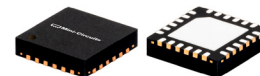




### THE BIG DEAL

- Wideband, 4 to 20 GHz
- Excellent Coupling Flatness  $21 \pm 2$  dB Typ.
- Highly Repeatable Performance (GaAs Based Design)
- Small Size, 4x4 mm
- No External Termination Required



Generic photo used for illustration purposes only

CASE STYLE: DG1847

#### +RoHS Compliant

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

### APPLICATIONS

- Satellite Communications
- Wireless Infrastructure
- Test and Measurement

### PRODUCT OVERVIEW

Mini-Circuits' EDC21-24+ is a 21 dB directional coupler that operates from 4 to 20 GHz and is packaged in an MCLP 4x4 mm, 24-lead package. It provides excellent coupling flatness over a broad bandwidth and good return loss. This coupler also provides a quadrature phase shift between the signal at the through port and coupler port. Manufactured using GaAs Technology, this model is highly repeatable in volume manufacturing.

### KEY FEATURES

Feature	Advantages
Wideband, 4 to 20 GHz	EDC21-24+ can be used in many applications, saving component count. Also ideal for wideband applications such as military and instrumentation.
Excellent Coupling Flatness	Excellent coupling flatness yields higher accuracy.
Small Size, 4x4 mm MCLP Package	Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.



MMIC SURFACE MOUNT

## Directional Coupler

EDC21-24+

ELECTRICAL SPECIFICATIONS<sup>1</sup> AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		4000		20000	MHz
Mainline Loss	4000 - 8000		0.4	1.0	dB
	8000 - 10000		0.7	1.4	
	10000 - 15000		0.8	1.5	
	15000 - 20000		0.9	2.0	
Nominal Coupling	4000 - 8000	18.7	22	25.8	dB
	8000 - 10000	17.8	21	24.6	
	10000 - 15000	18.0	21	24.8	
	15000 - 20000	17.5	21	24.2	
Coupling Flatness ( $\pm$ )	4000 - 20000		2.0		dB
Directivity	4000 - 8000	17.2	21		dB
	8000 - 10000	12.5	19		
	10000 - 15000	11	16		
	15000 - 20000	9.1	14		
Return Loss (Input)	4000 - 8000		26		dB
	8000 - 10000		16		
	10000 - 15000		17		
	15000 - 20000		21		
Return Loss (Output)	4000 - 8000		26		dB
	8000 - 10000		16		
	10000 - 15000		17		
	15000 - 20000		21		
Return Loss (Coupled)	4000 - 8000		19		dB
	8000 - 10000		16		
	10000 - 15000		15		
	15000 - 20000		21		

1. Measured on Mini-Circuits characterization test board TB-978+ with test board loss deducted.



## ABSOLUTE MAXIMUM RATINGS

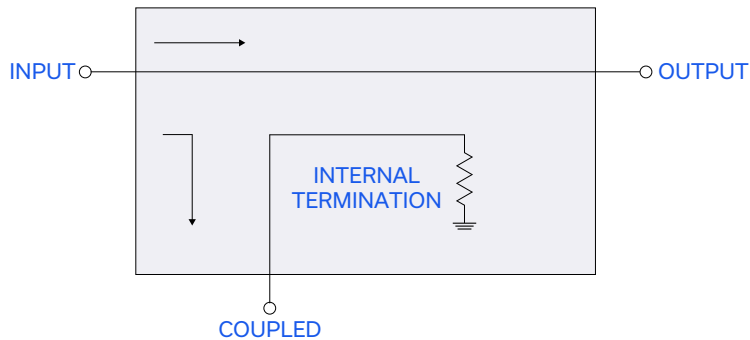
Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Input Power	+32.5 dBm (5 minutes max.) +29.5 dBm (continuous)
Power at Internal Termination	+15 dBm (5 minutes max.) +12 dBm (continuous)

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

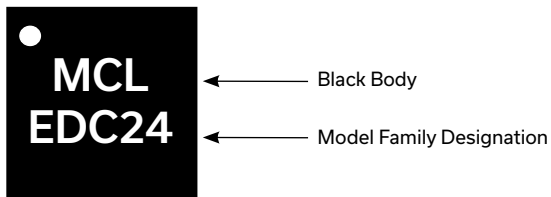
## PAD CONNECTIONS

Function	Pad Number
INPUT	3
COUPLED	7
OUTPUT	16
GROUND	1,2,4-6,8-15, 17-24 & paddle

## ELECTRICAL SCHEMATIC



## PRODUCT MARKING



Marking may contain other features or characters for internal lot control.



ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASHBOARD. TO ACCESS [CLICK HERE](#)

Performance Data	Data Table Swept Graphs S-Parameter (S3P Files) Data Set (.zip file)
Case Style	DG1847 Plastic package, exposed paddle Lead Finish: Matte-Tin
Tape & Reel Standard Quantities Available on Reel	F68 7" Reels with 20, 50, 100, 200, 500 or 1000 devices
Suggested Layout for PCB Design	PL-532
Evaluation Board	TB-978+
Environmental Ratings	ENV08T2

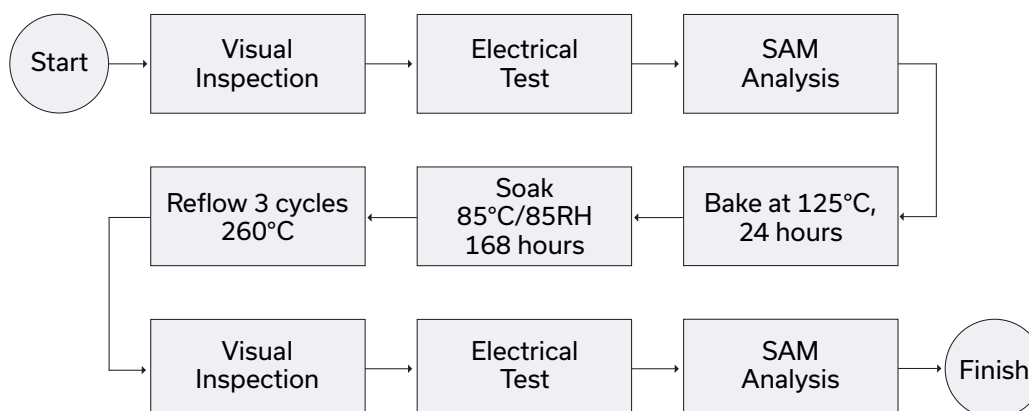
### ESD RATING

Human Body Model (HBM): Class 1B (Pass 500 V) in accordance with ANSI/ESD STM 5.1 - 2001

### MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020E /JEDEC J-STD-033C

### MSL TEST FLOW CHART



#### 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)