Coaxial

High Power Combiner

ZA3CS-450-9W

3 Way-0° 50Ω 100 to 450 MHz

Generic photo used for illustration purposes only

CASE STYLE: AX255

Connectors	Model
BNC	ZA3CS-450-9W
N-TYPE	ZA3CS-450-9W-N
SMA	ZA3CS-450-9W-S

Maximum Ratings

Operating Temperature	-55°C to 90°C
Storage Temperature	-55°C to 100°C

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

Coaxial Connections

SUM PORT	S
PORT 1	1
PORT 2	2
PORT 3	3

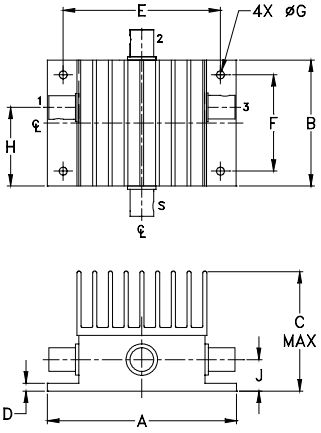
Features

- high power, up to 9W input power
- wideband, 100 to 450 MHz
- low insertion loss, 0.9 dB typ.

Applications

- VHF/UHF
- communication receivers & transmitters

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F
3.00	2.00	1.92	.100	2.500	1.525
76.20	50.80	48.77	2.54	63.50	38.74

G	H	J	wt
.125	1.25	.50	grams
3.18	31.75	12.70	343

High Power Combiner Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) ABOVE 4.8 dB		PHASE UNBALANCE (Degrees)		AMPLITUDE UNBALANCE (dB)		POWER INPUT[1] (W)	
									as combiner[2]	as splitter
f_L-f_U	Typ.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Max.	Max.
100-450	22	15	0.9	1.8	2.5	8.0	0.2	0.7	9	12

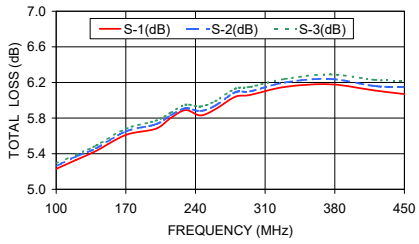
1. Over -55°C to +55°C. Derate linearly to 20% of rating at 90°C
2. As a combiner of non-coherent signals, max. power per port is power rating divided by number of ports.

Typical Performance Data

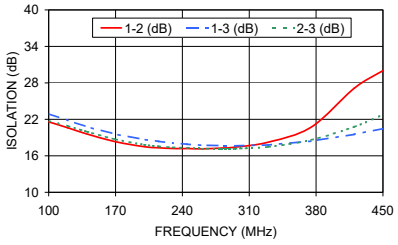
Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3
	S-1	S-2	S-3		1-2	1-3	2-3					
100.00	5.23	5.26	5.29	0.07	21.59	22.92	21.77	0.48	1.65	1.37	1.34	1.36
120.00	5.33	5.37	5.39	0.05	20.61	21.81	20.89	0.69	1.73	1.33	1.29	1.30
140.00	5.43	5.46	5.49	0.07	19.60	20.78	19.99	0.79	1.84	1.30	1.26	1.28
170.00	5.61	5.65	5.68	0.07	18.32	19.56	18.71	0.93	1.97	1.29	1.24	1.26
200.00	5.68	5.73	5.77	0.08	17.50	18.69	17.82	1.03	2.09	1.28	1.25	1.25
215.00	5.80	5.83	5.86	0.06	17.32	18.38	17.56	1.07	2.16	1.27	1.25	1.25
230.00	5.89	5.91	5.95	0.06	17.21	18.10	17.39	1.16	2.23	1.26	1.26	1.26
245.00	5.83	5.88	5.93	0.10	17.19	17.91	17.32	1.44	2.26	1.25	1.27	1.27
260.00	5.90	5.94	5.99	0.09	17.15	17.74	17.19	1.48	2.33	1.25	1.28	1.29
280.00	6.04	6.09	6.13	0.09	17.27	17.68	17.16	1.47	2.43	1.26	1.31	1.33
295.00	6.06	6.10	6.15	0.09	17.42	17.65	17.17	1.71	2.47	1.26	1.32	1.36
330.00	6.15	6.20	6.24	0.10	18.25	17.79	17.48	1.89	2.43	1.27	1.36	1.41
375.00	6.18	6.24	6.29	0.11	20.73	18.43	18.62	2.20	2.25	1.24	1.36	1.37
420.00	6.11	6.16	6.23	0.12	27.12	19.54	20.78	2.79	1.97	1.19	1.31	1.29
450.00	6.07	6.15	6.22	0.14	30.02	20.48	22.77	3.26	1.83	1.16	1.25	1.25

1. Total Loss = Insertion Loss + 4.8dB splitter loss.

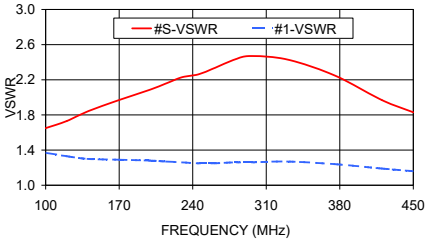
ZA3CS-450-9W
TOTAL LOSS



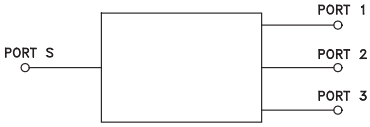
ZA3CS-450-9W
ISOLATION



ZA3CS-450-9W
VSWR



electrical schematic



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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3 Way-0° Power Splitter/Combiner ZA3CS-450-9W

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)			AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (deg.)
	S-1	S-2	S-3		1-2	1-3	2-3	
100.0	5.23	5.26	5.29	0.07	21.59	22.92	21.77	0.48
110.0	5.29	5.29	5.33	0.04	21.09	22.38	21.33	0.60
120.0	5.33	5.37	5.39	0.05	20.61	21.81	20.89	0.69
130.0	5.39	5.43	5.45	0.07	20.09	21.27	20.45	0.65
140.0	5.43	5.46	5.49	0.07	19.60	20.78	19.99	0.79
150.0	5.44	5.47	5.49	0.06	19.18	20.36	19.56	0.79
160.0	5.49	5.54	5.57	0.08	18.72	19.94	19.13	0.93
170.0	5.61	5.65	5.68	0.07	18.32	19.56	18.71	0.93
180.0	5.65	5.69	5.72	0.07	18.02	19.27	18.38	0.97
190.0	5.65	5.68	5.70	0.05	17.74	18.97	18.06	1.01
200.0	5.68	5.73	5.77	0.08	17.50	18.69	17.82	1.03
205.0	5.71	5.76	5.80	0.09	17.43	18.57	17.74	1.16
210.0	5.75	5.80	5.83	0.08	17.37	18.47	17.64	1.09
215.0	5.80	5.83	5.86	0.06	17.32	18.38	17.56	1.07
220.0	5.83	5.86	5.88	0.06	17.29	18.28	17.49	1.26
225.0	5.87	5.89	5.92	0.05	17.24	18.20	17.43	1.22
230.0	5.89	5.91	5.95	0.06	17.21	18.10	17.39	1.16
235.0	5.87	5.93	5.96	0.09	17.20	18.02	17.36	1.36
240.0	5.86	5.91	5.95	0.09	17.18	17.96	17.33	1.35
245.0	5.83	5.88	5.93	0.10	17.19	17.91	17.32	1.44
250.0	5.83	5.88	5.92	0.10	17.17	17.85	17.28	1.33
255.0	5.85	5.90	5.95	0.09	17.16	17.79	17.23	1.41
260.0	5.90	5.94	5.99	0.09	17.15	17.74	17.19	1.48
265.0	5.95	6.00	6.05	0.09	17.17	17.71	17.16	1.43
270.0	6.02	6.06	6.09	0.07	17.20	17.69	17.16	1.45
280.0	6.04	6.09	6.13	0.09	17.27	17.68	17.16	1.47
285.0	6.03	6.09	6.13	0.09	17.30	17.66	17.15	1.49
290.0	6.04	6.09	6.15	0.11	17.35	17.64	17.15	1.62
295.0	6.06	6.10	6.15	0.09	17.42	17.65	17.17	1.71
300.0	6.09	6.14	6.19	0.10	17.50	17.65	17.20	1.55
315.0	6.14	6.19	6.24	0.10	17.81	17.69	17.31	1.77
330.0	6.15	6.20	6.24	0.10	18.25	17.79	17.48	1.89
345.0	6.14	6.19	6.26	0.12	18.90	17.96	17.81	1.94
360.0	6.18	6.22	6.28	0.10	19.67	18.14	18.14	2.15
375.0	6.18	6.24	6.29	0.11	20.73	18.43	18.62	2.20
390.0	6.10	6.17	6.23	0.13	22.13	18.73	19.17	2.41
405.0	6.10	6.14	6.21	0.11	24.17	19.13	19.88	2.55
420.0	6.11	6.16	6.23	0.12	27.12	19.54	20.78	2.79
435.0	6.10	6.15	6.22	0.12	30.73	20.01	21.81	3.05
450.0	6.07	6.15	6.22	0.14	30.02	20.48	22.77	3.26

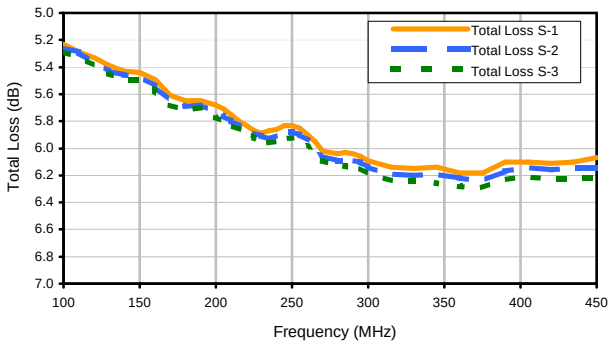
FREQ. (MHz)	VSWR (:1)			
	S	1	2	3
100.0	1.65	1.37	1.34	1.36
110.0	1.69	1.34	1.31	1.33
120.0	1.73	1.33	1.29	1.30
130.0	1.78	1.31	1.27	1.29
140.0	1.84	1.30	1.26	1.28
150.0	1.89	1.30	1.25	1.27
160.0	1.92	1.29	1.25	1.26
170.0	1.97	1.29	1.24	1.26
180.0	2.02	1.29	1.24	1.26
190.0	2.06	1.29	1.25	1.26
200.0	2.09	1.28	1.25	1.25
205.0	2.11	1.28	1.25	1.25
210.0	2.13	1.28	1.25	1.25
215.0	2.16	1.27	1.25	1.25
220.0	2.19	1.27	1.26	1.25
225.0	2.21	1.26	1.26	1.26
230.0	2.23	1.26	1.26	1.26
235.0	2.24	1.26	1.26	1.26
240.0	2.25	1.26	1.26	1.27
245.0	2.26	1.25	1.27	1.27
250.0	2.28	1.25	1.27	1.28
255.0	2.30	1.25	1.28	1.29
260.0	2.33	1.25	1.28	1.29
265.0	2.36	1.25	1.29	1.30
270.0	2.39	1.25	1.29	1.31
280.0	2.43	1.26	1.31	1.33
285.0	2.44	1.26	1.31	1.34
290.0	2.46	1.26	1.32	1.35
295.0	2.47	1.26	1.32	1.36
300.0	2.47	1.26	1.33	1.37
315.0	2.46	1.27	1.35	1.39
330.0	2.43	1.27	1.36	1.41
345.0	2.41	1.27	1.37	1.41
360.0	2.34	1.25	1.37	1.39
375.0	2.25	1.24	1.36	1.37
390.0	2.18	1.22	1.35	1.34
405.0	2.08	1.20	1.33	1.31
420.0	1.97	1.19	1.31	1.29
435.0	1.91	1.18	1.28	1.27
450.0	1.83	1.16	1.25	1.25

[1] Total Loss = Insertion Loss+ 4.8dB Splitter Loss

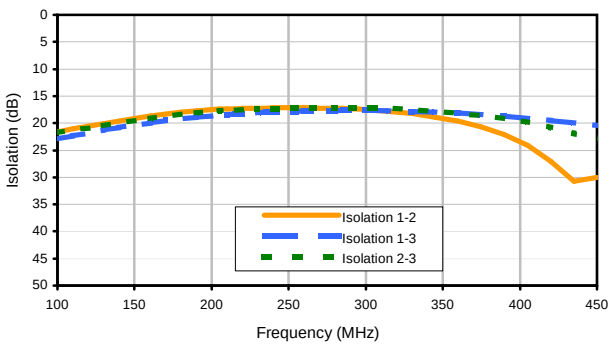
3 Way-0° Power Splitter/Combiner ZA3CS-450-9W

Typical Performance Curves

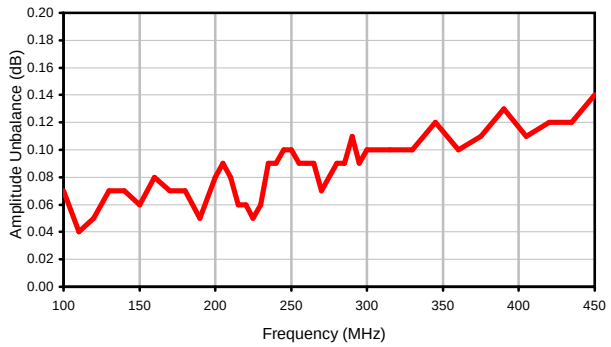
Total Loss



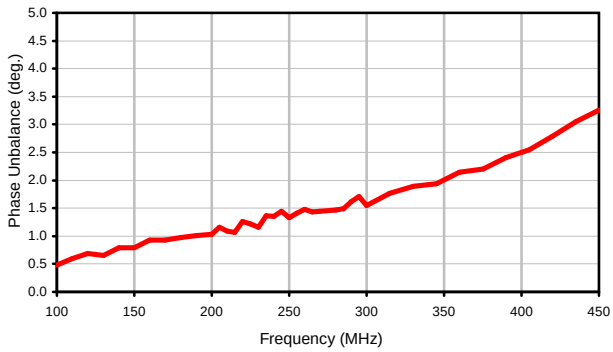
Isolation



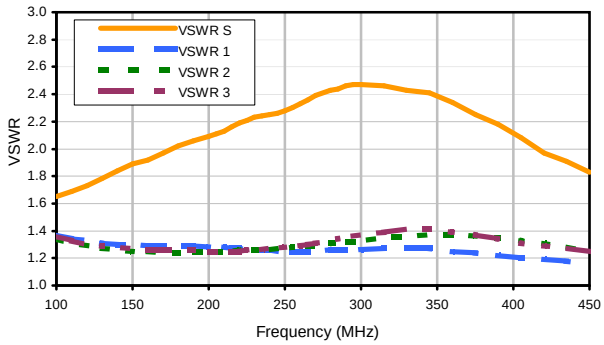
Amplitude Unbalance



Phase Unbalance



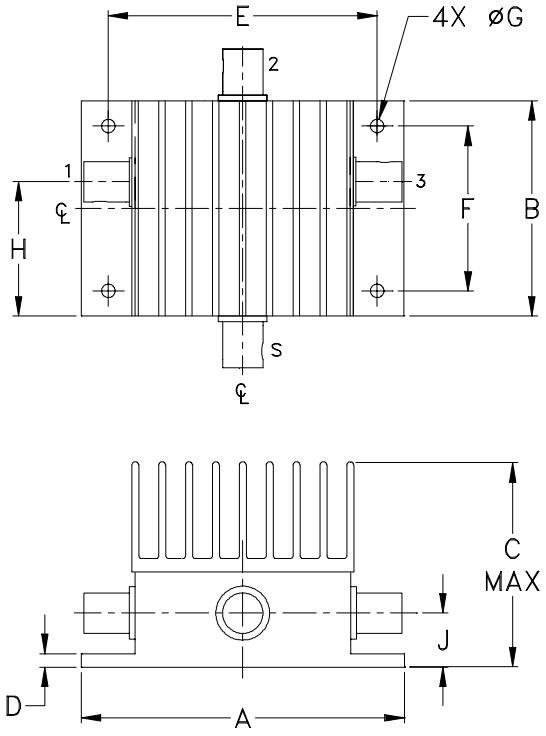
VSWR



Case Style AX

AX255

Outline Dimensions



CASE #	A	B	C	D	E	F	G	H	J	WT. GRAM
AX255	3.00 (76.20)	2.00 (50.80)	1.92 (48.77)	.100 (2.54)	2.500 (63.50)	1.525 (38.74)	.125 (3.18)	1.25 (31.75)	.50 (12.70)	343

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Case Finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Heat sink finish: Black anodize.

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Environmental Specifications **ENV28T9**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 90° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I