COAXIAL

Bias Tee

ZBT-K283+

50Ω Wideband 1.5 to 28 GHz

THE BIG DEAL

- Extremely wideband, 1.5 to 28 GHz
- Very low insertion loss, 2 dB typ.
- Good return loss, 15 dB typ.
- Excellent Isolation, > 40 dB typ.

Generic photo used for illustration purposes only

Model No.	ZBT-K283+
Case Style	VL3239
Connectors	2.92mm Female

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

APPLICATIONS

- Biasing amplifiers
- Biasing of laser diodes
- Biasing of active antennas

PRODUCT OVERVIEW

Mini-Circuits' ZBT-K283+ is an ultra-wideband MMIC coaxial bias tee covering applications from 1.5 GHz to 28 GHz with low insertion loss, excellent return loss and high DC-RF isolation over its entire frequency range. This model is capable of handling upto +30 dBm (1W) RF input power and DC input current up to 500mA.

KEY FEATURES

Feature	Advantages
Ultra-wideband, 1.5 to 28 GHz	Supports a wide range of applications with a single device, including biasing broadband amplifier, laser diodes, active antennas and more.
Low insertion loss, 2 dB	Preserves signal strength from input to output and minimizes overall system loss.
Excellent return loss, 15 dB typ.	Provides excellent matching for 50Ω systems with minimal signal reflection.
RF power handling up to 1W	This model supports applications with a variety of power requirements.
Excellent DC-RF isolation > 40 dB typ, 1.5 to 28 GHz	Minimizes RF leakage and interference with other elements in the system.

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MAXIMUM RATINGS

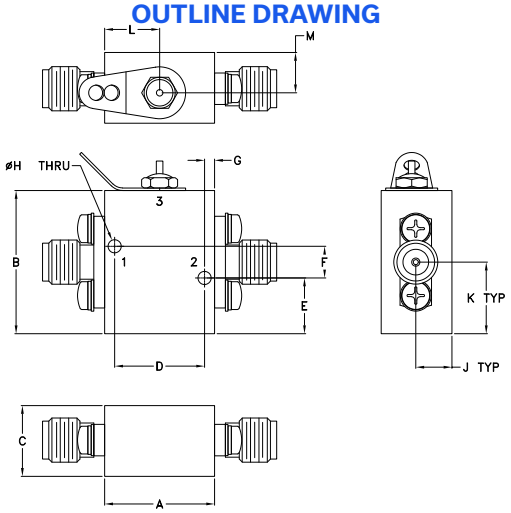
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	30 dBm max.
Voltage at DC port	35 V max.
Input Current	500 mA

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

COAXIAL CONNECTIONS

RF (PORT 1)	2.92mm Female
RF & DC (PORT 2)	2.92mm Female
DC (PORT 3)	(feed-through pin)
GROUND	GROUND

OUTLINE DRAWING

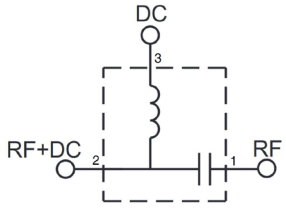


OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F	G
.66	**.86**	**.43**	**.540**	**.34**	**.190**	**.06**
16.7	21.8	10.8	13.72	8.5	4.83	1.5
H	J	K	L	M		Wt.
.07	**.22**	**.43**	**.33**	**.24**		grams
1.78	5.5	10.9	8.3	6.1		36

Note: Please refer to case style drawing for details

ELECTRICAL SCHEMATIC



ELECTRICAL SPECIFICATIONS AT 25°C

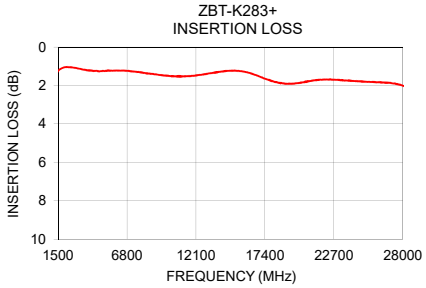
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		1500		28000	MHz
Insertion Loss	1500 - 10000		1.7	2.5	dB
	10000 - 20000		2.0	3.5	
	20000 - 25000		2.0	3.5	
	25000 - 28000		2.2	3.7	
Isolation (RF Port to DC Port)	1500 - 10000		57		dB
	10000 - 20000		47		
	20000 - 25000		48		
	25000 - 28000		47		
Return Loss	1500 - 10000		15		dB
	10000 - 20000		15		
	20000 - 25000		13		
	25000 - 28000		12		
DC Resistance, DC to RF and DC port			2.7		Ohm

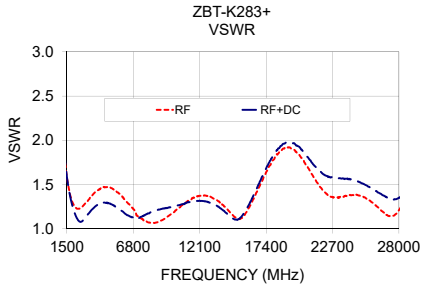
ESD RATING

Human Body Model (HBM): Class 1B (500 V) In Accordance with ANSI/ESD STM 5.1 - 2001

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	
		RF	RF & DC
1500	1.3	1.59	1.59
3000	1.1	1.30	1.13
5000	1.2	1.46	1.28
8000	1.3	1.07	1.17
10000	1.5	1.19	1.25
12000	1.5	1.37	1.31
14000	1.3	1.26	1.20
16000	1.3	1.23	1.27
18000	1.8	1.78	1.84
20000	1.9	1.84	1.93
22000	1.7	1.43	1.61
24000	1.8	1.38	1.56
25000	1.8	1.36	1.52
26000	1.8	1.28	1.44
28000	2.0	1.21	1.35





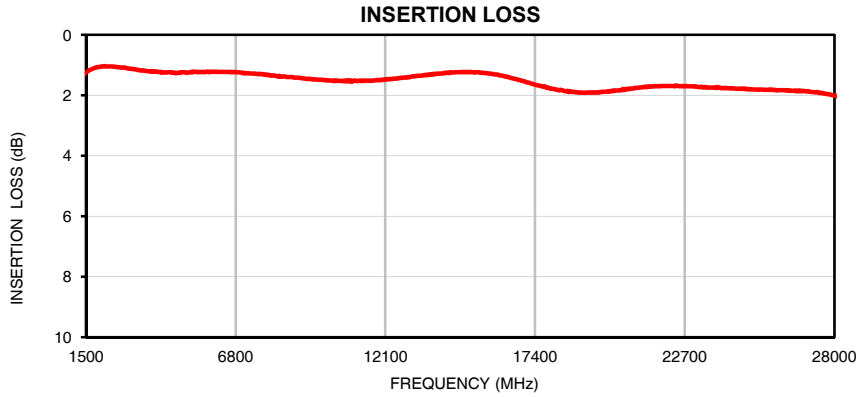
NOTES

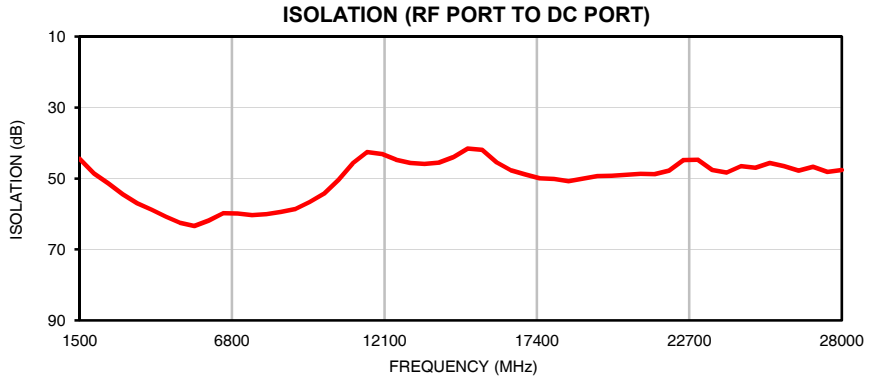
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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

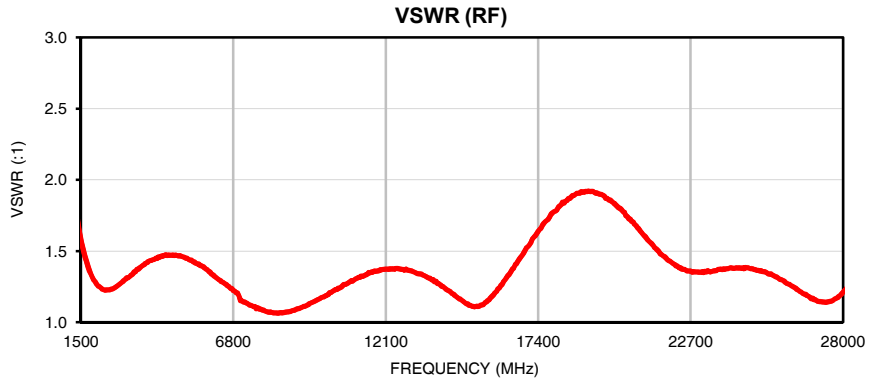
Typical Performance Data

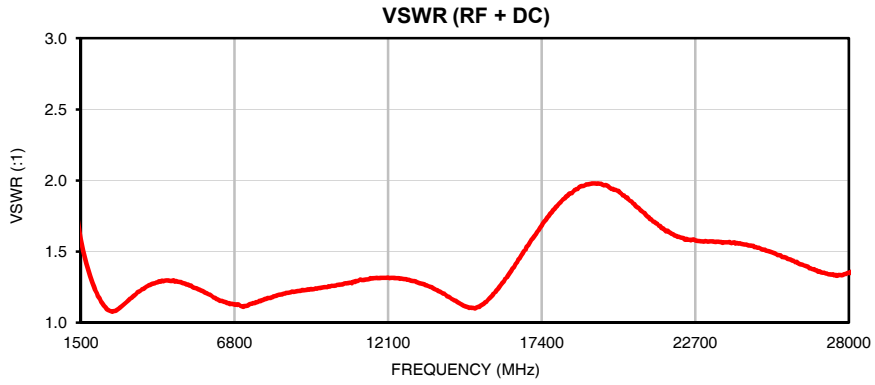
FREQ.	INSERTION LOSS	ISOLATION (RF PORT to DC PORT)	VSWR	
			RF	RF + DC
(MHz)	(dB)	(dB)	(:1)	(:1)
1500	1.3	44.46	1.59	1.59
2000	1.1	48.62	1.28	1.23
2500	1.1	51.42	1.23	1.08
3000	1.1	54.42	1.30	1.13
3500	1.2	56.94	1.37	1.22
4000	1.2	58.75	1.44	1.28
4500	1.2	60.77	1.47	1.30
5000	1.2	62.51	1.46	1.28
5500	1.2	63.34	1.41	1.24
6000	1.2	61.87	1.35	1.19
6500	1.2	59.79	1.27	1.14
7000	1.2	59.86	1.18	1.12
7500	1.3	60.31	1.11	1.14
8000	1.3	60.01	1.07	1.17
8500	1.4	59.41	1.07	1.20
9000	1.4	58.63	1.09	1.22
9500	1.5	56.65	1.13	1.23
10000	1.5	54.23	1.19	1.25
10500	1.5	50.39	1.24	1.27
11000	1.5	45.73	1.30	1.29
11500	1.5	42.58	1.35	1.31
12000	1.5	43.05	1.37	1.31
12500	1.4	44.74	1.38	1.31
13000	1.4	45.64	1.36	1.29
13500	1.3	45.92	1.32	1.26
14000	1.3	45.57	1.26	1.20
14500	1.2	43.97	1.19	1.15
15000	1.2	41.59	1.12	1.10
15500	1.2	41.94	1.12	1.15
16000	1.3	45.48	1.23	1.27
16500	1.4	47.71	1.37	1.41
17000	1.5	48.86	1.52	1.56
17500	1.7	49.97	1.66	1.71
18000	1.8	50.13	1.78	1.84
18500	1.9	50.72	1.87	1.92
19000	1.9	50.02	1.91	1.97
19500	1.9	49.32	1.90	1.97
20000	1.9	49.24	1.84	1.93
20500	1.8	48.94	1.74	1.85
21000	1.8	48.70	1.63	1.76
21500	1.7	48.81	1.52	1.68
22000	1.7	47.74	1.43	1.61
22500	1.7	44.85	1.37	1.58
23000	1.7	44.71	1.35	1.57
23500	1.7	47.57	1.36	1.57
24000	1.8	48.30	1.38	1.56
24500	1.8	46.50	1.38	1.55
25000	1.8	46.94	1.36	1.52
25500	1.8	45.61	1.34	1.48
26000	1.8	46.56	1.28	1.44
26500	1.8	47.77	1.22	1.40
27000	1.9	46.68	1.16	1.36
27500	1.9	48.13	1.14	1.33
28000	2.0	47.60	1.21	1.35

Typical Performance Curves









Case Style VL

Outline Dimensions

VL3239

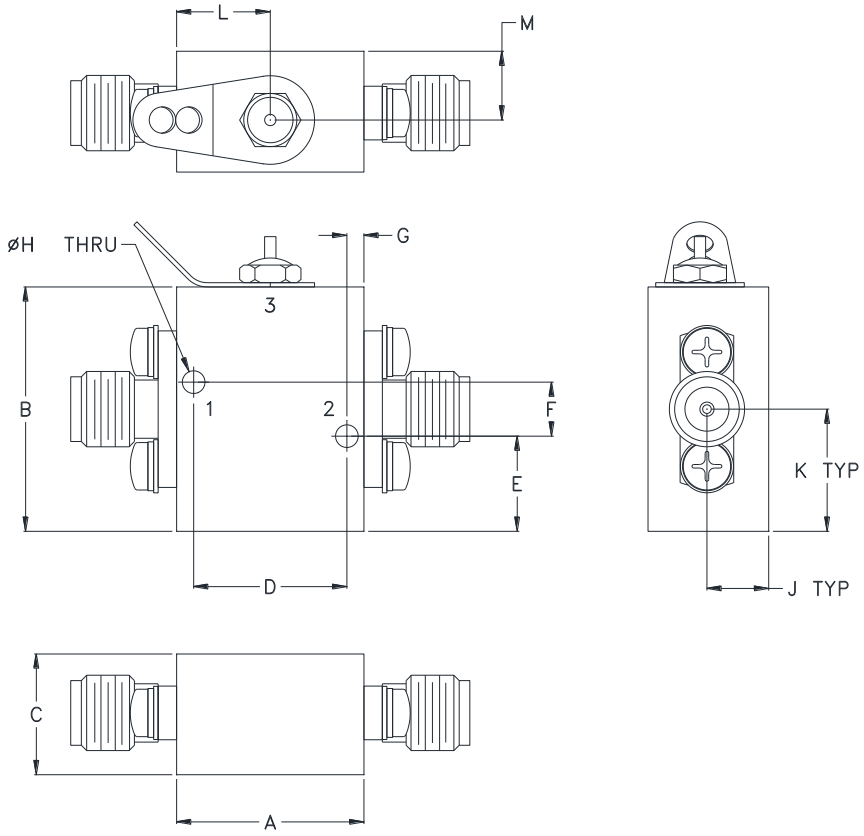


Figure 1

CASE#	A	B	C	D	E	F	G
VL3239	.66 (16.7)	.86 (21.8)	.43 (10.8)	.540 (13.72)	.34 (8.5)	.190 (4.83)	.06 (1.5)

CASE#	H	J	K	L	M	WT.GRAMS
VL3239	.070 (1.78)	.22 (5.5)	.43 (10.9)	0.33 (8.3)	0.24 (6.1)	36

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .050; 3 Pl. ± .015

Notes:

1. Case material: Brass alloy.
2. Case Finish:
   a. Case & Cover of the units –Gold plating.
3. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications ENV001

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 Ambient Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet