Surface Mount

Power Splitter/Combiner AMT-32+

2 Way-0°/180° 50Ω 1 to 300 MHz

The Big Deal

- Low amplitude unbalance, 0.2 dB typ.
- Low phase unbalance, ±3° typ.
- High isolation, 35 dB typ.

CASE STYLE: CD636

Product Overview

Mini-Circuits' AMT-32+ is a wideband, 2 way, 0°/180° surface mount magic T splitter/combiner. It provides very low amplitude and phase unbalance with good isolation over the full frequency range. It handles up to 0.5W of input power and comes in a small case with excellent thermal performance (-40°C to 85°C operating).

Key Features

Feature	Advantages
Wideband	Wide frequency coverage from 1 to 300 MHz supports many applications DOCSIS 3.1
Low amplitude unbalance and phase unbalance 0.2 dB typ. for amplitude unbalance ±3° typ. for phase unbalance	0.2 dB typ for amplifier unbalance ±3° typ. for phase unbalance produces nearly equal output signals.
Good return loss: • 18 dB typ., for all ports	Well matched for 50Ω systems.
Good isolation • 30 dB typ., for ports 1 & 2 • 35 dB typ., for S, J - ports	Good isolation over the entire band minimizes effect of load changes at one output port on another output port.
0.5W max. input power	High power handling accommodates a wide range of system power requirements.
Small size, 0.27 x 0.31 x 0.22 in.	Accommodates dense PCB layouts.

*Does not include coupling loss

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Generic photo used for illustration purposes only

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+RoHS Compliant

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200
13"	500, 1000

Features

- low insertion S-1 and S-2, 0.5 dB typ; J-1 and J-2, 0.5 dB typ.
- very good input VSWR, 1.3 typ. and good output VSWR, 1.35 typ.
- excellent amplitude unbalance, 0.2 dB typ.
- excellent phase unbalance, 2 deg. typ.
- high isolation S-J ports and 1-2 ports, 35 dB typ.
- protected under US Patent 6,133,525

Applications

- HF, VHF radios, Aircraft communications, FM Broadcast
- IF receiver

Maximum Ratings

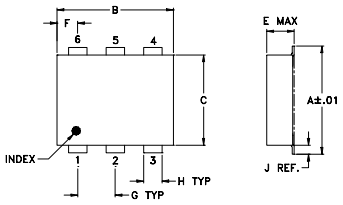
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.
Internal Dissipation	0.125W max.

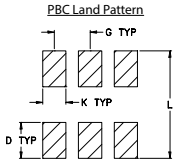
Permanent damage may occur if any of these limits are exceeded.

Pin Connections

SUM PORT	3
PORT 1	6
PORT 2	4
PORT J	1
GROUND	2,5

Outline Drawing



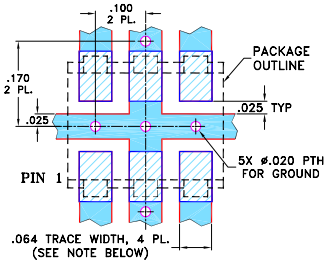


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.162	.055	.100
6.91	7.87	5.59	2.54	4.11	1.40	2.54

H	J	K	L	wt
.030	.026	.065	.300	grams
0.76	0.66	1.65	7.62	0.25

Demo Board MCL P/N: TB-211
Suggested PCB Layout (PL-097)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

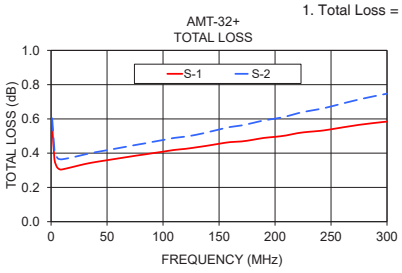
Electrical Specifications at 25°C

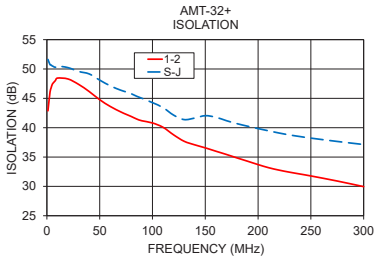
Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency			1		300	MHz
Insertion Loss	S-1, S-2	1-300		0.5	1.0	dB
(above theoretical 3.0 dB)	J-1, J-2	1-300		0.7	1.1	
Isolation	J-S	1-100	30	40		dB
		100-300	27	35		
	1-2	1-100	30	38		
		100-300	25	28		
Phase Unbalance		1-100		1.0	3.0	Degree
		100-200		2.0	5.0	
		200-300		4.0	8.0	
Amplitude Unbalance		1-300		0.2	0.5	dB
VSWR (Port S) (Port J)		1-300		1.3		:1
VSWR (Port 1-2)		1-300		1.35		:1

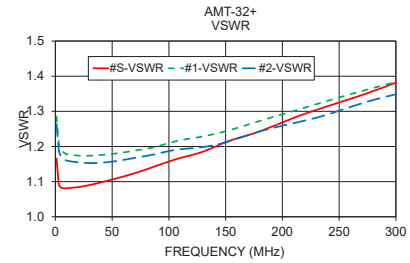
Typical Performance Data

Freq. (MHz)	Total Loss[1] (dB)		Amplitude Unbal. (dB)	Insertion Loss (dB)		Amplitude Unbal. (dB)	Isolation (dB)		Phase Unbal. (deg.)		VSWR S	VSWR 1	VSWR 2
	S-1	S-2	(S-1)-(S-2)	J-1	J-2	(J-1)-(J-2)	1-2	S-J	(S-1)-(S-2)	(J-1)-(J-2)			
1	0.56	0.60	0.05	0.52	0.61	0.09	42.87	51.63	0.13	0.236	1.17	1.29	1.26
3	0.36	0.42	0.05	0.37	0.46	0.08	46.10	50.74	0.03	0.127	1.09	1.21	1.19
5	0.32	0.38	0.06	0.35	0.43	0.08	47.34	50.52	0.01	0.121	1.08	1.19	1.17
10	0.31	0.36	0.06	0.34	0.42	0.08	48.45	50.50	0.09	0.14	1.08	1.18	1.16
20	0.32	0.38	0.06	0.37	0.44	0.08	48.30	50.23	0.22	0.216	1.08	1.17	1.15
30	0.34	0.39	0.06	0.38	0.46	0.07	47.39	49.58	0.32	0.318	1.09	1.17	1.15
50	0.36	0.42	0.06	0.42	0.48	0.07	44.77	48.11	0.55	0.487	1.11	1.18	1.16
100	0.41	0.48	0.07	0.49	0.53	0.04	40.80	44.26	1.10	0.976	1.16	1.21	1.19
130	0.43	0.51	0.07	0.53	0.55	0.02	37.68	41.38	1.46	1.28	1.19	1.23	1.20
150	0.45	0.54	0.08	0.56	0.57	0.01	36.57	42.04	1.67	1.467	1.21	1.24	1.21
200	0.50	0.60	0.11	0.63	0.59	0.04	33.71	39.85	2.30	2.045	1.27	1.29	1.26
230	0.52	0.65	0.12	0.68	0.61	0.07	32.41	38.76	2.70	2.422	1.30	1.32	1.28
250	0.54	0.67	0.13	0.71	0.62	0.09	31.78	38.22	2.99	2.687	1.33	1.34	1.30
300	0.58	0.75	0.16	0.79	0.64	0.15	29.96	37.13	3.73	3.407	1.38	1.38	1.35

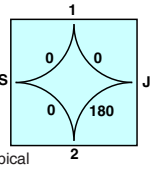
1. Total Loss = Insertion Loss + 3dB splitter loss.







electrical schematic



- S-J ports, isolation 40 typical
- Inphase ports, S-1 and S-2 insertion loss 0.2 dB typical
- Amplitude unbalance defined by input S or J ports to output 1 and 2

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

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