High Power, DC Pass

Power Splitter/Combiner

ZN4PD1-63LW-S+

4 Way-0° 50Ω 30W 500 to 6000 MHz

Generic photo used for illustration purposes only

CASE STYLE: UU846-5

Connectors	Model
SMA	ZN4PD1-63LW-S+

+RoHS Compliant

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

Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
DC Current	1.0 A (250mA for each port)

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

Coaxial Connections

SUM PORT	3
PORT 1	1
PORT 2	2
PORT 3	4
PORT 4	5

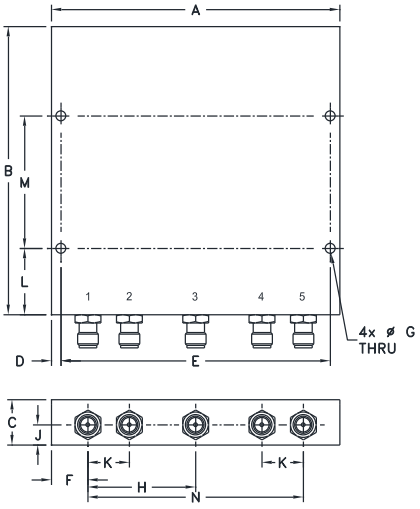
Features

- power handling up to 30 W
- wide frequency band, 500 to 6000 MHz
- very low insertion loss, 0.6 dB typ.
- low amplitude unbalance 0.15 dB typ.
- low phase unbalance 2 deg. typ.

Applications

- ISM
- test and measurement
- lab
- LTE
- WiFi
- bluetooth

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
3.48	3.48	.55	.115	3.250	.44	.125
88.39	88.39	13.97	2.92	82.55	11.18	3.18

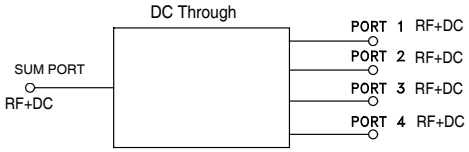
H	J	K	L	M	N	wt
1.30	.24	.500	.80	1.600	2.60	grams
33.02	6.10	12.70	20.32	40.64	66.04	190

Electrical Specifications

Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency			500		6000	MHz
Insertion Loss (above theoretical 6.0 dB)		500-3000 3000-6000	— —	0.4 0.6	0.9 1.3	dB
Isolation		500-600 600-6000	16 18	19 23	— —	dB
Phase Unbalance		500-6000	—	2	6	Degree
Amplitude Unbalance		500-6000	—	0.15	0.4	dB
VSWR (Port S)		500-600 600-6000	— —	1.3 1.25	1.5 1.5	:1
VSWR (Port 1-4)		500-6000	—	1.15	1.25	:1
Power Handling[3]	**As Splitter[1]**	500-6000	—	—	30	W
	As Combiner[2]	500-6000	—	—	0.5	

1. All outputs must terminate 50 ohm (VSWR 1.2:1 or better)
2. As a combiner of non-coherent signals, max. power is 0.5Watt per port.
3. 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 10°C/W.

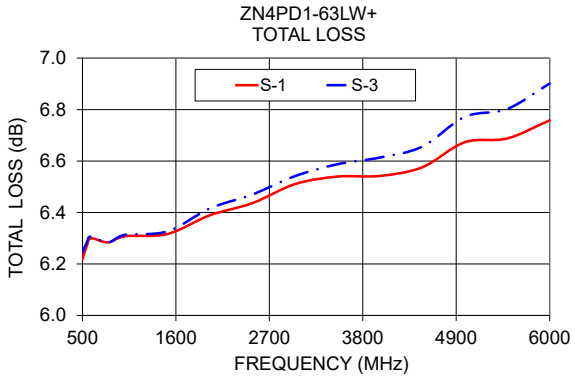
Electrical Schematic

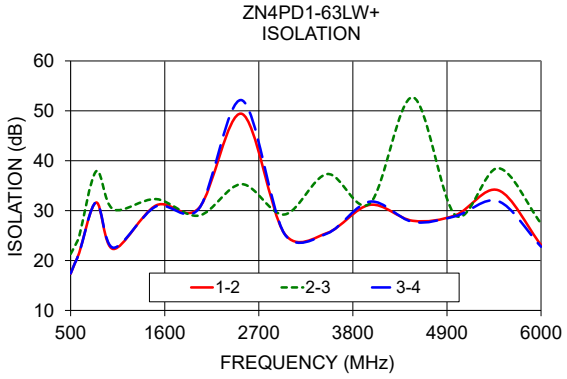


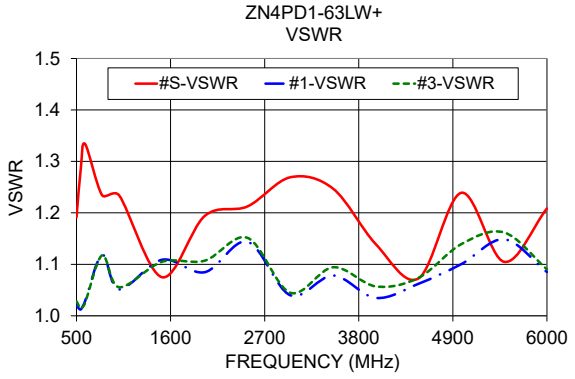
Typical Performance Data

Freq. (MHz)	Total Loss[1] (dB)				Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4						
500.0	6.22	6.23	6.25	6.25	0.03	17.36	21.33	17.41	0.14	1.19	1.02	1.02	1.03	1.03
550.0	6.27	6.28	6.28	6.30	0.03	19.48	22.94	19.50	0.22	1.29	1.01	1.01	1.01	1.01
600.0	6.30	6.31	6.31	6.34	0.04	21.51	24.86	21.47	0.22	1.33	1.03	1.02	1.02	1.02
800.0	6.28	6.30	6.28	6.33	0.04	31.63	37.91	31.69	0.34	1.23	1.12	1.12	1.12	1.13
1000.0	6.31	6.33	6.31	6.36	0.06	22.32	30.26	22.57	0.35	1.23	1.05	1.05	1.06	1.06
1500.0	6.32	6.34	6.33	6.38	0.06	31.06	32.32	30.86	0.47	1.07	1.11	1.12	1.10	1.12
2000.0	6.39	6.43	6.42	6.46	0.07	30.53	29.01	30.41	0.57	1.19	1.08	1.10	1.11	1.11
2500.0	6.44	6.48	6.47	6.52	0.08	49.40	35.30	52.13	0.70	1.21	1.14	1.15	1.15	1.17
3000.0	6.51	6.57	6.54	6.60	0.09	25.39	29.23	25.34	0.80	1.27	1.04	1.05	1.04	1.05
3500.0	6.54	6.61	6.59	6.64	0.10	25.53	37.33	25.43	0.85	1.25	1.08	1.09	1.09	1.08
4000.0	6.54	6.63	6.61	6.66	0.12	31.16	31.47	31.80	0.95	1.14	1.03	1.05	1.06	1.05
4500.0	6.58	6.68	6.66	6.70	0.12	27.97	52.70	27.74	1.02	1.07	1.06	1.07	1.07	1.07
5000.0	6.67	6.79	6.77	6.81	0.13	29.09	29.05	28.89	1.10	1.24	1.10	1.13	1.14	1.12
5500.0	6.69	6.82	6.80	6.84	0.16	34.09	38.51	31.89	1.12	1.10	1.15	1.16	1.16	1.17
6000.0	6.76	6.91	6.90	6.93	0.17	23.10	27.42	22.77	1.24	1.21	1.09	1.09	1.09	1.11

1. Total Loss = Insertion Loss + 6dB splitter loss.







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

4 Way-0° Power Splitter/Combiner ZN4PD1-63LW-S+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (Deg)
	S1	S2	S3	S4		1-2	2-3	3-4	
500	6.22	6.23	6.25	6.25	0.03	17.36	21.33	17.41	0.14
600	6.30	6.31	6.31	6.34	0.04	21.51	24.86	21.47	0.22
700	6.30	6.32	6.30	6.34	0.04	26.57	30.08	26.39	0.27
800	6.28	6.30	6.28	6.33	0.04	31.63	37.91	31.69	0.34
900	6.29	6.31	6.29	6.34	0.05	24.98	34.93	25.26	0.36
1000	6.31	6.33	6.31	6.36	0.06	22.32	30.26	22.57	0.35
1100	6.31	6.33	6.32	6.36	0.06	22.89	28.11	23.15	0.36
1200	6.31	6.33	6.33	6.37	0.06	25.72	27.40	25.99	0.37
1300	6.32	6.35	6.34	6.38	0.05	27.86	27.79	27.92	0.43
1400	6.32	6.35	6.34	6.38	0.06	28.06	29.28	27.97	0.44
1500	6.32	6.34	6.33	6.38	0.06	31.06	32.32	30.86	0.47
1600	6.32	6.35	6.34	6.39	0.06	34.25	38.26	33.84	0.51
1700	6.35	6.38	6.37	6.42	0.06	27.11	44.03	27.09	0.52
1800	6.36	6.39	6.39	6.43	0.07	24.35	35.44	24.41	0.55
1900	6.37	6.40	6.39	6.43	0.07	25.32	31.20	25.40	0.54
2000	6.39	6.43	6.42	6.46	0.07	30.53	29.01	30.41	0.57
2100	6.44	6.48	6.46	6.51	0.07	30.51	28.09	29.94	0.61
2200	6.46	6.50	6.49	6.54	0.07	25.57	28.11	25.38	0.65
2300	6.45	6.49	6.47	6.52	0.07	24.90	29.05	24.87	0.65
2400	6.43	6.47	6.46	6.51	0.08	28.72	31.19	28.94	0.68
2500	6.44	6.48	6.47	6.52	0.08	49.40	35.30	52.13	0.70
2600	6.44	6.49	6.48	6.53	0.09	29.88	44.86	29.49	0.71
2700	6.43	6.48	6.47	6.52	0.09	26.17	41.97	26.01	0.72
2800	6.43	6.48	6.46	6.51	0.08	26.38	34.37	26.34	0.72
2900	6.46	6.52	6.50	6.55	0.09	27.03	30.91	27.03	0.75
3000	6.51	6.57	6.54	6.60	0.09	25.39	29.23	25.34	0.80
3100	6.53	6.60	6.57	6.63	0.10	24.62	28.65	24.62	0.83
3200	6.54	6.60	6.58	6.63	0.10	26.93	28.95	27.11	0.84
3300	6.54	6.61	6.59	6.64	0.10	35.03	30.21	36.92	0.82
3400	6.55	6.62	6.60	6.65	0.10	30.67	32.69	30.87	0.83
3500	6.54	6.61	6.59	6.64	0.10	25.53	37.33	25.43	0.85
3600	6.52	6.59	6.57	6.62	0.10	24.91	50.19	24.75	0.88
3700	6.51	6.59	6.56	6.61	0.10	27.45	42.76	27.22	0.91
3800	6.51	6.60	6.57	6.62	0.11	31.51	35.75	31.35	0.93
3900	6.53	6.61	6.59	6.64	0.11	30.96	32.82	31.32	0.93
4000	6.54	6.63	6.61	6.66	0.12	31.16	31.47	31.80	0.95
4100	6.56	6.65	6.63	6.67	0.12	35.76	31.28	36.40	0.96
4200	6.57	6.66	6.64	6.69	0.12	31.74	32.18	31.01	0.95
4300	6.58	6.68	6.65	6.70	0.12	26.81	34.32	26.29	0.96
4400	6.58	6.68	6.65	6.70	0.12	25.85	38.89	25.46	0.97
4500	6.58	6.68	6.66	6.70	0.12	27.97	52.70	27.74	1.02
4600	6.58	6.69	6.67	6.71	0.12	29.92	42.21	30.13	1.03
4700	6.60	6.71	6.69	6.73	0.13	26.52	35.19	26.59	1.03
4800	6.63	6.74	6.72	6.76	0.13	24.61	31.86	24.54	1.04
4900	6.66	6.77	6.75	6.79	0.13	25.67	29.94	25.50	1.08
5000	6.67	6.79	6.77	6.81	0.13	29.09	29.05	28.89	1.10
5100	6.67	6.79	6.78	6.81	0.14	28.41	28.94	28.53	1.12
5200	6.66	6.79	6.78	6.81	0.14	25.70	29.66	25.86	1.14
5300	6.66	6.79	6.78	6.81	0.15	26.35	31.34	26.43	1.13
5400	6.67	6.80	6.79	6.82	0.16	32.65	34.43	31.97	1.12
5500	6.69	6.82	6.80	6.84	0.16	34.09	38.51	31.89	1.12
5600	6.71	6.84	6.82	6.86	0.15	26.41	37.43	25.82	1.13
5700	6.74	6.88	6.87	6.90	0.16	24.68	33.08	24.32	1.16
5800	6.74	6.88	6.87	6.90	0.16	25.65	30.02	25.24	1.16
5900	6.74	6.89	6.88	6.90	0.16	25.13	28.21	24.70	1.19
6000	6.76	6.91	6.90	6.93	0.17	23.10	27.42	22.77	1.24
6100	6.84	7.00	6.99	7.03	0.18	23.51	27.59	23.27	1.20
6200	6.98	7.13	7.13	7.17	0.19	27.99	28.79	28.08	1.15
6300	7.06	7.23	7.23	7.25	0.19	26.64	31.26	26.85	1.04
6400	7.03	7.20	7.20	7.21	0.18	20.50	35.50	20.43	1.01
6500	6.94	7.11	7.11	7.11	0.17	17.96	39.14	17.79	1.11

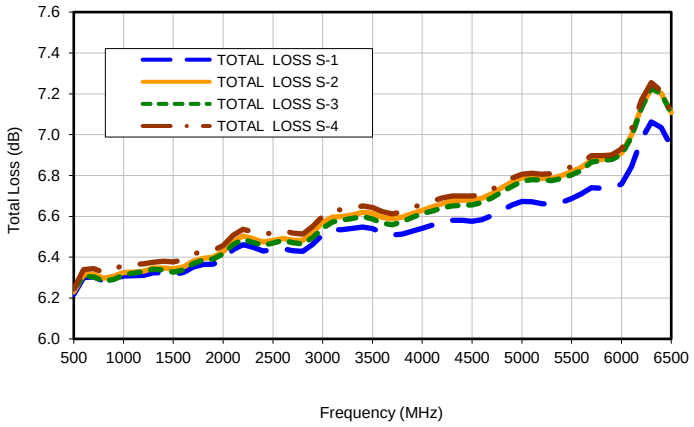
FREQ. (MHz)	VSWR (:1)				
	S	1	2	3	4
500	1.19	1.02	1.02	1.03	1.03
600	1.33	1.03	1.02	1.02	1.02
700	1.31	1.08	1.08	1.08	1.09
800	1.23	1.12	1.12	1.12	1.13
900	1.22	1.11	1.11	1.11	1.11
1000	1.23	1.05	1.05	1.06	1.06
1100	1.22	1.04	1.05	1.05	1.05
1200	1.20	1.09	1.10	1.09	1.10
1300	1.20	1.11	1.12	1.11	1.12
1400	1.17	1.10	1.11	1.10	1.11
1500	1.07	1.11	1.12	1.10	1.12
1600	1.04	1.13	1.15	1.13	1.15
1700	1.14	1.12	1.14	1.13	1.14
1800	1.17	1.07	1.09	1.08	1.09
1900	1.15	1.03	1.05	1.05	1.06
2000	1.19	1.08	1.10	1.11	1.11
2100	1.29	1.10	1.12	1.13	1.13
2200	1.33	1.06	1.09	1.09	1.08
2300	1.29	1.02	1.03	1.04	1.04
2400	1.22	1.10	1.10	1.10	1.11
2500	1.21	1.14	1.15	1.15	1.17
2600	1.21	1.14	1.15	1.15	1.16
2700	1.13	1.10	1.11	1.10	1.11
2800	1.03	1.06	1.07	1.06	1.08
2900	1.16	1.06	1.07	1.06	1.07
3000	1.27	1.04	1.05	1.04	1.05
3100	1.31	1.02	1.00	1.01	1.01
3200	1.31	1.07	1.07	1.08	1.08
3300	1.30	1.11	1.12	1.14	1.13
3400	1.29	1.12	1.13	1.14	1.13
3500	1.25	1.08	1.09	1.09	1.08
3600	1.15	1.03	1.02	1.02	1.02
3700	1.05	1.03	1.04	1.04	1.04
3800	1.06	1.04	1.06	1.07	1.06
3900	1.11	1.03	1.06	1.06	1.05
4000	1.14	1.03	1.05	1.06	1.05
4100	1.15	1.06	1.07	1.08	1.07
4200	1.17	1.06	1.08	1.07	1.07
4300	1.17	1.03	1.05	1.04	1.04
4400	1.13	1.02	1.02	1.02	1.01
4500	1.07	1.06	1.07	1.07	1.07
4600	1.06	1.08	1.10	1.10	1.09
4700	1.12	1.07	1.09	1.09	1.08
4800	1.17	1.04	1.07	1.07	1.06
4900	1.22	1.07	1.10	1.10	1.08
5000	1.24	1.10	1.13	1.14	1.12
5100	1.22	1.10	1.12	1.13	1.12
5200	1.18	1.06	1.08	1.09	1.09
5300	1.12	1.08	1.09	1.10	1.10
5400	1.11	1.13	1.14	1.15	1.15
5500	1.10	1.15	1.16	1.16	1.17
5600	1.06	1.11	1.12	1.12	1.13
5700	1.06	1.06	1.08	1.08	1.08
5800	1.13	1.07	1.09	1.09	1.10
5900	1.16	1.08	1.09	1.09	1.10
6000	1.21	1.09	1.09	1.09	1.11
6100	1.37	1.20	1.20	1.21	1.22
6200	1.56	1.32	1.34	1.34	1.36
6300	1.64	1.37	1.38	1.37	1.41
6400	1.49	1.28	1.30	1.28	1.33
6500	1.28	1.11	1.13	1.12	1.15

[1] Total Loss = Insertion Loss + 6dB Splitter Loss

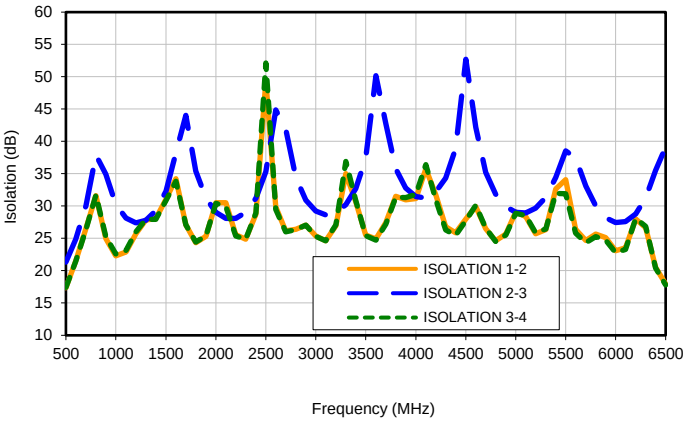
4 Way-0° Power Splitter/Combiner ZN4PD1-63LW-S+

Typical Performance Curves

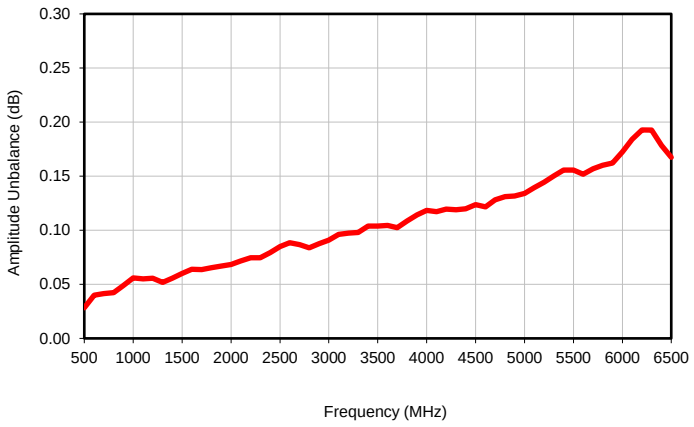
Total Loss



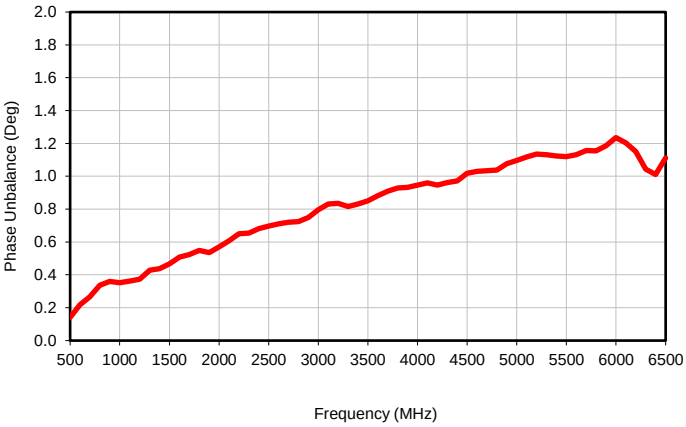
Isolation



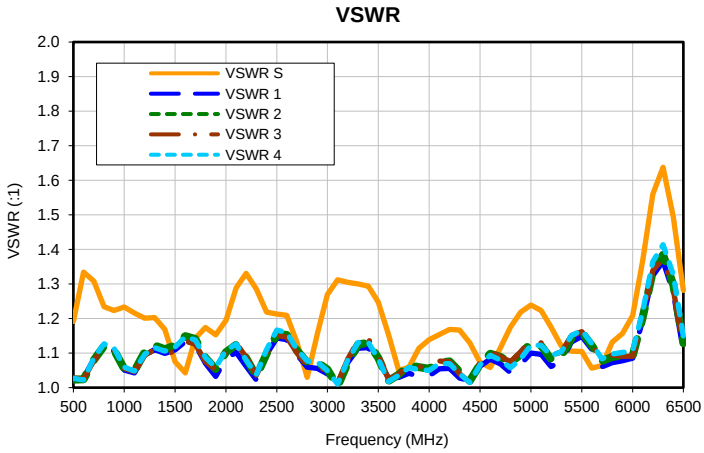
Amplitude Unbalance



Phase Unbalance



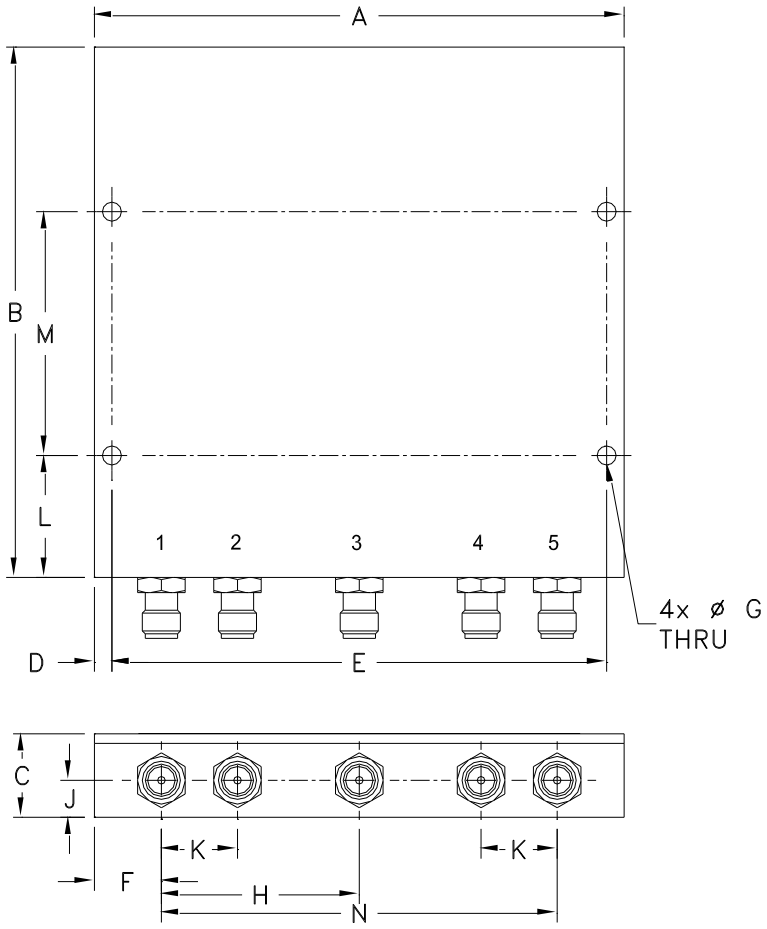
VSWR



Case Style UU

Outline Dimensions

UU846-5



CASE #	A	B	C	D	E	F	G	H	J	K	L	M
UU846-5	3.48 (88.39)	3.48 (88.39)	.55 (13.92)	.115 (2.92)	3.250 (82.55)	.44 (11.18)	125 (3.18)	1.30 (33.02)	.24 (6.17)	.500 (12.70)	.80 (20.32)	1.600 (40.64)

CASE #	N	WT. GRAMS
UU846-5	2.60 (66.04)	190

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .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. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications **ENV28T8**

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 85°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