

High Power, DC Pass

# Power Splitter/Combiner ZN8PD-362HP+

8 Way-0° 50Ω Up to 100W 650 to 3600 MHz

## The Big Deal

- High power, up to 100W as a splitter
- Low insertion loss, 1.0 dB
- Good isolation, 23 dB



ZN8PD-362HPX-S+▲



ZN8PD-362HP-S+

## Product Overview

Mini-Circuits' ZN8PD-362HP+ is an 8-way 0° splitter/combiner providing very high power handling and low insertion loss across 600 to 3600 MHz, covering many wireless communications bands as well as satellite IF and more. Its outstanding combination of high power and low loss minimize power dissipation due to intrinsic losses and provide excellent signal fidelity from input to output. This model also provides high port-to-port isolation and low amplitude and phase unbalance. It comes housed in a rugged aluminum alloy case with your choice of SMA or N-Type connectors and an optional heat sink for cooling.

## Key Features

Feature	Advantages
Wideband, 600 to 3600 MHz	ZN8PD-362HP+ covers many popular wireless communications bands, making it suitable for a wide variety of applications.
High power handling: <ul style="list-style-type: none"><li>• 100W as a splitter</li><li>• 3.2W as a combiner</li></ul>	Suitable for many high power applications.
Low insertion loss, 1.0 dB	Very low insertion loss minimizes intrinsic losses, making this model a suitable candidate for high power signal distribution applications where low loss is a requirement.
Low unbalance: <ul style="list-style-type: none"><li>• 0.35 dB amplitude unbalance</li><li>• 4° phase unbalance</li></ul>	ZN8PD-362HP+ produces nearly equal output signals, ideal for parallel path / multichannel systems.
DC Passing, 1.2A (each port)	Supports applications where DC power is needed at later stages in the system.

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



High Power, DC Pass

# Power Splitter/Combiner

## ZN8PD-362HP+

8 Way-0° 50Ω Up to 100W 600 to 3600 MHz



ZN8PD-362HPX-S+<sup>▲</sup>

ZN8PD-362HP-S+

Generic photo used for illustration purposes only

CASE STYLE: AW257-1

Connectors	Model
SMA	ZN8PD-362HP-S+
SMA	ZN8PD-362HPX-S+ <sup>▲</sup>
N-TYPE	ZN8PD-362HP-N+
N-TYPE	ZN8PD-362HPX-N+ <sup>▲</sup>

+RoHS Compliant

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

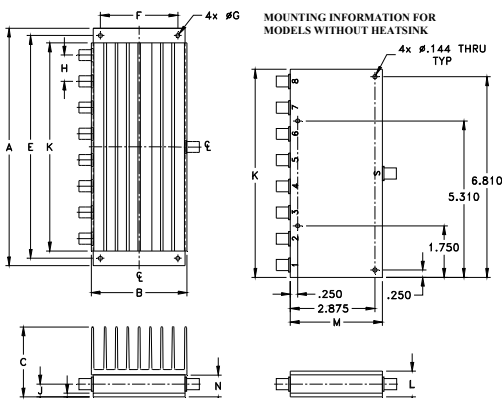
### Maximum Ratings

Operating Temperature	-55°C to 60°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter <sup>1</sup> )	100W max.
Internal Dissipation	3.2W max.
DC Current	1.2A (150mA for each port)
Permanent damage may occur if any of these limits are exceeded.	

### Coaxial Connections

SUM PORT	S
PORT 1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8

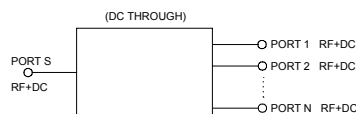
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
8.06	3.25	2.38	.125	7.560	2.625	.144
204.72	82.55	60.45	3.18	192.02	66.68	3.66
H	J	K	L	M	N	wt
.890	.44	7.06	.88	3.13	.75	grams*
22.61	11.18	179.32	22.35	79.50	19.05	1240
*850 grams without heatsink						

### Electrical Schematic



### Features

- power handling up to 100W
- wideband, 600 to 3600 MHz
- low insertion loss, 1.0 dB typ.
- good isolation, 23 dB typ.
- rugged shielded case

### Applications

- WiMax
- LTE
- WCDMA

### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit	
<b>Frequency Range</b>		600		3600	MHz	
<b>Insertion Loss</b> (above theoretical 9.0 dB)	600 - 700	—	0.7	1.0	dB	
	700 - 2700	—	1.0	1.6		
	2700 - 3600	—	1.6	2.2		
<b>Isolation</b>	600 - 700	16	20	—	dB	
	700 - 2700	19	23	—		
	2700 - 3600	16	20	—		
<b>Phase Unbalance</b>	600 - 700	—	1	3	Degree	
	700 - 2700	—	4	8		
	2700 - 3600	—	5	10		
<b>Amplitude Unbalance</b>	600 - 700	—	0.1	0.3	dB	
	700 - 2700	—	0.2	0.7		
	2700 - 3600	—	0.4	0.9		
<b>VSWR (Port S)</b>	600 - 700	—	1.5	1.7	:1	
	700 - 2700	—	1.4	1.8		
	2700 - 3600	—	1.5	1.8		
<b>VSWR (Port 1-8)</b>	600 - 700	—	1.1	1.35	:1	
	700 - 2700	—	1.15	1.35		
	2700 - 3600	—	1.2	1.35		
<b>Power Handling</b>		<b>As Splitter<sup>1</sup></b>	600 - 2700	—	100	Watt
		<b>As Combiner<sup>2</sup></b>	2700 - 3600	—	50	
			600 - 3600	—	3.2	

1. All outputs must terminate 50 ohm (VSWR 1.5:1 or better)

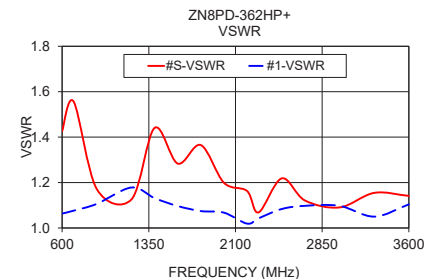
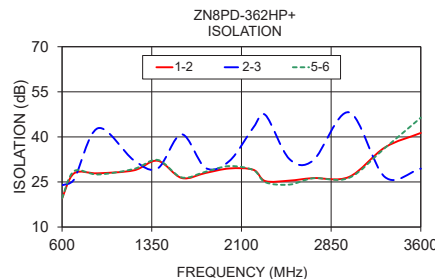
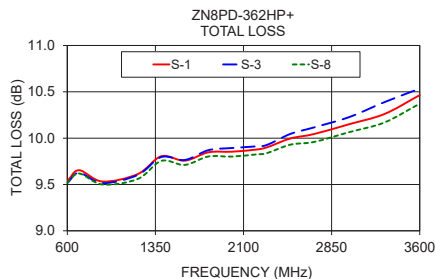
2. As a combiner of non-coherent signals, max. power per port is 3.2 watt power rating divided by number of ports.

<sup>▲</sup> Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 60°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 1.1°C/W max.

### Typical Performance Data

Freq. (MHz)	Total Loss <sup>1</sup> (dB)						Amp. Unb. (dB)	Isolation (dB)				Phase Unb. (deg.)	VSWR S	VSWR 1	VSWR 8
	S-1	S-2	S-3	S-4	S-6	S-8		1-2	2-3	3-4	5-6				
600	9.54	9.54	9.51	9.51	9.53	9.52	0.05	19.47	23.95	19.46	19.53	0.76	1.43	1.06	1.05
700	9.65	9.65	9.63	9.62	9.64	9.62	0.04	27.87	25.82	27.94	28.59	0.88	1.56	1.08	1.08
900	9.53	9.52	9.51	9.49	9.53	9.50	0.05	27.88	42.88	28.04	27.48	1.13	1.17	1.11	1.12
1200	9.61	9.60	9.60	9.57	9.62	9.56	0.06	28.86	32.22	29.31	29.33	1.40	1.13	1.18	1.17
1400	9.80	9.80	9.80	9.78	9.81	9.75	0.06	32.05	29.51	31.81	32.32	1.55	1.44	1.13	1.12
1600	9.76	9.76	9.76	9.74	9.78	9.71	0.07	26.32	40.86	26.51	26.51	1.75	1.28	1.10	1.08
1800	9.85	9.86	9.87	9.85	9.87	9.80	0.07	27.99	29.65	27.91	28.39	1.76	1.37	1.07	1.06
2000	9.85	9.88	9.89	9.86	9.89	9.80	0.09	29.49	32.00	30.28	30.28	2.02	1.20	1.07	1.07
2200	9.88	9.89	9.91	9.87	9.91	9.82	0.09	29.04	43.15	28.13	28.94	1.94	1.16	1.02	1.03
2300	9.90	9.91	9.93	9.89	9.92	9.84	0.09	25.28	47.28	24.64	24.90	1.98	1.07	1.04	1.04
2500	10.00	10.00	10.05	10.01	10.06	9.93	0.13	25.44	32.67	24.86	24.11	2.07	1.22	1.08	1.09
2700	10.04	10.04	10.12	10.06	10.10	9.96	0.16	26.28	32.17	26.22	26.24	2.16	1.12	1.10	1.10
3000	10.15	10.15	10.23	10.18	10.19	10.06	0.16	26.67	48.18	26.42	26.37	2.35	1.09	1.10	1.11
3300	10.26	10.29	10.39	10.32	10.34	10.17	0.22	36.49	26.63	36.18	36.31	2.54	1.15	1.05	1.05
3600	10.46	10.49	10.53	10.48	10.50	10.37	0.16	41.31	29.44	45.05	46.39	2.57	1.14	1.10	1.12

1. Total Loss = Insertion Loss + 9dB theoretical splitter loss.



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# 8 Way-0° Power Splitter/Combiner

# ZN8PD-362HP+

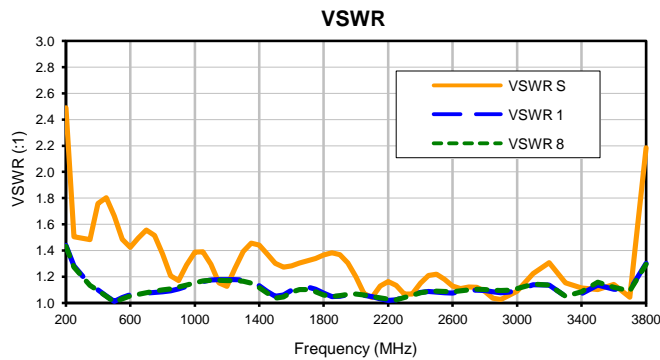
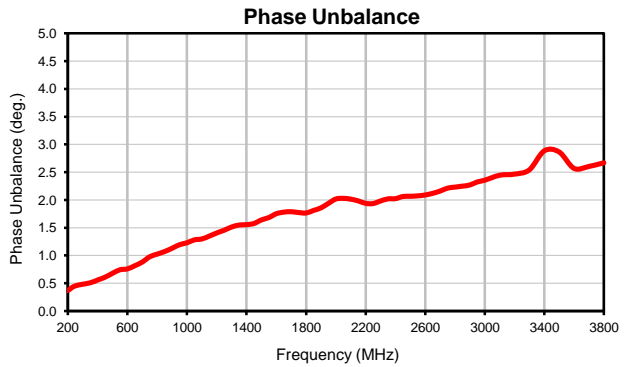
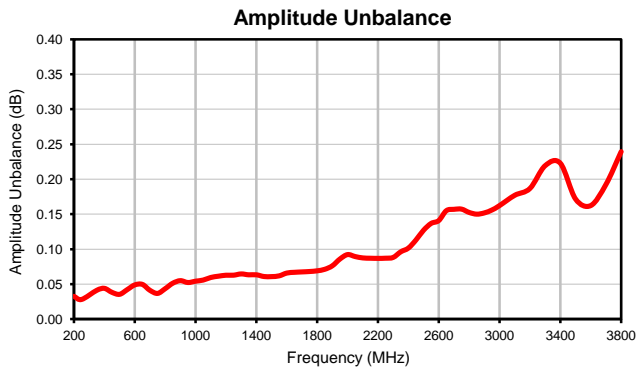
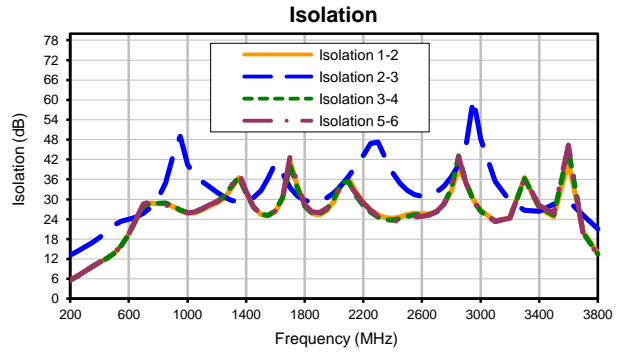
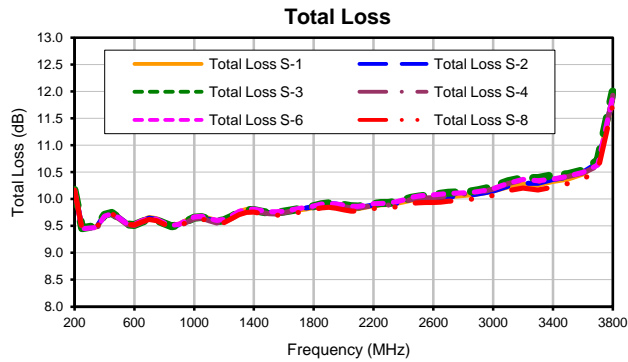
## Typical Performance Data

FREQ. (MHz)	TOTAL LOSS <sup>1</sup> (dB)						AMP. UNBAL. (dB)	ISOLATION (dB)				PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1)		
	S-1	S-2	S-3	S-4	S-6	S-8		1-2	2-3	3-4	5-6			S	1	8
200	10.18	10.19	10.17	10.16	10.15	10.17	0.03	5.60	13.14	5.59	5.59	0.37	200	2.49	1.44	1.43
250	9.47	9.46	9.46	9.44	9.45	9.45	0.03	6.83	14.27	6.83	6.83	0.45	250	1.51	1.28	1.27
350	9.48	9.49	9.50	9.46	9.47	9.49	0.04	9.62	16.88	9.64	9.65	0.51	350	1.48	1.14	1.13
400	9.69	9.70	9.71	9.66	9.68	9.69	0.04	10.97	18.49	10.99	11.02	0.56	400	1.76	1.10	1.10
450	9.74	9.75	9.74	9.71	9.73	9.73	0.04	12.20	20.45	12.21	12.25	0.61	450	1.80	1.05	1.05
500	9.65	9.65	9.64	9.62	9.64	9.63	0.04	13.73	22.28	13.74	13.77	0.68	500	1.66	1.01	1.01
550	9.55	9.55	9.53	9.52	9.54	9.53	0.04	16.07	23.35	16.07	16.10	0.74	550	1.49	1.04	1.03
600	9.54	9.54	9.51	9.51	9.53	9.52	0.05	19.47	23.95	19.46	19.53	0.76	600	1.43	1.06	1.05
650	9.60	9.60	9.57	9.57	9.59	9.57	0.05	23.88	24.66	23.88	24.12	0.82	650	1.50	1.07	1.07
700	9.65	9.65	9.63	9.62	9.64	9.62	0.04	27.87	25.82	27.94	28.59	0.88	700	1.56	1.08	1.08
750	9.63	9.62	9.61	9.60	9.62	9.60	0.04	28.76	27.58	28.92	29.30	0.98	750	1.52	1.08	1.09
800	9.56	9.55	9.55	9.53	9.56	9.53	0.04	28.67	30.36	28.84	28.66	1.02	800	1.37	1.08	1.10
850	9.51	9.50	9.50	9.47	9.51	9.48	0.05	28.71	34.85	28.90	28.32	1.07	850	1.21	1.09	1.11
900	9.53	9.52	9.51	9.49	9.53	9.50	0.05	27.88	42.88	28.04	27.48	1.13	900	1.17	1.11	1.12
950	9.60	9.59	9.59	9.57	9.61	9.57	0.05	26.60	48.93	26.74	26.46	1.19	950	1.29	1.13	1.14
1000	9.67	9.65	9.66	9.63	9.67	9.63	0.05	25.84	40.50	25.99	25.94	1.23	1000	1.39	1.15	1.15
1050	9.68	9.66	9.66	9.64	9.68	9.63	0.06	25.94	37.20	26.13	26.22	1.28	1050	1.39	1.16	1.17
1100	9.64	9.62	9.62	9.60	9.64	9.58	0.06	26.76	35.38	27.01	27.14	1.30	1100	1.29	1.17	1.17
1150	9.60	9.58	9.58	9.55	9.60	9.54	0.06	27.88	33.86	28.23	28.31	1.35	1150	1.15	1.18	1.17
1200	9.61	9.60	9.60	9.57	9.62	9.56	0.06	28.86	32.22	29.31	29.33	1.40	1200	1.13	1.18	1.17
1250	9.68	9.67	9.67	9.64	9.69	9.63	0.06	30.24	30.71	30.80	30.80	1.45	1250	1.26	1.18	1.17
1300	9.77	9.75	9.76	9.73	9.77	9.71	0.06	33.21	29.67	33.94	34.24	1.51	1300	1.39	1.18	1.17
1350	9.81	9.80	9.80	9.78	9.81	9.75	0.06	36.53	29.26	36.72	38.15	1.55	1350	1.46	1.16	1.15
1400	9.80	9.80	9.80	9.78	9.81	9.75	0.06	32.05	29.51	31.81	32.32	1.55	1400	1.44	1.13	1.12
1450	9.77	9.77	9.77	9.75	9.79	9.73	0.06	27.66	30.52	27.59	27.77	1.58	1450	1.37	1.09	1.08
1500	9.75	9.75	9.74	9.72	9.76	9.70	0.06	25.45	32.60	25.49	25.55	1.64	1500	1.30	1.05	1.04
1550	9.74	9.75	9.74	9.72	9.76	9.70	0.06	24.98	36.28	25.11	25.13	1.68	1550	1.27	1.06	1.05
1600	9.76	9.76	9.76	9.74	9.78	9.71	0.07	26.32	40.86	26.51	26.51	1.75	1600	1.28	1.10	1.08
1650	9.78	9.79	9.79	9.77	9.80	9.73	0.07	30.25	37.88	30.51	30.55	1.78	1650	1.31	1.12	1.10
1700	9.80	9.81	9.82	9.80	9.82	9.75	0.07	41.62	33.53	40.18	42.83	1.79	1700	1.32	1.12	1.10
1750	9.82	9.83	9.84	9.82	9.84	9.78	0.07	34.15	31.00	33.42	34.51	1.77	1750	1.34	1.10	1.09
1800	9.85	9.86	9.87	9.85	9.87	9.80	0.07	27.99	29.65	27.91	28.39	1.76	1800	1.37	1.07	1.06
1850	9.88	9.89	9.90	9.87	9.90	9.83	0.07	25.68	29.21	25.81	26.18	1.81	1850	1.38	1.05	1.05
1900	9.89	9.92	9.92	9.88	9.92	9.85	0.08	25.35	29.48	25.65	25.97	1.86	1900	1.37	1.05	1.05
1950	9.88	9.91	9.92	9.88	9.91	9.83	0.09	26.59	30.42	27.10	27.37	1.94	1950	1.31	1.06	1.07
2000	9.85	9.88	9.89	9.86	9.89	9.80	0.09	29.49	32.00	30.28	30.28	2.02	2000	1.20	1.07	1.07
2050	9.83	9.85	9.87	9.83	9.87	9.78	0.09	34.18	34.18	35.10	34.13	2.03	2050	1.07	1.06	1.06
2100	9.82	9.84	9.86	9.83	9.86	9.78	0.09	36.20	36.90	35.27	34.74	2.01	2100	1.04	1.05	1.05
2150	9.85	9.86	9.89	9.86	9.89	9.80	0.09	32.27	39.99	31.12	31.73	1.98	2150	1.13	1.03	1.04
2200	9.88	9.89	9.91	9.87	9.91	9.82	0.09	29.04	43.15	28.13	28.94	1.94	2200	1.16	1.02	1.03
2250	9.89	9.90	9.92	9.89	9.92	9.84	0.09	26.81	46.82	26.06	26.66	1.93	2250	1.14	1.02	1.03
2300	9.90	9.91	9.93	9.89	9.92	9.84	0.09	25.28	47.28	24.64	24.90	1.98	2300	1.07	1.04	1.04
2350	9.92	9.92	9.95	9.91	9.95	9.85	0.10	24.43	42.41	23.85	23.78	2.02	2350	1.07	1.06	1.06
2400	9.95	9.95	9.98	9.95	9.98	9.88	0.10	24.24	38.01	23.71	23.35	2.02	2400	1.15	1.08	1.08
2450	9.98	9.98	10.02	9.99	10.03	9.92	0.11	24.69	34.81	24.15	23.56	2.06	2450	1.21	1.09	1.09
2500	10.00	10.00	10.05	10.01	10.06	9.93	0.13	25.44	32.67	24.86	24.11	2.07	2500	1.22	1.08	1.09
2550	10.01	10.00	10.06	10.02	10.07	9.94	0.14	25.82	31.37	25.28	24.61	2.07	2550	1.18	1.08	1.09
2600	10.01	10.01	10.08	10.02	10.08	9.94	0.14	25.65	30.91	25.24	24.84	2.09	2600	1.13	1.08	1.09
2650	10.03	10.02	10.10	10.04	10.09	9.94	0.16	25.59	31.12	25.35	25.19	2.12	2650	1.11	1.09	1.09
2700	10.04	10.04	10.12	10.06	10.10	9.96	0.16	26.28	32.17	26.22	26.24	2.16	2700	1.12	1.10	1.10
2750	10.06	10.05	10.13	10.08	10.11	9.97	0.16	28.31	33.96	28.50	28.62	2.21	2750	1.12	1.10	1.11
2800	10.07	10.06	10.13	10.09	10.12	9.98	0.15	32.42	36.70	33.28	33.48	2.23	2800	1.09	1.10	1.10
2850	10.08	10.07	10.14	10.11	10.12	9.99	0.15	39.25	40.39	43.11	42.80	2.25	2850	1.04	1.08	1.10
2900	10.10	10.09	10.17	10.13	10.14	10.02	0.15	35.15	46.06	35.16	34.88	2.27	2900	1.03	1.08	1.09
2950	10.12	10.12	10.19	10.15	10.16	10.04	0.16	29.83	60.34	29.52	29.42	2.32	2950	1.06	1.08	1.10
3000	10.15	10.15	10.23	10.18	10.19	10.06	0.16	26.67	48.18	26.42	26.37	2.35	3000	1.09	1.10	1.11
3100	10.23	10.24	10.33	10.29	10.29	10.15	0.18	23.48	35.41	23.28	23.35	2.44	3100	1.23	1.14	1.14
3200	10.27	10.29	10.39	10.36	10.36	10.20	0.19	24.49	29.51	24.30	24.31	2.46	3200	1.31	1.14	1.14
3300	10.26	10.29	10.39	10.32	10.34	10.17	0.22	36.49	26.63	36.18	36.31	2.54	3300	1.15	1.05	1.05
3400	10.33	10.36	10.44	10.36	10.37	10.22	0.22	27.22	26.37	27.67	28.10	2.88	3400	1.11	1.07	1.09
3500	10.37	10.40	10.46	10.42	10.42	10.29	0.17	24.77	28.49	25.20	25.76	2.86	3500	1.10	1.14	1.16
3600	10.46	10.49	10.53	10.48	10.50	10.37	0.16	41.31	29.44	45.05	46.39	2.57	3600	1.14	1.10	1.12
3700	10.64	10.67	10.72	10.61	10.63	10.53	0.19	20.29	25.24	19.83	19.40	2.60	3700	1.04	1.10	1.09
3800	11.86	11.89	12.00	11.93	11.90	11.76	0.24	13.61	21.10	13.40	13.32	2.67	3800	2.19	1.30	1.29

<sup>1</sup>Total Loss = Insertion Loss + 9dB Splitter Loss

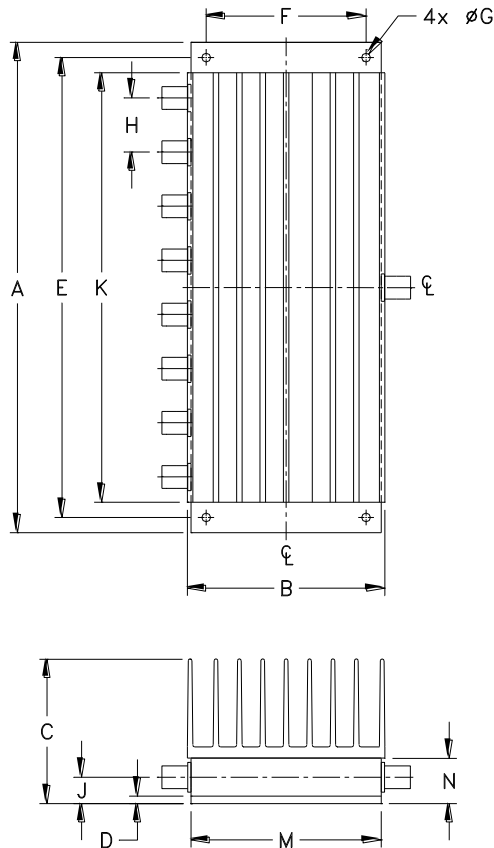


## Typical Performance Curves

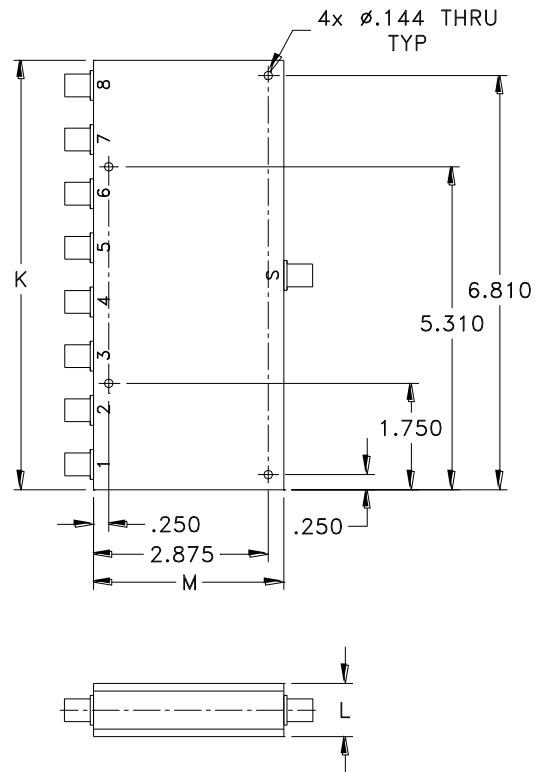


## Outline Dimensions

AW257-1



### MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE #	A	B	C	D	E	F	G	H	J	K	L
AW257-1	8.06 (204.72)	3.25 (82.55)	2.38 (60.45)	.125 (3.18)	7.560 (192.02)	2.625 (66.68)	.144 (3.66)	.890 (22.61)	.44 (11.18)	7.06 (179.32)	.88 (22.35)

CASE #	M	N	WT, GRAMS	WT WITHOUT HEATSINK, GRAMS
AW257-1	3.13 (79.50)	.75 (19.05)	1240	850

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

Mounting hole locations  $\nabla .005$

### Notes:

- Case material: Aluminum alloy.
- Case Finish:

For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

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3. Heat sink finish: Black anodize.



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RF/IF MICROWAVE COMPONENTS



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.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-55° to 100°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