

Ceramic Directional Coupler

DCW-6-722+

50Ω 6 dB Coupling 4400 to 7200 MHz

The Big Deal

- Rugged, ceramic construction
- Industry leading combination of size/bandwidth



CASE STYLE: JC0603C

Product Overview

Mini-Circuits new directional coupler DCW-6-722+ offers an industry leading combination of operating bandwidth and size; The low insertion loss makes this component a versatile building block for use in a variety of systems and sub-system designs.

Key Features

Feature	Advantages
Small Size	Offered in the JC-0603C package size, the DCW-6-722+ offers an industry leading combination of size, bandwidth and frequency. The small footprint allows for reduced parasitics in systems with improved performance and simplified layout.
LTCC Construction	Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes.
Wrap-around terminations	Provides excellent solderability and easy visual inspection

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



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Generic photo used for illustration purposes only

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+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, 1000, 4000

Maximum Ratings

Operating Temperature -55°C to 125°C

Storage Temperature -55°C to 125°C

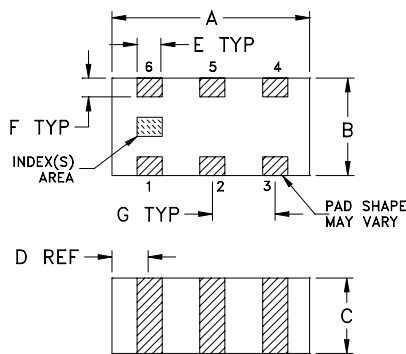
Input Power¹ 1W

Permanent damage may occur if any of these limits are exceeded.
1. Derate linearly 0.5W at 125°C

Pad Connections

INPUT	1
OUTPUT	4
COUPLED	6
TERMINATION	3
GROUND	2.5

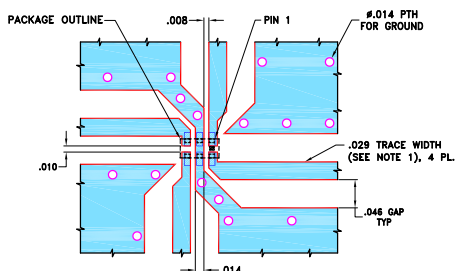
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	wt
.063	.031	.024	.012	.008	.006	.020	grams
1.60	0.79	0.61	0.30	0.20	0.15	0.51	0.005

Demo Board MCL P/N: TB-DCW-6-722+ Suggested PCB Layout (PL-572)



- NOTES:
- TRACE WIDTH & GAP ARE SHOWN FOR FR4, GRADE IT-180TC (ITEQ CORP.) WITH DIELECTRIC THICKNESS .016±.0015. COPPER: 1/2 OZ EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
 - REFER TO MODEL DATASHEET FOR PIN OUTS.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Features

- Wideband, 4400-7200 MHz
- Excellent return loss for input/output ports ideal for signal-tap
- Ultra small size, 0603 (1.6 x 0.8 mm)
- Temperature stable
- LTCC construction

Applications

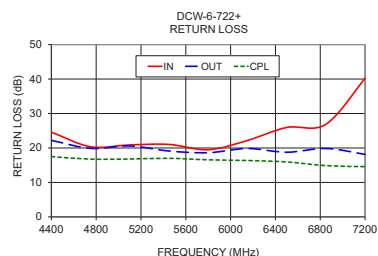
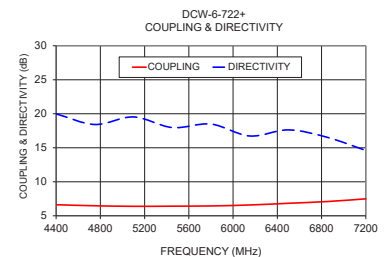
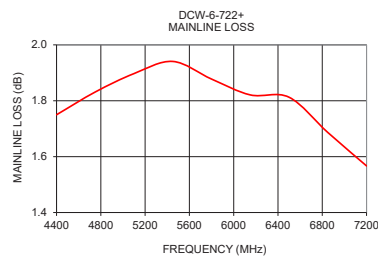
- 5G sub 6GHz
- Wi-Fi

Electrical Specifications at 25°C

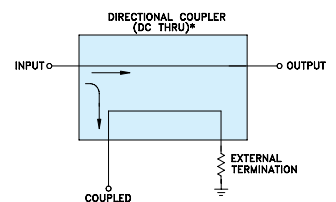
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		4400		7200	MHz
Mainline Loss (Theoretical loss included)	4400-7200	—	1.7	2.6	dB
Coupling	4400-7200	—	6.75	—	dB
Coupling Flatness(±)	4400-7200	—	1.3	—	dB
Directivity	4400-7200	—	17	—	dB
Return Loss (Input)	4400-7200	9.5	17	—	dB
Return Loss (Output)	4400-7200	9.5	17	—	dB

Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		Cpl
				In	Out	
4400.00	1.75	6.63	19.99	24.59	22.22	17.49
4750.00	1.83	6.47	18.42	20.36	19.89	16.77
5100.00	1.90	6.40	19.53	20.89	20.59	16.80
5450.00	1.94	6.41	17.97	21.04	19.12	17.00
5800.00	1.88	6.45	18.49	19.50	18.63	16.56
6150.00	1.82	6.59	16.73	22.18	19.84	16.37
6500.00	1.81	6.84	17.63	25.95	18.76	15.95
6850.00	1.69	7.09	16.55	26.87	19.86	14.88
7200.00	1.57	7.49	14.60	40.27	18.13	14.59



Electrical Schematic



* ELECTRICAL SCHEMATIC FOR DIRECTIONAL COUPLERS REQUIRING EXTERNAL TERMINATION THAT IS DESIGNED WITHOUT INTERNAL TRANSFORMERS.

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