

Ultra-wideband, DC Pass

Directional Coupler

ZCDC20-K0244+

50Ω 20dB Up to 20W 2 to 40 GHz

The Big Deal

- Wideband, 2 to 40 GHz
- Excellent Coupling Flatness, ± 0.4 dB typ.
- Power Handling up to 20 W



CASE STYLE: HT2627

Product Overview

The Mini-Circuits ZCDC20-K0244+ ultra-wideband directional coupler offers exceptional performance operating over 2 to 40 GHz. This coupler has excellent coupling flatness, good directivity, and power handling. It is ideal for lab testing applications as well as for power monitoring over wide bands, among other applications.

Key Features

Feature	Advantages
Ultra-wideband	With a bandwidth spanning 2 to 40 GHz, ZCDC20-K0244+ coupler is ideal for most lab testing applications, avoiding the need to switch components for different frequency bands.
Excellent Directivity • 19 dB typ. up to 40 GHz	High directivity allows sampling of input powers with minimal effects due to output mismatches.
Excellent coupling flatness, ± 0.4 dB typ	Excellent coupling flatness over the entire frequency range minimizes the need for compensation circuits in most cases.
Good Return Loss (In & Out) • 15 dB typ. up to 40 GHz	Good return loss over 2 to 40 GHz minimizes undesired reflections and resulting amplitude ripple.

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



Ultra-wideband, DC Pass Directional Coupler

50Ω 20dB Up to 20W 2 to 40 GHz

Maximum Ratings

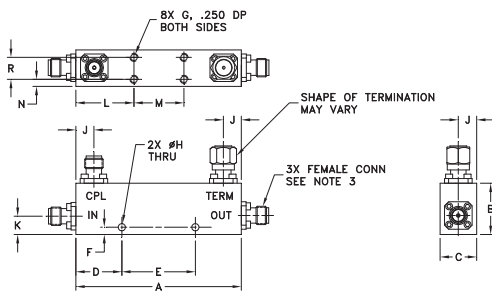
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Supplied Termination*	1W
DC Current	0.6A

* up to 25°C, derates linearly to 325mW at 100°C.
Permanent damage may occur if any of these limits are exceeded

Coaxial Connections

INPUT	IN
OUTPUT	OUT
COUPLED	CPL
TERMINATION (50Ω) INCLUDED	—

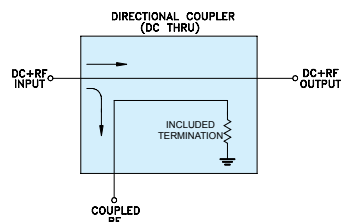
Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H
2.25	0.7	0.50	0.63	1.00	0.10	#4-40	0.1
57.15	17.78	12.70	16.00	25.40	2.54	INC-2B	2.54
J	K	L	M	N	R	wt	
0.25	0.25	0.79	0.68	0.1	0.3	grams	
6.35	6.35	20.07	17.27	2.54	7.62	80	

Electrical Schematic



Features

- Wide frequency range, 2 to 40 GHz
- Good coupling flatness, ± 0.4 dB typ.
- Good directivity, 20 dB typ. up to 40 GHz
- Good return loss (In & Out), 22 dB typ. up to 40 GHz
- DC pass, input to output

Applications

- Cellular infrastructure
- Military
- Lab use

ZCDC20-K0244+



Generic photo used for illustration purposes only

CASE STYLE: HT2627

Connectors	Model
2.92mm Female	ZCDC20-K0244+

+RoHS Compliant

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

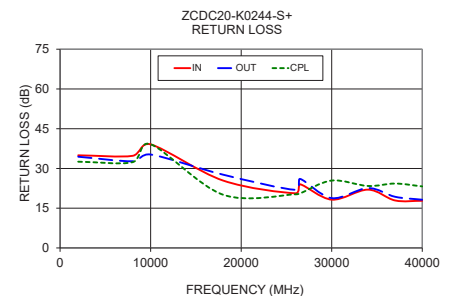
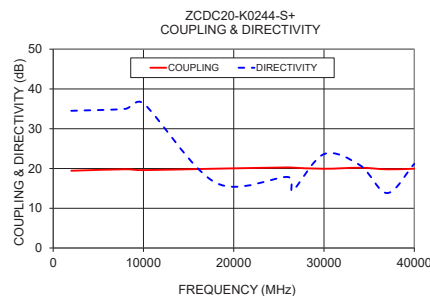
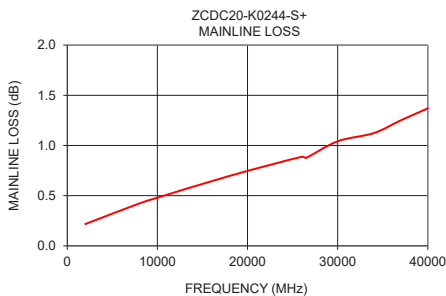
Electrical Specifications at 25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Operating Frequency		2		40	GHz
Nominal Coupling	2 - 40	—	20 $\pm$ 1.8	—	dB
Coupling Flatness	2 - 40	—	± 0.4	± 0.8	dB
Mainline Loss	2 - 8	—	0.3	0.7	dB
	8 - 18	—	0.5	0.9	
	18 - 26.5	—	0.8	1.2	
	26.5 - 40	—	1.0	1.5	
Directivity	2 - 8	16	33	—	dB
	8 - 18	13	28	—	
	18 - 26.5	11	25	—	
	26.5 - 40	10	22	—	
Return Loss (In & Out)	2 - 8	15.0	35	—	dB
	8 - 18	13.5	33	—	
	18 - 26.5	12.5	28	—	
	26.5 - 40	11.0	24	—	
Return Loss (Coupling)	2 - 8	15.0	33	—	dB
	8 - 18	13.5	30	—	
	18 - 26.5	12.5	26	—	
	26.5 - 40	11.0	24	—	
Input Power*	2 - 40	—	—	20	W

* Up to 50°C, derate linearly to 10W at 100°C

Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	In	Return Loss (dB) Out	Cpl
2000	0.22	19.44	34.50	34.96	34.43	32.55
8000	0.42	19.80	35.00	34.76	32.72	32.37
10000	0.48	19.59	36.36	39.08	35.25	39.13
18000	0.70	19.95	16.41	25.44	27.66	20.09
26000	0.89	20.27	17.86	20.63	21.92	20.24
26500	0.88	20.22	14.37	24.03	26.05	20.55
30000	1.04	19.93	23.62	18.23	18.81	25.43
34000	1.12	20.18	20.80	22.00	22.59	23.39
37000	1.25	19.79	13.83	17.92	19.31	24.30
40000	1.37	19.94	21.17	17.81	18.20	23.23



Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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



www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV. A
M173518
ZCDC20-K0244+
WL/CP/AM
190920
Page 2 of 2

Directional Coupler

ZCDC20-K0244+

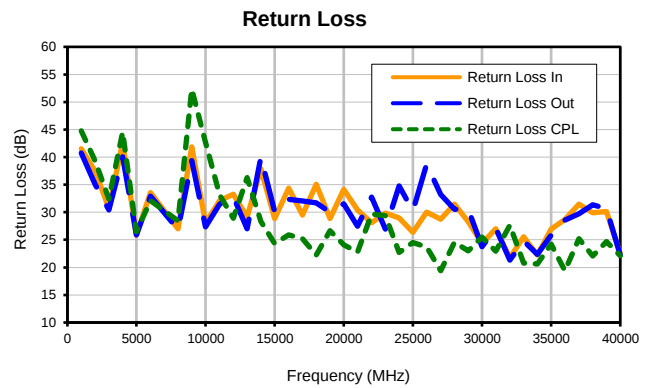
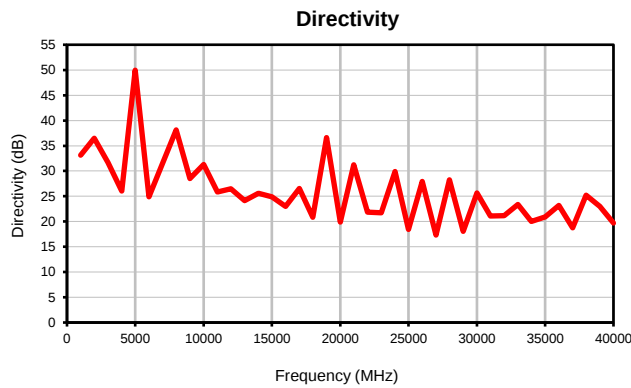
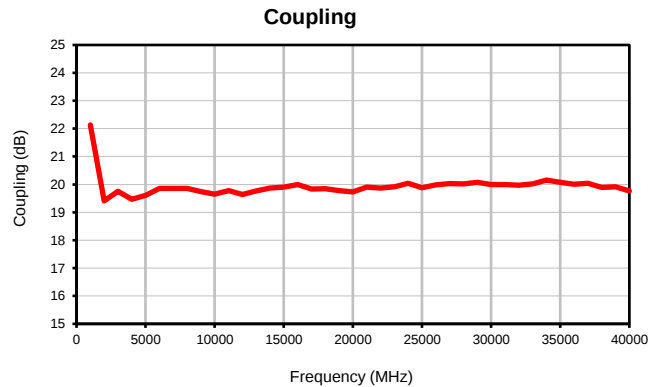
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT	CPL
1000	0.14	22.13	33.11	41.53	40.75	44.77
2000	0.21	19.41	36.50	37.43	35.08	39.28
3000	0.24	19.76	31.70	30.72	30.43	32.40
4000	0.27	19.47	26.04	42.59	40.03	44.52
5000	0.31	19.61	49.96	25.85	25.92	26.46
6000	0.33	19.86	24.89	33.54	32.91	32.10
8000	0.39	19.86	38.17	27.01	26.88	28.47
9000	0.40	19.75	28.49	41.84	39.38	52.33
10000	0.43	19.65	31.29	28.02	27.36	42.66
11000	0.45	19.78	25.87	32.11	31.49	33.17
12000	0.47	19.64	26.48	33.27	32.81	28.90
13000	0.50	19.76	24.11	29.13	26.99	36.31
14000	0.52	19.87	25.58	37.86	40.02	28.33
15000	0.54	19.90	24.88	28.88	30.15	24.32
16000	0.56	19.99	22.96	34.36	32.33	25.87
17000	0.59	19.84	26.55	29.52	32.07	25.19
18000	0.61	19.85	20.86	35.09	31.72	22.26
19000	0.63	19.77	36.62	28.84	30.01	26.66
20000	0.66	19.73	19.91	34.14	31.54	24.10
21000	0.70	19.91	31.26	30.41	27.44	22.79
22000	0.73	19.87	21.84	28.11	32.74	29.68
23000	0.75	19.91	21.73	29.85	26.93	29.39
24000	0.73	20.05	29.90	28.95	34.78	22.68
25000	0.74	19.88	18.43	26.36	30.24	24.52
26000	0.76	19.99	27.91	30.00	38.72	23.68
27000	0.78	20.03	17.32	28.73	33.21	19.40
28000	0.81	20.02	28.27	31.45	30.57	24.57
29000	0.84	20.07	18.05	28.28	30.52	22.99
30000	0.88	20.00	25.65	24.34	23.74	25.52
31000	0.89	19.99	21.10	27.00	27.09	22.93
32000	0.95	19.97	21.14	21.73	21.32	27.63
33000	0.96	20.02	23.40	25.55	24.78	20.81
34000	0.99	20.16	20.03	22.25	22.38	20.64
35000	0.99	20.08	20.89	26.96	25.86	24.20
36000	1.02	20.00	23.21	28.67	28.55	19.41
37000	1.04	20.04	18.78	31.47	29.72	25.23
38000	1.07	19.90	25.23	29.91	31.35	22.05
39000	1.16	19.92	23.00	30.14	30.63	24.66
40000	1.15	19.76	19.72	22.46	22.24	22.12

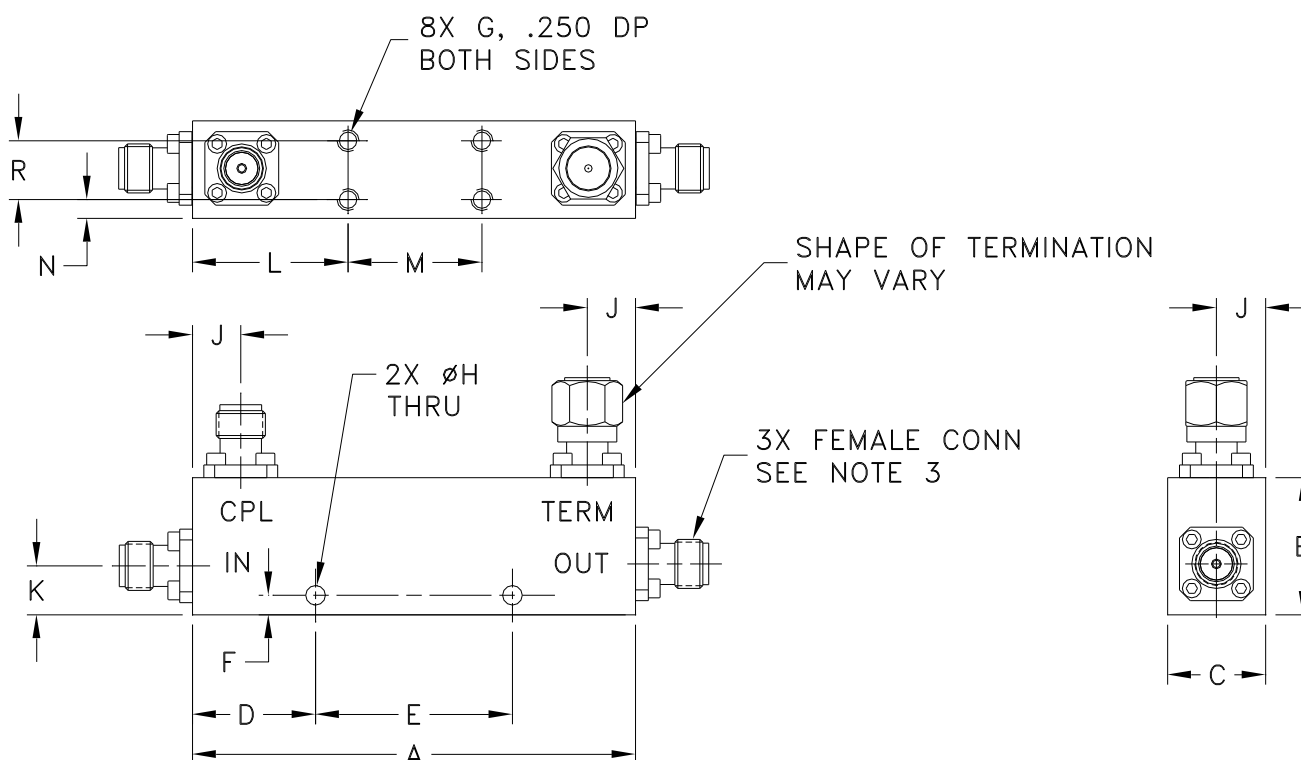
Directional Coupler

Typical Performance Curves

ZCDC20-K0244+



Outline Dimensions



CASE #	A	B	C	D	E	F	G	H	J	K
HT2627	2.25 (57.15)	.70 (17.76)	.50 (12.70)	.63 (16.00)	1.00 (25.40)	.10 (2.54)	#4-40 UNC-2B	.10 (2.54)	.25 (6.35)	.25 (6.35)

CASE #	L	M	N	R	WT. GRAM
HT2627	.79 (20.07)	.68 (17.27)	.10 (2.54)	.30 (7.62)	60.0

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .03$; 3Pl. $\pm .015$

Notes:

1. Case material: Aluminum alloy.
2. Case finish: Blue Painting, Pantone 286.
3. Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 25 cycles	MIL-STD-202, Method 107, Condition A-1 except +100°C instead of 85°C
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I
Connector Durability	500 mating/unmating cycles	MIL-PRF-39012E, PARAGRAPH 4.6.12