

Wideband, DC Pass

# Directional Coupler ZCDC10-E40653+

50Ω 10dB Up to 12W 40 to 65 GHz

## The Big Deal

- Wideband, 40 to 65 GHz
- Power Handling up to 12W
- Excellent Coupling Flatness,  $\pm 0.41$  dB typ.



CASE STYLE: HT2536-3

## Product Overview

The Mini-Circuits ZCDC10-E40653+ wideband directional coupler offers exceptional performance operating over 40 to 65 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
Wide bandwidth	With a bandwidth spanning 40 to 65 GHz, ZCDC10-E40653+ coupler is ideal for most lab testing applications, avoiding the need to switch components for different frequency bands.
Good Directivity <ul style="list-style-type: none"><li>• 18 dB typ. up to 65 GHz</li></ul>	High directivity allows sampling of input powers with minimal detrimental effects due to output mismatches.
Excellent Return Loss (In & Out) <ul style="list-style-type: none"><li>• 17 dB typ. up to 65 GHz</li></ul>	Excellent return loss over 40 to 65 GHz minimizes undesired reflections and resulting amplitude ripple.
<ul style="list-style-type: none"><li>• Excellent Coupling Flatness <math>\pm 0.41</math>dB typ,</li></ul>	Excellent coupling Flatness over the entire frequency range minimizes the need for compensation circuits in most applications.

### 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.  
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# Wideband, DC Pass Directional Coupler

## ZCDC10-E40653+

50Ω 10dB Up to 12W 40 to 65 GHz



Generic photo used for illustration purposes only

CASE STYLE: HT2536-3

Connectors	Model
1.85mm-Fem	ZCDC10-E40653+

### Maximum Ratings

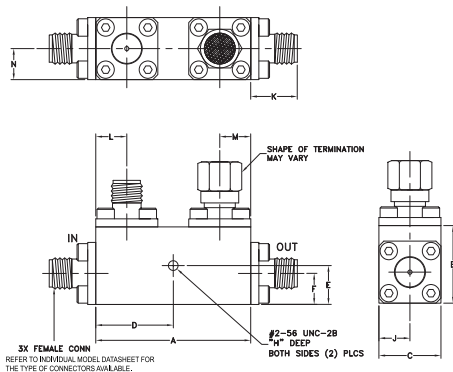
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Supplied Termination*	1 W
DC Current	0.3 A

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

### Coaxial Connections

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

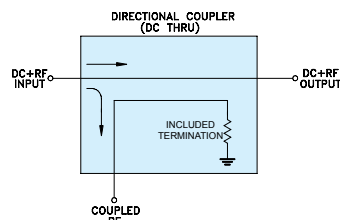
### Outline Drawing



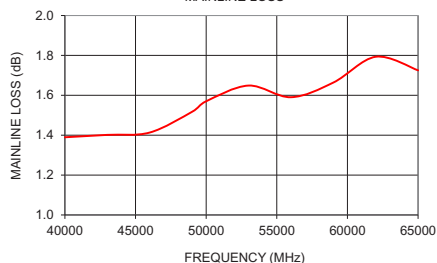
### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
1.25	0.63	0.50	6.25	0.313	0.25	--
31.75	16.00	12.70	158.75	7.95	6.35	--
H	J	K	L	M	N	wt
0.120	0.25	0.43	0.25	0.25	0.25	grams
3.05	6.35	11	6.35	6.35	6.35	50

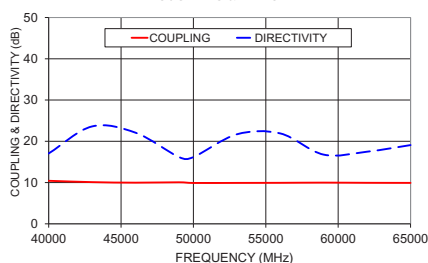
### Electrical Schematic



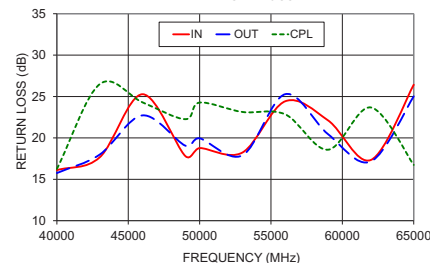
ZCDC10-E40653+  
MAINLINE LOSS



ZCDC10-E40653+  
COUPLING & DIRECTIVITY



ZCDC10-E40653+  
RETURN LOSS



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### Features

- Wide frequency range, 40 to 65 GHz
- Excellent coupling flatness,  $\pm 0.41$  dB typ. up to 65 GHz
- Good directivity, 18 dB typ. up to 65 GHz
- Excellent in/out return loss, 17 dB typ. up to 65 GHz
- DC current pass through input to output

### Applications

- 5G
- mobile
- fixed satellite
- lab use

### Electrical Specifications at 25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Operating Frequency					GHz
Coupling	40 - 65	8.2	10.0	11.8	dB
Coupling Flatness ( $\pm$ )	40 - 65		0.4	1.0	dB
Mainline Loss <sup>1</sup>	40 - 50		1.4	2.0	dB
	50 - 65		1.7	2.4	dB
Directivity	40 - 50	8.0	19.0		dB
	50 - 65	7.0	17.9		dB
Return Loss (In & Out)	40 - 50	10.9	21.1		dB
	50 - 65	10.2	22.6		dB
Return Loss (Coupling)	40 - 50	10.9	20.8		dB
	50 - 65	10.2	21.1		dB
Input Power <sup>2</sup>	40 - 65			12	W

1. Mainline loss includes coupling loss
2. Up to 25°C, derates linearly to 4.5W at 100°C.

### Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
40000	1.39	10.43	17.06	16.10	15.75	16.25
43000	1.40	10.10	23.61	17.65	17.99	26.49
46000	1.41	9.97	22.09	25.28	22.72	24.29
49000	1.52	10.07	16.18	17.81	19.06	22.26
50000	1.57	9.91	16.17	18.77	19.95	24.27
53000	1.65	9.92	21.70	18.23	17.89	23.13
56000	1.59	9.94	21.91	24.43	25.28	22.84
59000	1.66	9.99	16.77	22.11	20.45	18.57
62000	1.79	9.94	17.49	17.34	17.16	23.68
65000	1.73	9.92	19.08	26.43	25.02	16.74