

# Surface Mount top hat® Directional Coupler

## TCD-12-222X+

50Ω

5 to 2250 MHz

### The Big Deal

- Wideband, 5 to 2250 MHz
- Flat coupling,  $\pm 0.8$  dB
- RF power handling up to 1W



CASE STYLE: DB1627

### Product Overview

Mini-Circuits' TCD-12-222X+ surface mount directional coupler provides 12.6 dB nominal coupling with excellent flatness from 5 to 2250 MHz, supporting a wide variety of applications including VHF/UHF, CATV, cellular and more. This model provides low mainline loss, high directivity and excellent return loss. The coupler is built with core and wire construction mounted on a 6-lead plastic base (0.16 x 0.15 x 0.16") and includes Mini-Circuits' TopHat® feature for faster, more accurate pick-and-place assembly.

### Key Features

Feature	Advantages
Low mainline loss, 2.0 dB	Provides good through-path signal power transmission.
High directivity, 10 – 21 dB	High directivity allows accurate signal sampling through the coupled port with minimal measurement error.
Excellent return loss, 14 – 25 dB (input/output/coupling)	Provides excellent matching for 50Ω systems and minimal signal reflection.
1W power handling	Usable in systems with a variety of high-power requirements.
Top Hat® feature	Improves speed and accuracy of pick and place assembly and provides clear device marking for visual inspection.



# Surface Mount Directional Coupler

50Ω

5 to 2250 MHz

TCD-12-222X+

## Features

- wideband, 5 to 2250 MHz
- low mainline loss, 2.0 dB typ.
- aqueous washable
- leads for excellent solderability
- protected by US Patent 6,140,887

## Applications

- VHF/UHF
- CATV
- cellular



Generic photo used for illustration purposes only

CASE STYLE: DB1627

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500
13"	1000, 2000

## Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		2250	MHz
Mainline Loss <sup>1</sup> (above theoretical 0.3 dB)	5	—	0.4	1.0	dB
	950	—	0.6	1.1	
	2250	—	2.5	3.6	
Nominal Coupling	5-2250	—	12.6±0.8	—	dB
Coupling Flatness(±)	5-2250	—	0.6	1.0	dB
Directivity	5	17	21	—	dB
	950	11	15	—	
	2250	6	10	—	
Return Loss (Input)	5	—	21	—	dB
	950	—	17	—	
	2250	—	16	—	
Return Loss (Output)	5	—	25	—	dB
	950	—	17	—	
	2250	—	14	—	
Return Loss (Coupling)	5	—	24	—	dB
	950	—	17	—	
	2250	—	15	—	
Input Power	5-100	—	—	0.5	W
	100-2250	—	—	1.0	

1. Mainline loss includes theoretical power loss 0.3 dB at coupled port.

## Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C*
Storage Temperature	-55°C to 100°C

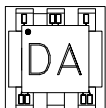
Permanent damage may occur if any of these limits are exceeded.

\* Case temperature is defined as temperature on ground leads.

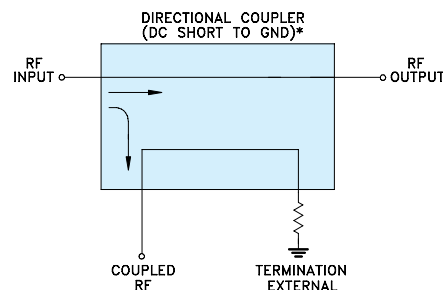
## Pin Connections

Function	Pin Number
INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
50Ω TERM EXTERNAL	6
NOT USED	5

## Product Marking



## Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.



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