DC Pass

Power Splitter/Combiner ZX10-2-143M-S+

2 Way-0° 50Ω 4000 to 14000 MHz

The Big Deal

- Ultra-wideband, 4000 to 14000 MHz
- Low insertion loss, 0.8 dB
- Low amplitude unbalance, 0.1 dB
- Rugged unibody case

CASE STYLE: FL2227

Product Overview

Mini-Circuits' ZX10-2-143M-S+ is a coaxial, ultra-wideband 2-way 0˚ splitter combiner providing RF input power handling up to 2.5W as a splitter and 0.8 dB insertion loss for an extremely wide range of applications from 4000 to 14000 MHz. Its outstanding combination of low loss and low unbalance make this model an excellent choice for distributing signals in systems where excellent transmission of signal power is needed. The splitter/combiner comes housed in a rugged, compact case 0.74 x 090 x 0.54" with SMA connectors.

Key Features

Feature	Advantages
Ultra-wideband, 4000 to 14000 MHz	ZX10-2-143M-S+ supports bandwidth requirements for a wide variety of applications including broadband applications such as instrumentation and defense.
Low insertion loss, 0.8 dB	Provides excellent transmission of signal power, making this model an excellent candidate for signal distribution applications where low loss is a requirement.
Low amplitude unbalance, 0.1 dB	Produces nearly equal output signals, ideal for parallel path / multichannel systems.
DC passing up to 1.2A	Supports applications where DC power is needed through the RF line.
Rugged, unibody construction	Mini-Circuits' unibody construction integrates the RF connector into the case body, providing high reliability and excellent survivability in critical applications.

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

DC Pass

Power Splitter/Combiner

ZX10-2-143M-S+

2 Way-0° 50Ω 4000 to 14000 MHz

Generic photo used for illustration purposes only

CASE STYLE: FL2227

Connectors	Model
SMA	ZX10-2-143M-S+

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

Maximum Ratings

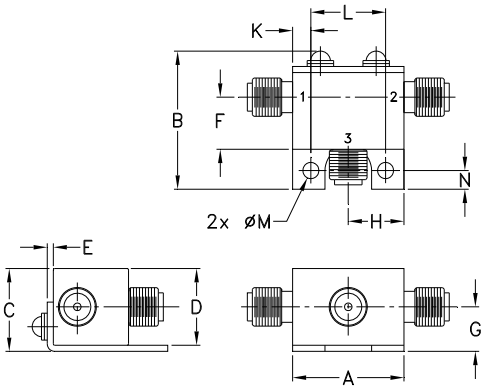
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	2.5W[1] max. at 25°C
Internal Dissipation	1.7W[2] max. at 25°C
DC Current	1.2A[3] max. at 25°C

Permanent damage may occur if any of these limits are exceeded.
1. Derate linearly to 1.25W at 85°C
2. Derate linearly to 1.1W at 85°C
3. Derate linearly to 0.6W at 85°C

Coaxial Connections

SUM PORT	S
PORT 1	1
PORT 2	2

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.74	.90	.54	.50	.04	.34	.29
18.80	22.86	13.72	12.70	1.02	8.64	7.37

H	J	K	L	M	N	wt
.37	--	.122	.496	.106	.122	grams
9.40	--	3.10	12.60	2.69	3.10	20.0

Features

- wide bandwidh, 4000 to 14000 MHz
- excellent amplitude unbalance, 0.1 dB typ.
- small size
- high ESD level*
- DC passing
- protected under US patent 6,790,049

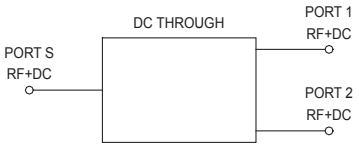
Applications

- WIMAX
- ISM
- instrumentation
- radar
- WLAN
- satellite communications
- LTE

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		4000		14000	MHz
Insertion Loss (above theoretical 3.0 dB)	4000 - 6000	—	0.7	1.0	dB
	6000 - 10000	—	1.1	1.6	
	10000 - 14000	—	1.6	2.0	
Isolation	4000 - 6000	12	15	—	dB
	6000 - 10000	17	20	—	
	10000 - 14000	14	18	—	
Phase Unbalance	4000 - 6000	—	1	3	Degree
	6000 - 10000	—	2	4	
	10000 - 14000	—	3	6	
Amplitude Unbalance	4000 - 6000	—	0.1	0.3	dB
	6000 - 10000	—	0.1	0.4	
	10000 - 14000	—	0.2	0.5	
VSWR (Port S)	4000 - 6000	—	1.4	—	:1
	6000 - 10000	—	1.5	—	
	10000 - 14000	—	1.6	—	
VSWR (Port 1-2)	4000 - 6000	—	1.5	—	:1
	6000 - 10000	—	1.5	—	
	10000 - 14000	—	1.5	—	

Electrical Schematic



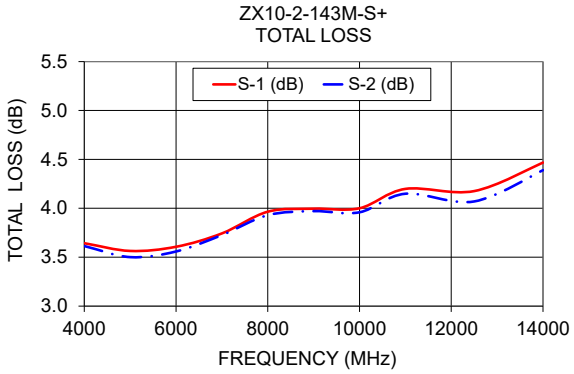
* ESD rating
Human body model (HBM): Class 2 (1800 to 4000V) inaccordance with ANSI / ESD 5.1-2007.
Machine model (MM). Class M3 (200 to <400V) in accordance with ANSI / ESD 5.2-2009

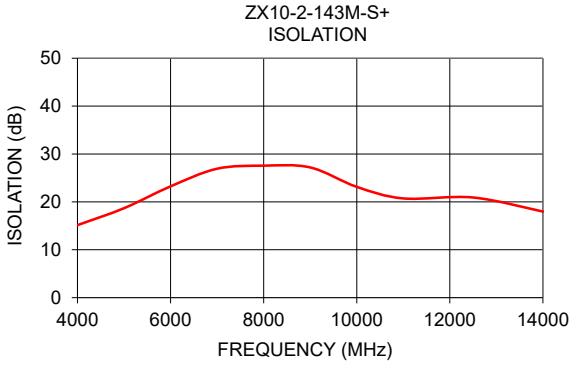
Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

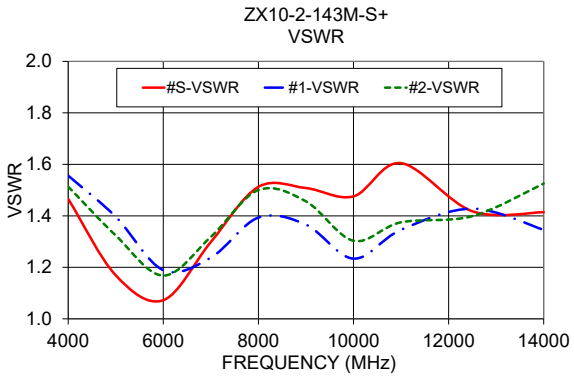
Typical Performance Data

Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
4000	3.64	3.61	0.03	15.14	0.17	1.47	1.56	1.51
5000	3.56	3.50	0.06	18.68	0.54	1.17	1.40	1.32
6000	3.61	3.56	0.05	23.24	1.02	1.07	1.19	1.17
7000	3.74	3.73	0.02	26.93	1.19	1.30	1.24	1.32
8000	3.97	3.93	0.04	27.56	1.28	1.51	1.39	1.50
9000	4.00	3.97	0.03	27.19	1.46	1.51	1.37	1.46
10000	4.00	3.96	0.04	23.14	1.55	1.48	1.23	1.30
11000	4.20	4.15	0.05	20.72	1.70	1.60	1.35	1.37
12500	4.18	4.07	0.11	20.91	1.65	1.42	1.43	1.40
14000	4.47	4.39	0.08	17.97	2.24	1.41	1.35	1.53

1. Total Loss = Insertion Loss + 3dB 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

2 Way-0° Power Splitter/Combiner ZX10-2-143M-S+

Typical Performance Data

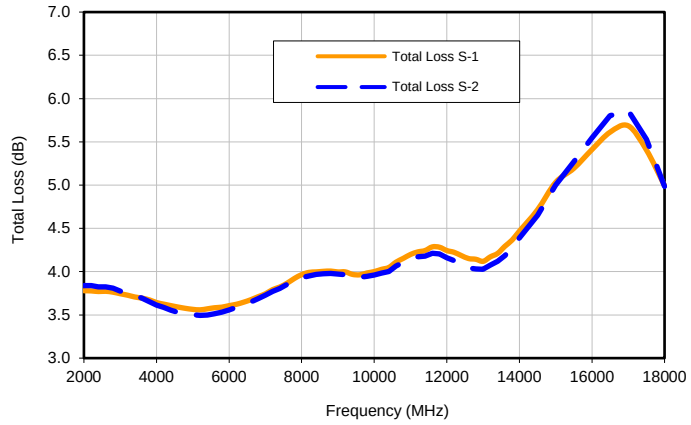
FREQUENCY (MHz)	TOTAL LOSS[1] (dB) S-1	TOTAL LOSS[1] (dB) S-2	AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (Deg)	FREQUENCY (MHz)	VSWR (:1) S	VSWR (:1) 1	VSWR (:1) 2
2000	3.78	3.84	0.06	8.64	0.24	2000	1.86	1.56	1.59
2200	3.78	3.84	0.06	9.33	0.21	2200	1.84	1.57	1.60
2400	3.77	3.83	0.06	10.02	0.15	2400	1.82	1.58	1.60
2600	3.77	3.82	0.05	10.67	0.16	2600	1.81	1.59	1.61
2800	3.76	3.81	0.04	11.34	0.07	2800	1.77	1.60	1.61
3000	3.74	3.78	0.03	11.99	0.07	3000	1.73	1.60	1.61
3200	3.73	3.75	0.02	12.65	0.04	3200	1.69	1.60	1.60
3400	3.71	3.72	0.01	13.26	0.07	3400	1.64	1.60	1.59
3600	3.69	3.69	0.00	13.82	0.08	3600	1.59	1.59	1.57
3800	3.67	3.65	0.02	14.51	0.09	3800	1.53	1.58	1.54
4000	3.64	3.61	0.03	15.14	0.17	4000	1.47	1.56	1.51
4200	3.62	3.59	0.04	15.79	0.19	4200	1.41	1.54	1.49
4400	3.61	3.55	0.05	16.48	0.23	4400	1.34	1.50	1.45
4600	3.59	3.53	0.06	17.18	0.37	4600	1.29	1.47	1.41
4800	3.58	3.51	0.06	17.91	0.44	4800	1.23	1.43	1.37
5000	3.56	3.50	0.06	18.68	0.54	5000	1.17	1.40	1.32
5200	3.56	3.49	0.06	19.56	0.59	5200	1.11	1.35	1.28
5400	3.57	3.50	0.07	20.61	0.71	5400	1.08	1.31	1.25
5600	3.58	3.51	0.07	21.55	0.81	5600	1.05	1.27	1.21
5800	3.59	3.53	0.06	22.26	0.95	5800	1.04	1.22	1.18
6000	3.61	3.56	0.05	23.24	1.02	6000	1.07	1.19	1.17
6200	3.62	3.59	0.04	24.28	1.06	6200	1.12	1.16	1.17
6400	3.65	3.61	0.03	25.11	1.15	6400	1.16	1.16	1.19
6600	3.68	3.65	0.03	25.87	1.19	6600	1.20	1.18	1.23
6800	3.71	3.69	0.02	26.33	1.20	6800	1.25	1.20	1.27
7000	3.74	3.73	0.02	26.93	1.19	7000	1.30	1.24	1.32
7200	3.79	3.77	0.02	27.13	1.24	7200	1.37	1.28	1.37
7400	3.82	3.80	0.02	27.75	1.26	7400	1.40	1.33	1.40
7600	3.87	3.85	0.01	27.53	1.23	7600	1.43	1.37	1.44
7800	3.92	3.90	0.02	27.48	1.20	7800	1.46	1.39	1.48
8000	3.97	3.93	0.04	27.56	1.28	8000	1.51	1.39	1.50
8200	3.99	3.95	0.04	27.47	1.40	8200	1.54	1.43	1.51
8400	4.00	3.97	0.03	27.86	1.41	8400	1.51	1.45	1.51
8600	4.00	3.97	0.03	27.93	1.37	8600	1.52	1.43	1.50
8800	4.01	3.98	0.03	28.08	1.42	8800	1.53	1.40	1.49
9000	4.00	3.97	0.03	27.19	1.46	9000	1.51	1.37	1.46
9200	4.00	3.96	0.03	26.37	1.49	9200	1.52	1.36	1.43
9400	3.97	3.93	0.03	26.14	1.45	9400	1.48	1.31	1.38
9600	3.96	3.93	0.03	25.20	1.49	9600	1.47	1.27	1.35
9800	3.98	3.95	0.04	24.28	1.53	9800	1.46	1.26	1.32
10000	4.00	3.96	0.04	23.14	1.55	10000	1.48	1.23	1.30
10200	4.03	3.98	0.04	22.53	1.62	10200	1.50	1.24	1.29
10400	4.05	4.00	0.05	22.31	1.67	10400	1.50	1.25	1.29
10600	4.11	4.06	0.05	21.63	1.66	10600	1.56	1.30	1.32
10800	4.15	4.11	0.04	21.32	1.63	10800	1.56	1.35	1.35
11000	4.20	4.15	0.05	20.72	1.70	11000	1.60	1.35	1.37
11200	4.23	4.17	0.06	20.96	1.72	11200	1.62	1.39	1.40
11400	4.24	4.18	0.07	21.17	1.71	11400	1.63	1.44	1.42
11600	4.29	4.21	0.07	20.97	1.65	11600	1.64	1.49	1.44
11800	4.28	4.20	0.08	20.89	1.61	11800	1.60	1.47	1.45
12000	4.24	4.16	0.08	20.80	1.66	12000	1.58	1.42	1.43
12200	4.22	4.13	0.09	21.01	1.59	12200	1.53	1.46	1.42
12400	4.19	4.08	0.10	21.21	1.60	12400	1.48	1.42	1.40
12600	4.15	4.04	0.11	20.44	1.63	12600	1.43	1.39	1.37
12800	4.14	4.03	0.11	20.11	1.76	12800	1.30	1.35	1.35
13000	4.12	4.03	0.09	19.89	1.63	13000	1.24	1.30	1.35
13200	4.17	4.08	0.09	19.19	1.61	13200	1.16	1.29	1.34
13400	4.21	4.12	0.09	19.15	1.79	13400	1.14	1.30	1.37
13600	4.29	4.19	0.11	18.55	1.85	13600	1.19	1.28	1.40
13800	4.37	4.29	0.08	18.16	2.00	13800	1.30	1.28	1.45
14000	4.47	4.39	0.08	17.97	2.24	14000	1.41	1.35	1.53
14500	4.71	4.65	0.06	18.82	2.85	14500	1.77	1.46	1.74
15000	5.03	5.00	0.03	19.23	3.55	15000	2.28	1.65	1.99
15500	5.19	5.27	0.07	19.91	3.32	15500	2.62	1.79	2.21
16000	5.41	5.55	0.14	19.70	2.63	16000	2.93	2.02	2.40
16500	5.61	5.80	0.19	18.54	1.81	16500	2.70	2.23	2.48
17000	5.69	5.86	0.18	17.91	1.21	17000	2.67	2.29	2.42
17500	5.41	5.53	0.12	17.76	1.13	17500	2.18	2.16	2.18
18000	4.99	4.99	0.01	18.08	0.82	18000	1.75	1.80	1.84

[1]Total Loss = Insertion Loss + 3dB Splitter Loss

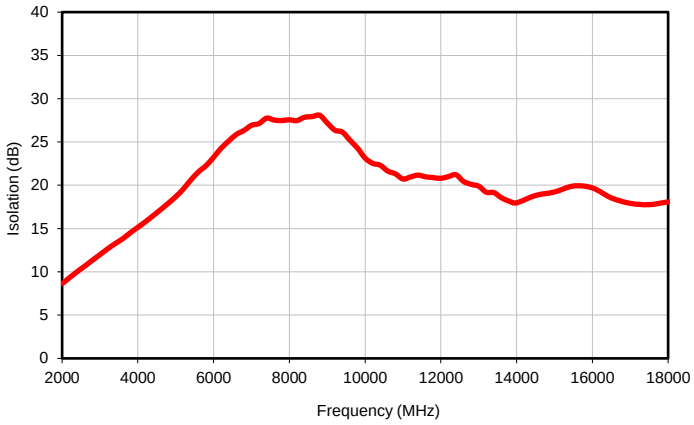
2 Way-0° Power Splitter/Combiner ZX10-2-143M-S+

Typical Performance Curves

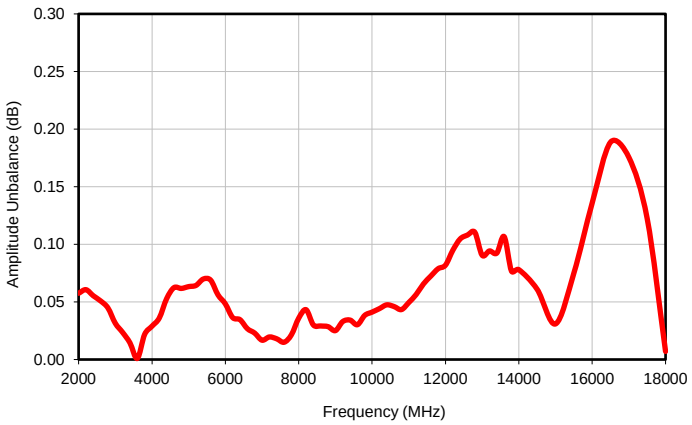
Total Loss



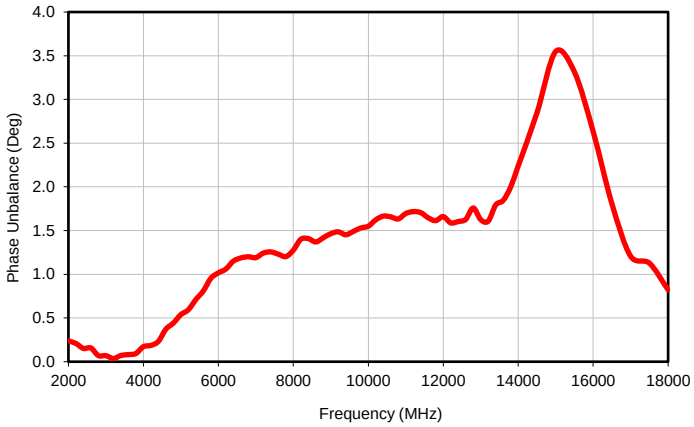
Isolation



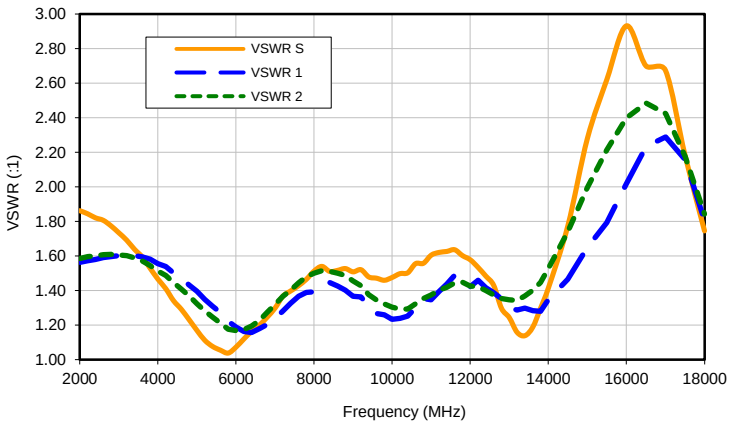
Amplitude Unbalance



Phase Unbalance



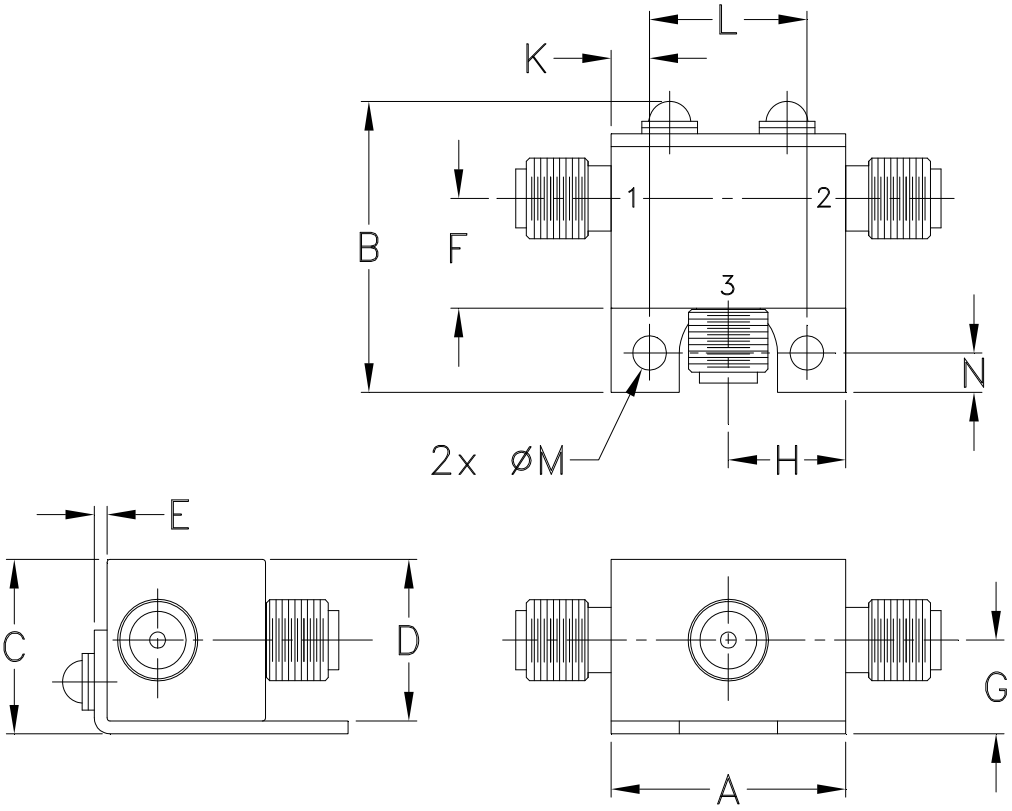
VSWR



Case Style FL

FL2227

Outline Dimensions



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
FL2227	.74 (18.80)	.90 (22.86)	.54 (13.72)	.50 (12.70)	.04 (1.02)	.34 (8.64)	.29 (7.37)	.37 (9.40)	- -	.122 (3.10)	.496 (12.60)	.106 (2.69)	.122 (3.10)	20.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015.
Tolerance on hole size and interaxes dimensions to be ±.005.

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

This document and its contents are the property of Mini-Circuits.

Mini-Circuits

Environmental Specifications **ENV28T5**

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	-40° to 85°C	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

This document and its contents are the property of Mini-Circuits.