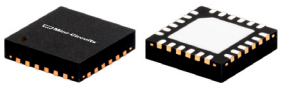
MMIC SURFACE MOUNT

Power Splitter/Combiner EPQ-133+

2 Way-90° 50Ω 6000 to 1400 MHz

THE BIG DEAL

- Wideband (6-14 GHz)
- Good Isolation and Return Loss
- Highly repeatable performance (GaAs based design)
- No external termination required
- High power handling (>30dBm)
- Small Size MCLP 4x4mm



Generic photo used for illustration purposes only

CASE STYLE: DG1847

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

APPLICATIONS

- Balanced amplifiers
- Modulators
- Attenuator
- Point to Point
- Military

PRODUCT OVERVIEW

Mini-Circuits' EPQ-133+ is a wideband 6-14 GHz, 90° hybrid. It splits an input signal into two output signals with quadrature phase shift between them. It provides low loss, wideband in a small layout size and handles high power with good VSWR.

KEY FEATURES

Feature	Advantages
Small Size	The EPQ-133+ offers an industry leading combination of size, bandwidth and frequency. The small footprint (4mm x4 mm) allows for reduced parasitics in systems with improved performance and simplified layout.
Low Phase and Amplitude Unbalance	3.4 deg. and 0.5 dB unbalance make this 90° hybrid applicable for use in higher level integrated components such as image reject mixers, single sideband modulators, phase shifters, variable attenuators, and balance amplifiers.
High Power Handling	Capable of operating up to 32 dBm, MMIC structure of EPQ-133+ makes this 90° hybrid a robust, rugged product that can be used effectively in either the transmit or receive paths.

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ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		6000		14000	MHz
Insertion Loss, (Avg. of Mainline & Coupled) above 3dB	6000 - 8000	—	0.6	1.1	dB
	8000 - 10000	—	0.6	1.2	
	10000 - 12000	—	0.8	1.5	
	12000 - 14000	—	1.0	2.0	
Isolation	6000 - 8000	16	20	—	dB
	8000 - 10000	16	20	—	
	10000 - 12000	14	18	—	
	12000 - 14000	13	16	—	
Amplitude Unbalance	6000 - 8000	—	0.5	1.7	dB
	8000 - 10000	—	0.5	1.2	
	10000 - 12000	—	0.6	1.2	
	12000 - 14000	—	0.4	1.6	
Phase Unbalance (Deviation from 90°)	6000 - 8000	—	2.9	5.7	Degree
	8000 - 10000	—	3.4	7.0	
	10000 - 12000	—	4.1	8.8	
	12000 - 14000	—	4.4	—	
Input VSWR	6000 - 8000		1.2		:1
	8000 - 10000		1.2		
	10000 - 12000		1.4		
	12000 - 14000		1.6		
Output VSWR (0°&90°)	6000 - 8000		1.2		:1
	8000 - 10000		1.1		
	10000 - 12000		1.3		
	12000 - 14000		1.5		

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Power Input (as a splitter)	+32 dBm
Internal Dissipation	+30 dBm

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

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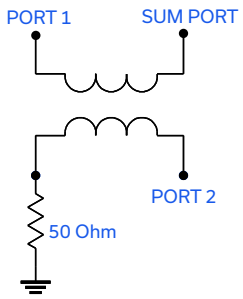
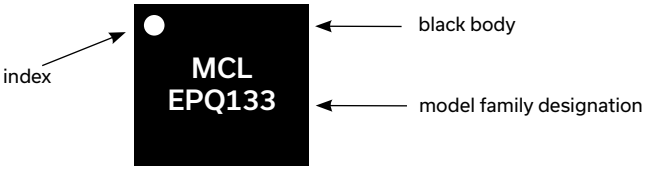
SIMPLIFIED ELECTRICAL SCHEMATIC



PAD CONNECTIONS

Function	Pad Number
SUM PORT	1
PORT 1 (0°)	9
PORT 2 (+90°)	22
NC	2-8, 10-21, 23,24

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

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ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS CLICK HERE

Performance Data	Data Table Swept Graphs S-Parameter (S2P 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, 1000 devices 13" reels with 2000, 3000, 4000 devices
Suggested Layout for PCB Design	PL-520
Evaluation Board	TB-961-133+
Environmental Ratings	ENV82

ESD RATING

Human Body Model (HBM): Class 1A (250 to <500 V) in accordance with ANSI/ESD STM 5.1 - 2001

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