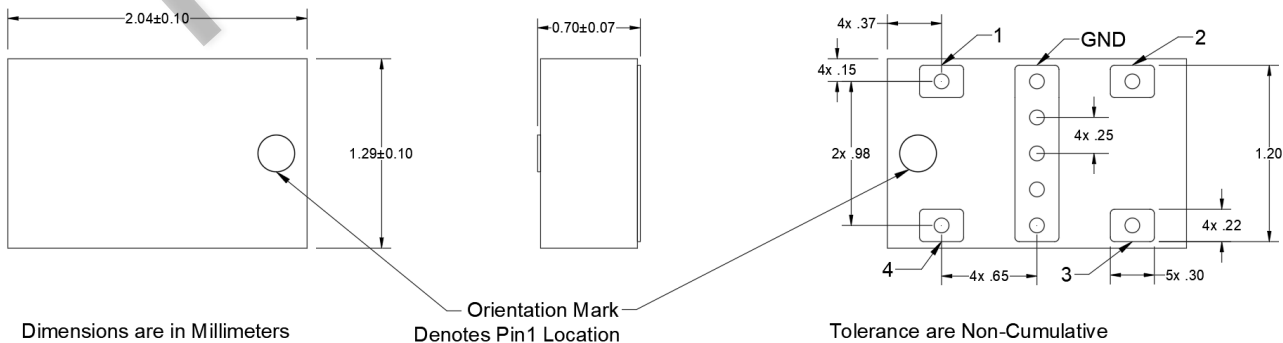
- 5700-9200 MHz
- 0.70mm Height
- 5G, LTE, C-Band COTS Mil-Aero
- Power 10 Watts (AVG)
- Very Low Loss (<0.10dB)
- Tight Coupling (± 1.5 dB)
- High Directivity (>18dB)
- Production Friendly
- Tape and Reel
- Lead Free

Electrical Specifications:

Frequency MHz	Mean Coupling dB	Insertion Loss dB Max	Return Loss dB Min
5700-9200	20.0 \pm 1.5	0.2	18
6000-7500	20.0 \pm 1.5	0.2	20
6400-7100	20.0 \pm 1.5	0.15	20
Directivity dB Min	Frequency Sensitivity dB Max	Power Avg. Watts @ 105°C	Operating Temp. °C
18	± 0.7	7	-55 to +140
18	± 0.7	10	-55 to +140
18	± 0.2	10	-55 to +140

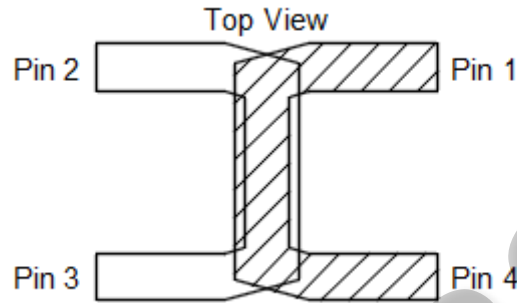
*Specification based on performance of unit properly installed on TTM Test Board with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline:



Directional Coupler Pin Configuration:

The X4C70J1-20G has an orientation marker to denote Pin 1. Once port one has been identified the other ports are known automatically. Please see the chart below for clarification.



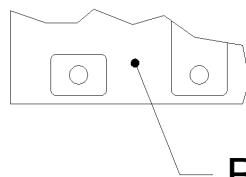
20dB Coupler Pin Configuration

Configuration	Pin 1	Pin 2	Pin 3	Pin 4
Configuration-1	Input	Coupled	Isolated	Direct
Configuration-2	Direct	Isolated	Coupled	Input

Note: The direct port has a DC connection to the input port and the coupled port has a DC connection to the isolated port. For optimum IL and power handling performance, use Pin 1 or Pin 4 as inputs.

Peak Power Handling:

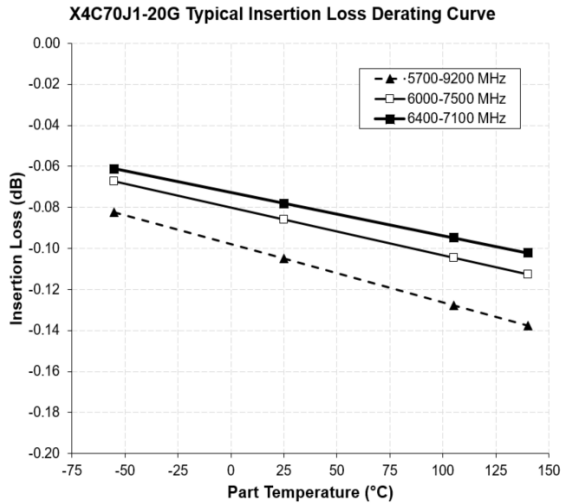
High-Pot testing of these couplers during the qualification procedure resulted in a minimum breakdown voltage of 1Kv (minimum recorded value). This voltage level corresponds to a breakdown resistance capable of handling at least 12dB peak over average power levels, for very short durations. The breakdown location consistently occurred across the pads and the ground bar (see illustration below). The breakdown levels at these points will be affected by any contamination in the gap area around these pads. These areas must be kept clean for optimum performance. It is recommended that the user test for voltage breakdown under the maximum operating conditions and over worst case modulation induced power peaking. This evaluation should also include extreme environmental conditions (such as high humidity).



Breakdown Area

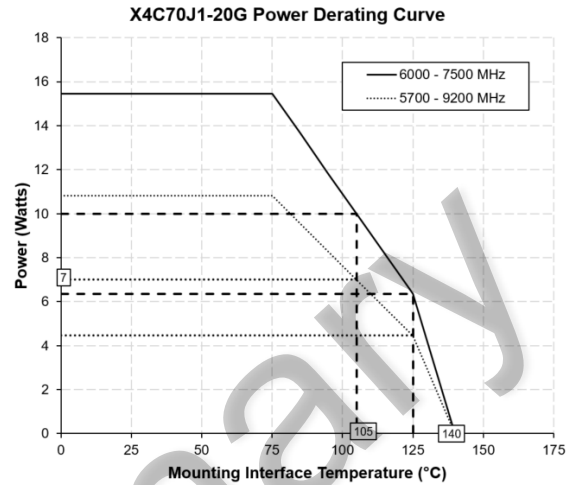
Insertion Loss and Power Derating Curves:

Insertion Loss Derating:



The insertion loss, at a given frequency, the coupler is measured at 25°C and then averaged. The measurements are performed under small signal conditions (i.e. using a Vector Network Analyzer). The process is repeated at -55°C, 105°C and 140°C. A best-fit line for the measured data is computed and then plotted from -55°C to 140°C.

Power Derating:



The power handling and corresponding power derating plots are a function of the thermal resistance, mounting surface temperature (base plate temperature), maximum continuous operating temperature of the coupler, and the thermal insertion loss. The thermal insertion loss is defined in the Power Handling section of the data sheet.

As the mounting interface temperature approaches the maximum continuous operating temperature, the power handling decreases to zero.

If mounting temperature is greater than 105°C, the Xinger coupler will perform reliably as long as the input power is derated to the curve above.

Packaging and Ordering Information:

Parts are available in reel and are packaged per EIA 481. Parts are oriented in tape and reel as shown below. Minimum order quantities are 4000 per reel.

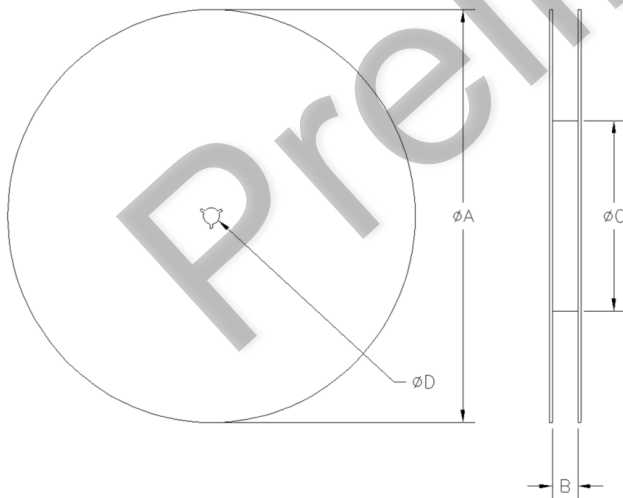
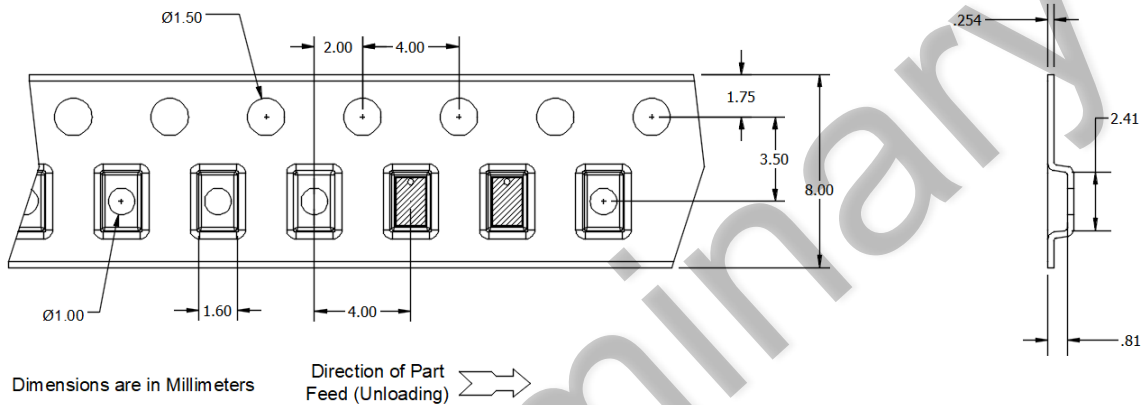


TABLE 1		
QUANTITY/REEL	REEL DIMENSIONS mm	
4000	ØA	177.80
	B	8.00
	ØC	50.80
	ØD	13.00

Contact us:
rf&s_support@ttm.com