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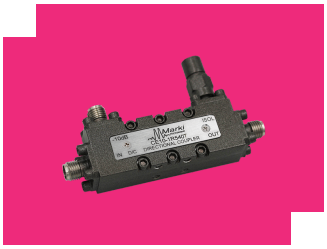
CE10-1R540T

Elite 1.5-40 GHz Directional Coupler

DEVICE OVERVIEW

General Description

The CE10-1R540 is a next generation broadband 1.5GHz to 40GHz, 10dB directional coupler from the Marki Elite Series. Conductive paint is applied to all Elite Series products to reduce EMI/RFI leakage and susceptibility. The CE10-1R540 offers the best directivity, return loss, and coupling accuracy available on the market. Available as both a three port directional coupler and a four port bidirectional coupler, the CE10-1R540 is an exceptional choice for broadband return loss measurements, power leveling, and signal monitoring applications. Sophisticated neural network design techniques combined with deep circuit knowledge and triplate stripline construction allow the Marki Elite Series of Couplers to provide superior performance to all other directional couplers available.



Download s-parameters here

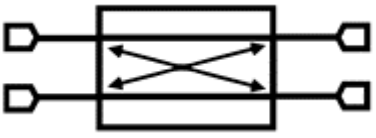
Features

- Broadband Performance
- Excellent Coupling Flatness
- High Directivity
- Low VSWR
- Conductive paint minimizes RF leakage

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Connectors	Green Status	Product Lifecycle	Export Classification
CE10-1R540T	Elite 1.5-40 GHz Directional Coupler	Standard	REACH RoHS	Released	EAR99
CE10-1R540	Elite 1.5-40 GHz Directional Coupler	Standard	REACH RoHS	Released	EAR99

Table Of Contents

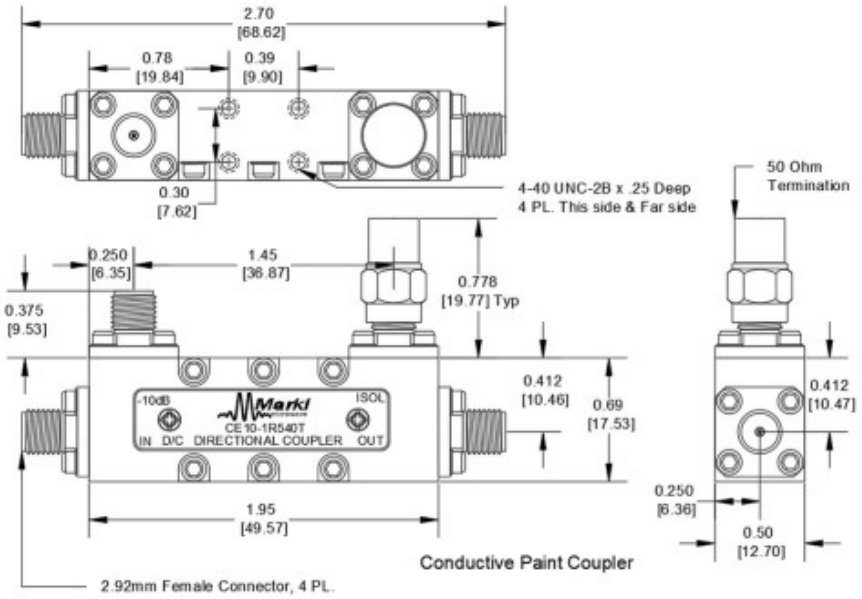
Revision History

Revision Code	Revision Date	Comment
-	2021-12-01	Datasheet Initial Release
A		Terminated Option Added, Operating and Storage Temperatures Updated

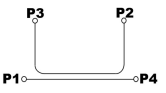
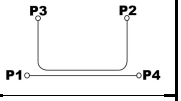
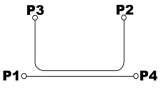
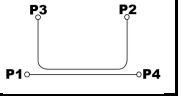
Port Configuration and Functions

Port Diagram

A side view of the CE10-1R540 package outline drawing is shown below. The CE10-1R540 has input and output ports given in Port Functions. The CE10-1R540 can be used in either the forward or reverse direction corresponding to configuration A and B respectively. For configuration A, input signal into port 1, use port 3 for coupled port, and port 4 for output port. Port two is loaded in the CE10-1R540T and the device can only be used in configuration A.



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
Port 1	Input	2.92F	The input port is DC short to the output port and open to the isolated and coupled ports.	
Port 2	Isolated	2.92F	The isolated port is DC short to the coupled port and open to the input and output ports. This port has a factory installed 50 Ohm termination.	
Port 3	Coupled	2.92F	The coupled port is DC short to the isolated port and open to the input and output ports.	
Port 4	Output	2.92F	The output port is DC short to the input port and open to the isolated and coupled ports.	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
RF Power Handling	20	W
Minimum Operating Temperature	-55	°C
Maximum Operating Temperature	100	°C
Minimum Storage Temperature	-65	°C
Maximum Storage Temperature	125	°C

Package Information

Parameter	Details	Rating
Dimensions	-	68.62 x 17.53 mm

Electrical Specifications

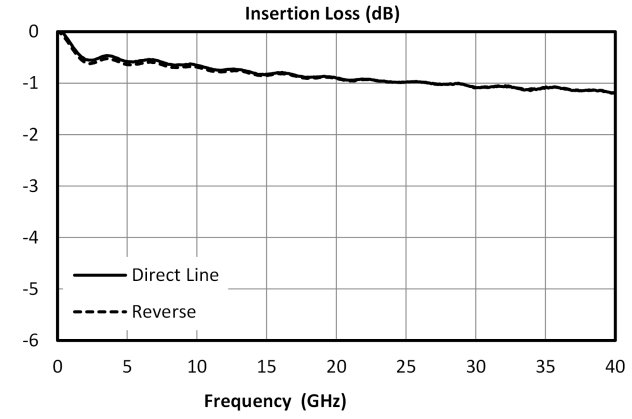
The electrical specifications apply at TA=+25°C in a 50Ω system

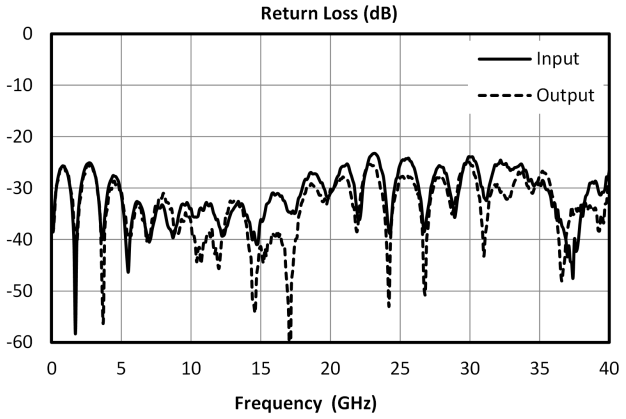
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Flatness [1]	-	1.5	40	-	0.25	0.5	dB
Coupling Loss [2]	-	1.5	40	0.41	0.46	0.52	dB
Directivity	-	1.5	40	15	20	-	dB
Direct Line Insertion Loss	DC-40	-	-	-	0.9	1.7	dB
Excess Insertion Loss (dB) [3]	DC-40	-	-	-	0.42	1.3	dB
IL Corrected Directivity [4]	-	1.5	40	16	22	-	dB
Impedance	-	-	-	-	50	-	Ω
Maximum Coupling Deviation	-	1.5	40	-	0.85	1.7	dB
Mean Coupling	-	1.5	40	9.5	10	10.5	dB
Return Loss	DC-40	-	-	19	30	-	dB
VSWR	DC-40	-	-	-	1.07	1.25	

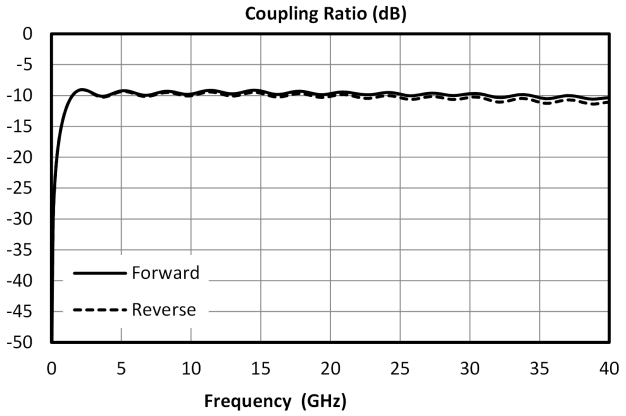
[1] Amplitude Flatness = Median value of ABS(Measured Coupling Power – Average Coupling Factor).
[2] Coupling loss based on average coupling factor
[3] Excess Insertion Loss = (Input Port to Output Port Insertion Loss) – Coupling Loss.
[4] IL Corrected Directivity = Directivity + Insertion Loss.

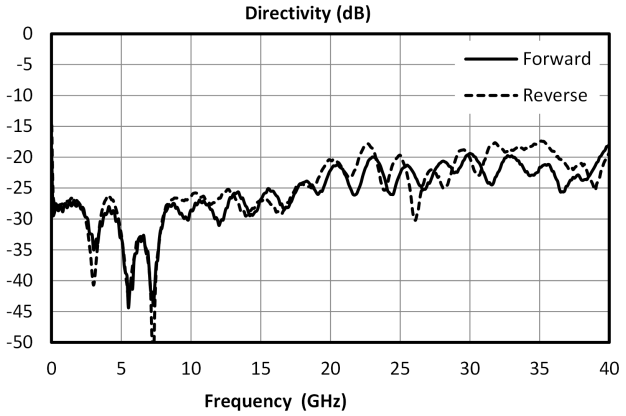
Typical Performance Plots

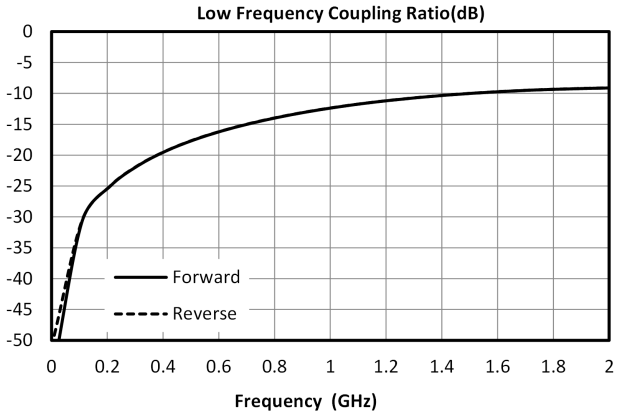
Insertion Loss, Return Loss, Coupled Port Power, and Directivity



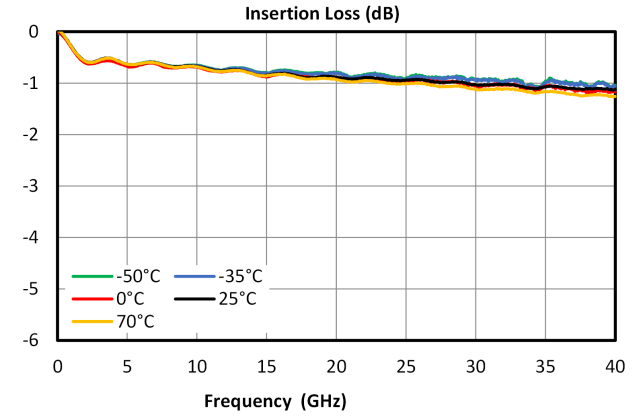


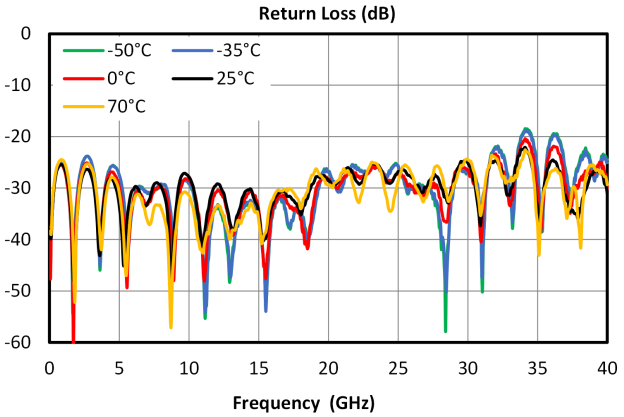


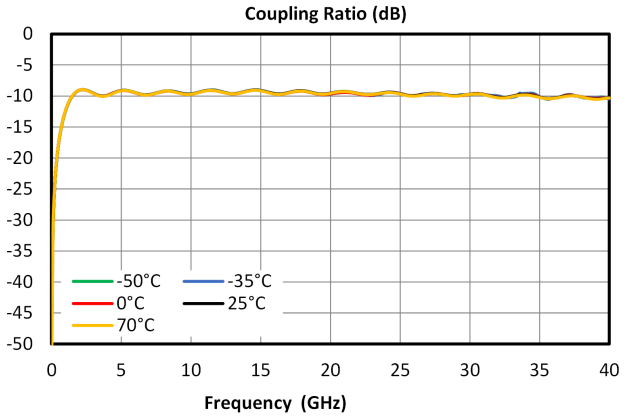


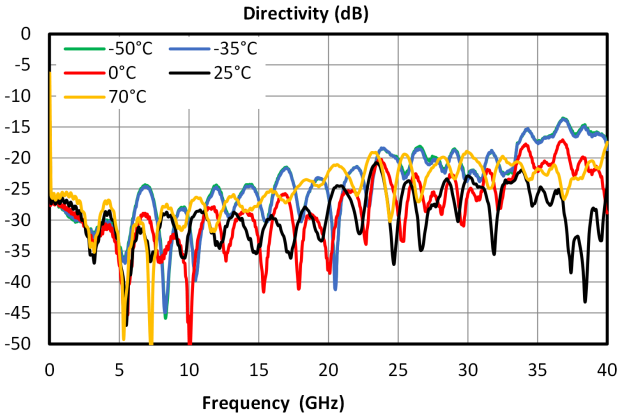


Performance Over Temperature

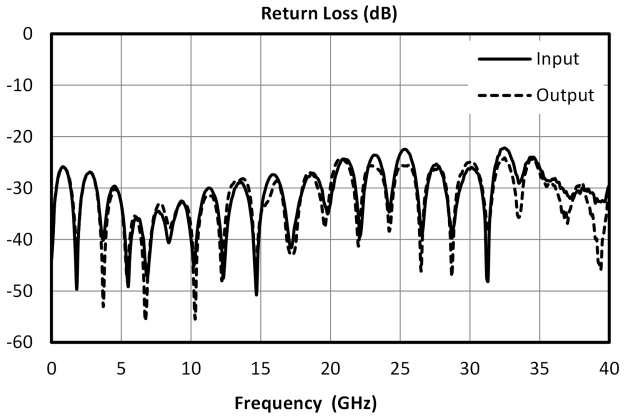


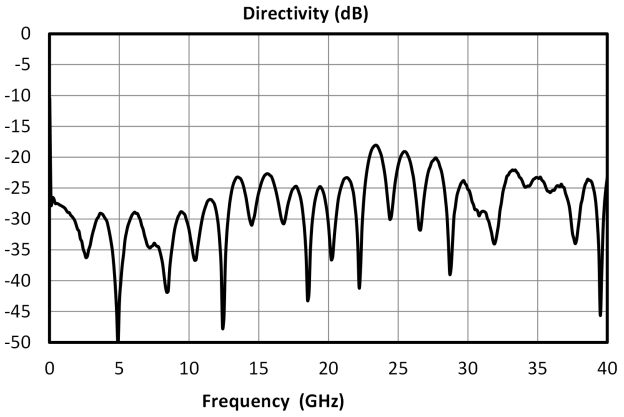






Terminated Return Loss and Directivity

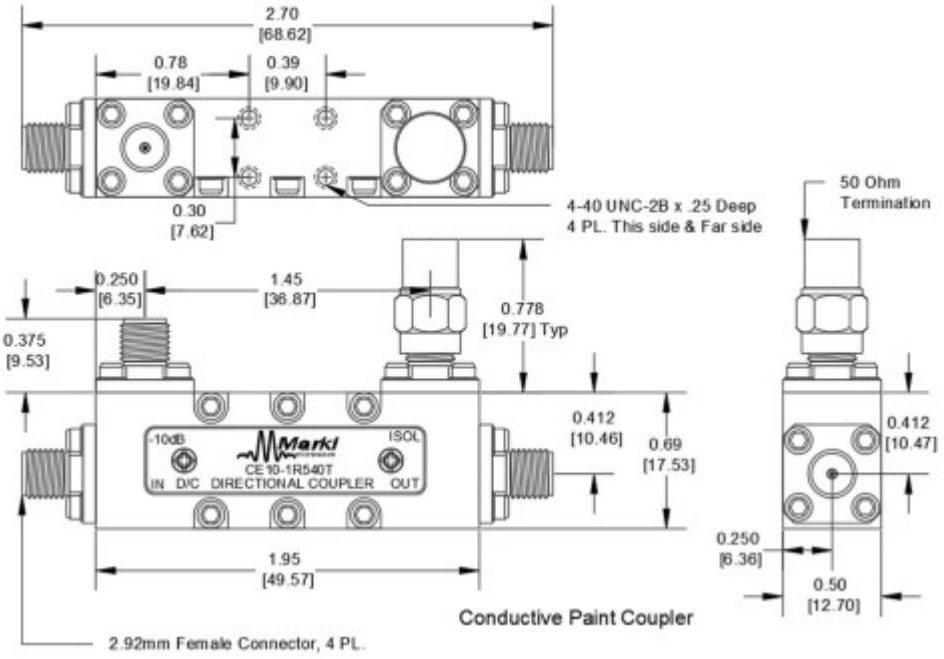




Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



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