



## Ultra Low Profile 0805 10dB Directional Coupler



### **Description:**

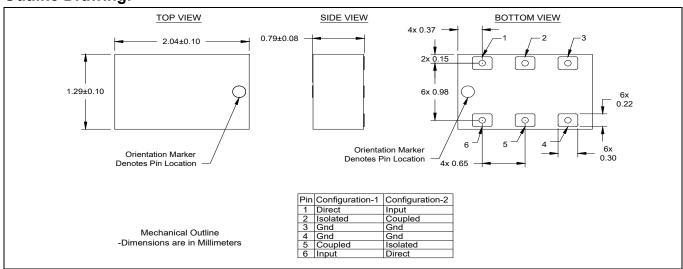
The DC1722J5010AHF is a low cost, low profile sub-miniature high performance 10 dB directional coupler in an easy to use RoHS compliant, Halogen Free surface mount package. It is designed for 1700 – 2200MHz applications including: LTE, WCDMA, CDMA, IMT2000, UMTS and GSM1800 / 1900 applications. The DC1722J5010AHF is ideal for power detection, signal injection and other applications where low insertion loss signal monitoring is required. The DC1722J5010AHF is available on tape and reel for pick and place high volume manufacturing. All of the Xinger components are constructed from ceramic filled PTFE composites which possess excellent electrical and mechanical stability. All parts have been subjected to rigorous qualification testing and units are 100% RF tested.

**Detailed Electrical Specifications:** 

Features:		ROOM (25°C)													
<ul> <li>1700 – 2200 MHz</li> <li>Mean Coupling 10dB</li> <li>0.79mm Height Profile</li> </ul>	Frequency (MHz)	Mean Coupling (dB)		Insertion loss (dB)		Return Loss (dB)		Directivity (dB)		Frequency Sensitivity (dB)		Power Handling (watts)			
Ultra Low Insertion     Loss		Min	Тур.	Max	Тур.	Max	Тур.	Min	Тур.	Min	Тур.	Max	Ma @85C	ax @105C	
• LTE Bands: 1,2,3,4,9,10,33, 34,35,36,37,39	1700 - 2200	9.9	10.6	11.2	0.13	0.30	19.0	15.6	16.6	13.1	0.23	0.25	2	1.3	
WCDMA, CDMA, IMT2000, UMTS, GSM	1805 - 1880	9.8	10.5	11.0	0.14	0.30	19.0	15.9	23.2	18.2	0.01	0.04	2	1.3	
1800/1900 ■ Surface Mountable	1930 - 1990	9.8	10.5	11.1	0.15	0.30	19.0	16.1	20.7	16.4	0.02	0.03	2	1.3	
<ul><li>Tape &amp; Reel</li><li>RoHS Compliant</li></ul>	2110 - 2170	10.0	10.7	11.4	0.16	0.31	20.0	16.5	17.2	13.6	0.07	0.10	2	1.3	
<ul><li>Halogen Free</li><li>100% RF Tested</li></ul>	Group Delay (1.7-2.2GHz)	Direct Min.		Direct Typ.		Direct Max.		Coupled Min.		Coupled Typ.		Coupled Max.			
• -55°C to 140°C	(nSec)	0.048			0.052		0.	0.056		0.175		0.184		0.192	

<sup>\*</sup>Specifications subject to change without notice.

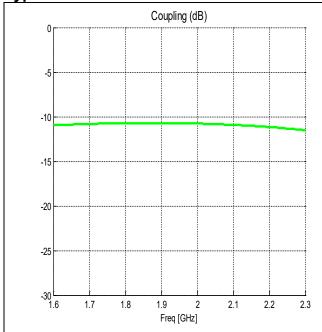
#### **Outline Drawing:**

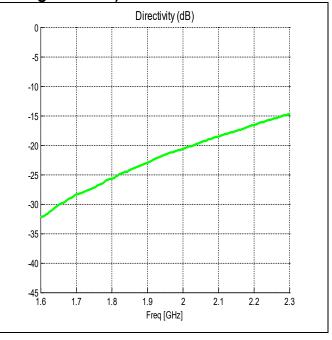


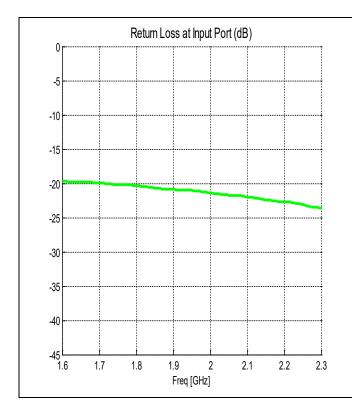
<sup>\*\*</sup>Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance.

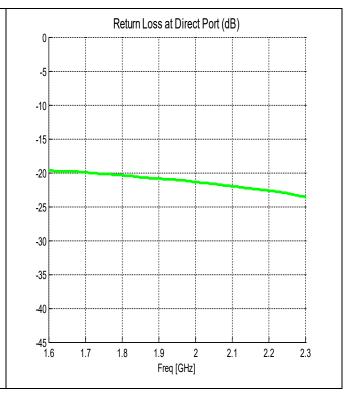


Typical Performance: 1600 MHz to 2300 MHz (Configuration 1)

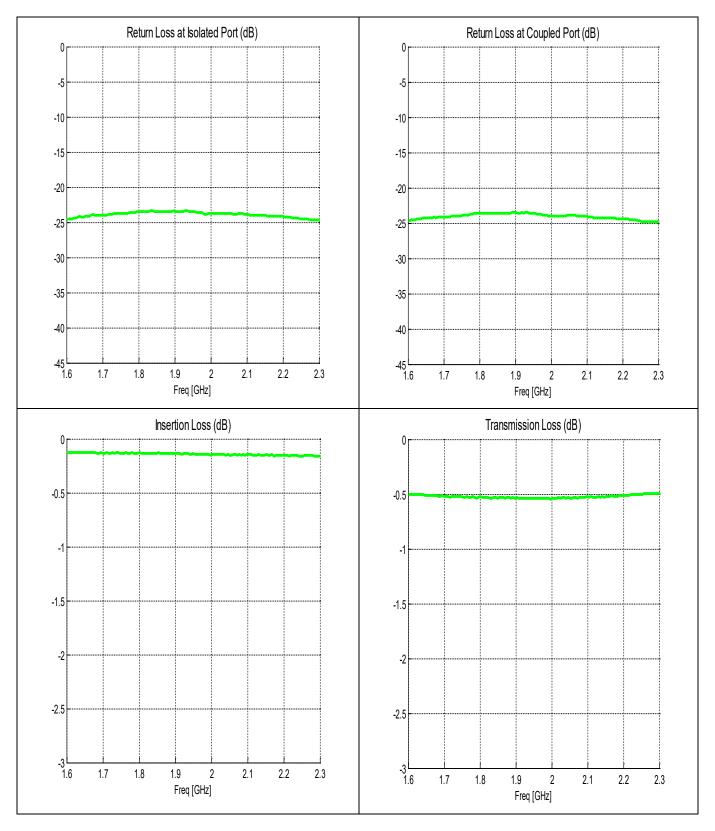






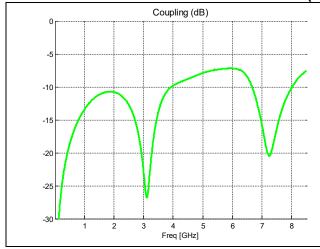


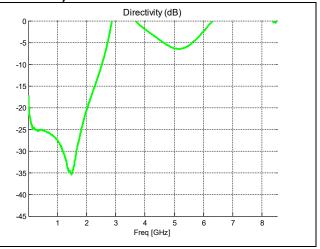


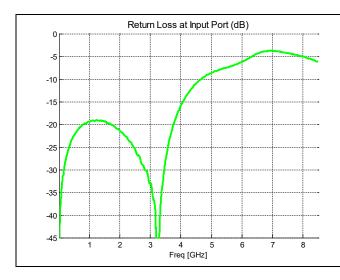


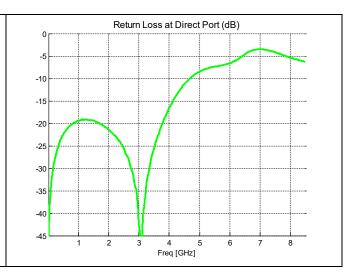


Wide Band Performance: 0 to 8500MHz (Configuration 1)

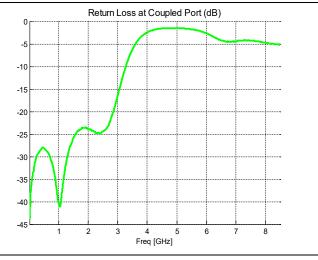




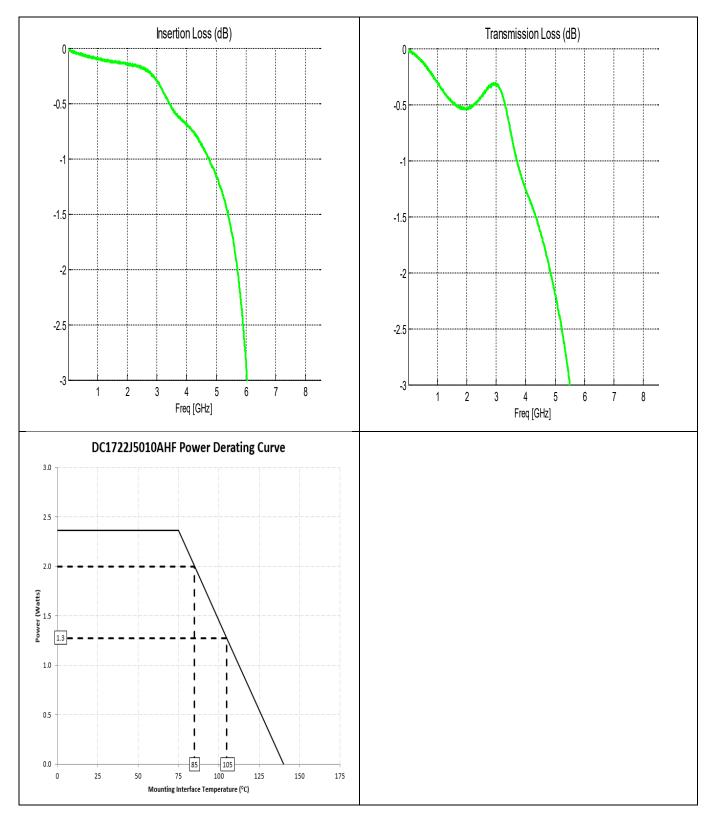














# **Definition of Measured Specifications**

Parameter	Definition	Mathematical Representation		
Return Loss	The impedance match of the coupler to a $50\Omega$ system. Return Loss is an alternate means to express VSWR.	Return Loss(dB) = $20\log \frac{VSWR + 1}{VSWR - 1}$		
Directivity	The power at the isolated port divided by the power at the coupled port	$Directivity(dB) = 10log \frac{P_{iso}}{P_{cpl}}$		
Insertion Loss	The input power divided by the sum of the power at the two output ports.	Insertion Loss(dB) = $10\log \frac{P_{in}}{P_{cpl} + P_{direct}}$		
Mean Coupling	At a given frequency ( $\omega_n$ ), coupling is the input power divided by the power at the coupled port.  Mean coupling is the average value of the coupling values in the band. N is the number of frequencies in the band.	Coupling(dB) = $C(\omega_n) = 10\log \frac{P_{in}(\omega_n)}{P_{cpl}(\omega_n)}$ Mean Coupling(dB) = $\frac{\sum_{n=1}^{N} C(\omega_n)}{N}$		
Transmission Loss	The input power divided by the power at the direct port	Transmission Loss(dB) = $10\log \frac{P_{in}}{P_{direct}}$		
Frequency sensitivity	The decibel difference between the maximum in band coupling value and the minimum in band coupling value.	(Max Coupling (dB) – Min Coupling (dB))/2		

<sup>\*100%</sup> RF test is performed on configuration 1 where port 1 is connected to pin1, port 2 is connected to pin 2, port 3 is connected to pin 5 and port 4 is connected to pin 6.

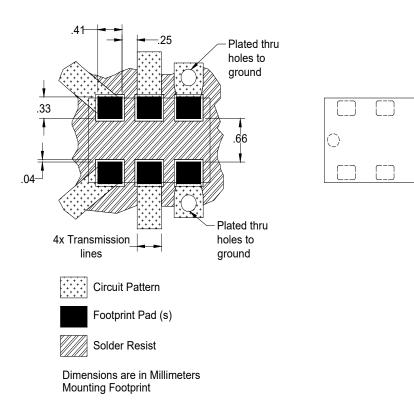


## **Mounting Configuration:**

In order for Xinger surface mount components to work optimally, the proper impedance transmission lines must be used to connect to the RF ports. If this condition is not satisfied, insertion loss, Isolation and VSWR may not meet published specifications.

All of the Xinger components are constructed from organic PTFE based composites which possess excellent electrical and mechanical stability. Xinger components are compliant to a variety of ROHS and Green standards and ready for Pb-free soldering processes. Pads are Gold plated with a Nickel barrier.

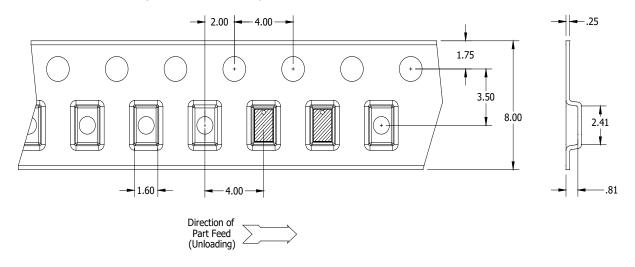
An example of the PCB footprint used in the testing of these parts is shown below. In specific designs, the transmission line widths need to be adjusted to the unique dielectric coefficients and thicknesses as well as varying pick and place equipment tolerances.





## **Packaging and Ordering Information:**

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



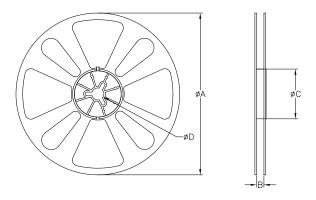


TABLE 1							
QUANTITY/REEL	REEL DIMENSIONS mm						
	ØΑ	177.80					
4000	В	8.00					
	φC	50.80					
	ØD	13.00					

Contact us: rf&s support@ttm.com