

Voltage Controlled Oscillator

POS-535+

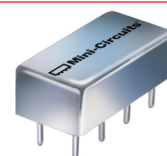
Linear Tuning 300 to 525 MHz

Features

- low load pull, 0.6 MHz typ.
- low phase noise, -145 dBc/Hz at 1 MHz offset, typ.
- output suitable for LO drive to mixers
- hermetically sealed

Applications

- VHF/UHF receivers/transmitters
- test instruments
- wideband frequency synthesizers



CASE STYLE: A06

+RoHS Compliant

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

Electrical Specifications

FREQUENCY (MHz)		POWER OUTPUT (dBm)	TUNING VOLTAGE (V)		PHASE NOISE (dBc/Hz)				PULLING pk-pk @ 12 dB (MHz)	PUSHING (MHz/V)	TUNING SENSITIVITY (MHz/V)	HARMONICS* (dBc)		3 dB MODULATION BANDWIDTH (MHz)	DC OPERATING POWER	
Min.	Max.	Typ.	Min.	Max.	1 kHz	10 kHz	100 kHz	1 MHz	Typ.	Typ.	Typ.	Typ.	Max.	Typ.	Vcc (volts)	Current (mA) Max.
300	525	+8.5	1	16	-72	-97	-120	-145	0.6	0.6	17-23	-32	-20	0.1	12	20

*Second & Third Harmonics

Pin Connections

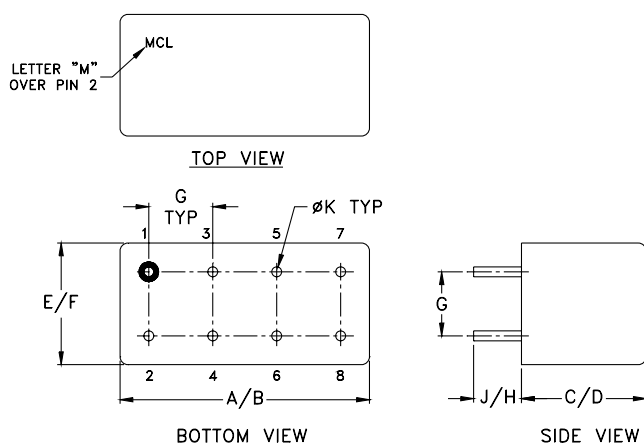
RF OUT	2
VCC	1
V-TUNE	8
GROUND	3,4,5,6,7
CASE GROUND	3,4,5,6,7

Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	+16V
Absolute Max. Tuning Voltage (Vtune)	+18V

all specifications: 50 ohm system
Permanent damage may occur if any of these limits are exceeded.

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	wt
.770	.800	.285	.310	.370	.400	.200	.20	.14	.031	grams
19.56	20.32	7.24	7.87	9.40	10.16	5.08	5.08	3.56	0.79	5.2

Notes

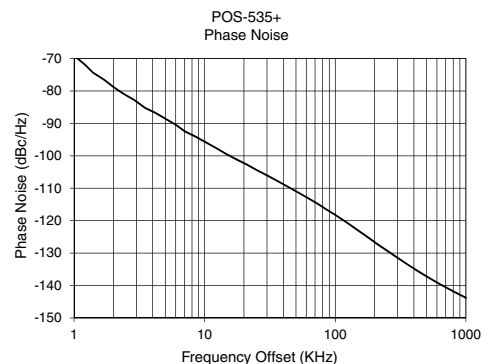
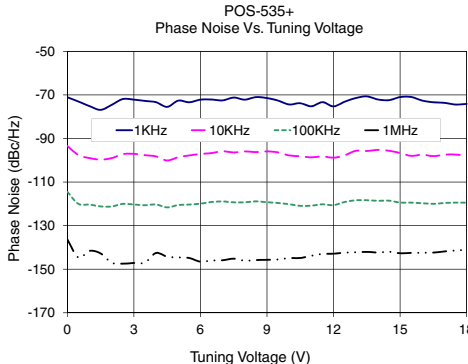
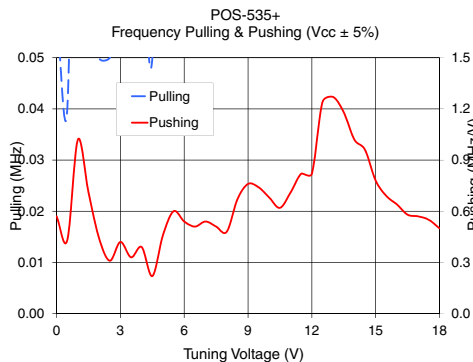
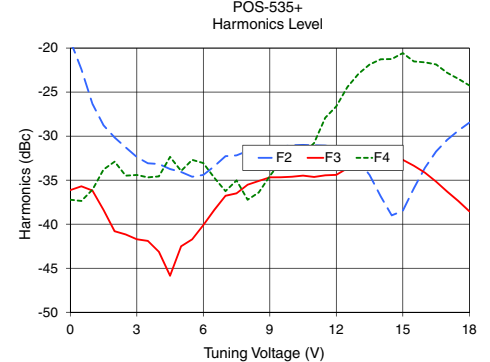
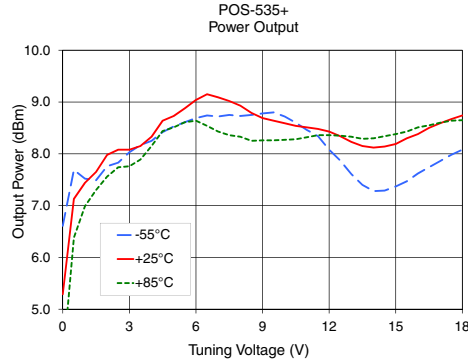
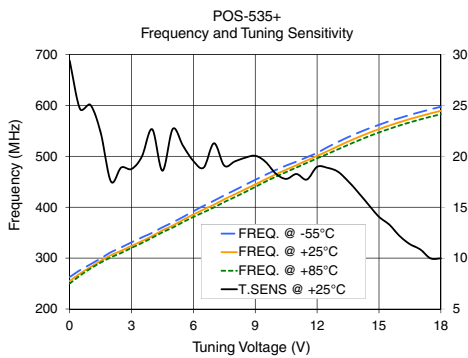
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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



Performance Data & Curves

POS-535+

V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			Icc (mA)	HARMONICS (dBc)			FREQ. PUSH (MHz/V)	FREQ. PULL (MHz)	PHASE NOISE (dBc/Hz) at offsets				FREQ OFFSET (KHz)	PHASE NOISE at 418 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	29.39	262.8	255.1	250.1	6.61	5.29	3.95	16.39	-19.1	-36.1	-37.2	0.57	0.06	-71.07	-93.5	-114.5	-136.3	1.0	-69.11
1.00	25.06	287.7	282.1	279.2	7.52	7.44	6.99	16.30	-26.3	-36.2	-36.1	1.02	0.13	-75.14	-99.0	-120.3	-141.6	2.0	-78.75
2.00	17.53	311.6	305.8	301.6	7.76	7.98	7.56	16.21	-30.2	-40.8	-32.9	0.44	0.05	-74.57	-99.0	-121.2	-147.0	3.5	-85.24
3.00	18.76	331.1	324.0	320.1	8.03	8.08	7.76	15.98	-32.4	-41.7	-34.4	0.42	0.06	-72.18	-97.1	-120.3	-147.1	6.0	-90.43
4.00	22.66	349.7	343.4	340.0	8.25	8.33	8.15	15.81	-33.2	-43.1	-34.6	0.39	0.07	-73.35	-98.3	-120.3	-142.6	8.5	-94.07
5.00	22.69	370.3	364.0	360.0	8.53	8.73	8.51	15.70	-34.1	-42.5	-34.0	0.46	0.13	-72.63	-98.6	-120.6	-144.6	10.0	-95.62
6.00	19.54	392.1	385.9	380.9	8.69	9.04	8.64	15.61	-34.4	-40.1	-33.1	0.54	0.63	-72.18	-97.1	-119.9	-146.5	20.8	-102.60
6.50	18.90	402.8	395.6	390.2	8.74	9.15	8.54	15.53	-33.4	-38.4	-34.7	0.51	0.86	-72.13	-96.7	-119.2	-146.0	35.5	-107.62
7.00	21.28	412.9	405.1	399.7	8.72	9.09	8.43	15.43	-32.3	-36.8	-36.3	0.54	0.82	-72.52	-95.9	-118.9	-145.9	60.7	-112.84
7.50	19.08	423.4	415.7	410.2	8.75	9.02	8.36	15.38	-32.2	-36.5	-35.0	0.51	0.65	-71.22	-96.4	-119.3	-145.2	86.7	-116.69
8.50	19.86	443.7	435.0	429.6	8.75	8.79	8.25	15.24	-31.4	-35.1	-36.4	0.67	0.63	-71.02	-96.3	-118.9	-145.8	100.0	-118.23
9.00	20.06	453.9	444.9	440.0	8.78	8.69	8.26	15.18	-31.3	-34.7	-34.5	0.76	0.54	-71.46	-95.9	-119.3	-145.7	148.1	-122.90
10.00	18.29	473.2	464.7	460.0	8.72	8.59	8.27	15.08	-31.1	-34.6	-32.2	0.68	0.43	-74.40	-97.8	-120.2	-144.9	177.0	-125.06
10.50	17.78	481.9	473.8	469.2	8.60	8.54	8.28	15.03	-31.0	-34.5	-32.0	0.62	0.63	-73.81	-98.2	-120.9	-144.9	211.6	-127.32
11.00	18.26	489.7	482.7	478.1	8.46	8.51	8.32	14.97	-31.1	-34.6	-30.8	0.71	1.08	-75.24	-98.7	-120.8	-143.8	302.4	-131.53
12.00	18.97	506.9	500.7	496.0	8.08	8.43	8.36	14.87	-31.3	-34.4	-26.6	0.82	1.68	-75.28	-98.8	-120.6	-142.9	361.5	-133.62
13.00	18.51	528.0	519.6	513.6	7.61	8.23	8.33	14.81	-32.8	-33.0	-22.9	1.27	0.32	-71.46	-95.7	-118.4	-142.2	507.5	-137.35
14.00	16.45	546.4	537.7	531.1	7.28	8.12	8.30	14.79	-36.8	-32.2	-21.3	1.02	1.37	-72.10	-95.2	-118.6	-142.3	606.7	-139.15
15.00	14.06	561.9	553.5	547.0	7.37	8.19	8.38	14.76	-38.5	-32.7	-20.6	0.78	1.45	-71.00	-96.7	-119.4	-142.7	851.6	-142.34
16.00	12.17	575.3	567.2	560.6	7.62	8.38	8.51	14.72	-33.6	-34.2	-21.6	0.64	1.24	-72.61	-97.4	-119.7	-142.5	1000.0	-143.78



Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- 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



Voltage Controlled Oscillator

POS-535+

Typical Performance Data

V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			HARMONICS (dBc)			FREQ. PUSH (MHz/V)	FREQ OFFSET (KHz)	PHASE NOISE (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C	F2	F3	F4			
1.0	31.50	285.0	278.9	274.8	8.25	8.38	8.25	-26.6	-37.3	-34.1	0.97	1	-70
2.0	26.00	310.2	304.9	301.2	8.55	8.95	8.94	-30.9	-41.3	-33.7	0.64	10	-93
3.0	20.90	331.3	325.8	321.5	8.49	9.23	9.33	-35.3	-40.9	-35.4	0.97	100	-116
4.0	20.90	352.8	346.7	341.3	8.61	9.35	9.47	-38.4	-41.9	-37.0	0.41	1000	-139
5.0	17.80	370.7	364.5	358.8	8.76	9.43	9.49	-41.5	-40.0	-41.0	0.07		
6.0	16.20	386.8	380.7	374.9	8.70	9.37	9.34	-43.3	-36.9	-43.6	-0.36		
7.0	16.80	402.9	397.5	393.2	8.12	8.91	9.07	-45.7	-37.1	-38.6	1.04		
8.0	23.90	427.1	421.3	416.1	7.81	8.00	8.91	-43.7	-37.4	-35.8	0.35		
9.0	20.30	447.0	441.6	436.5	7.73	8.53	8.63	-41.6	-40.1	-36.2	-0.14		
10.0	18.00	464.8	459.6	454.8	7.80	8.51	8.55	-39.9	-42.7	-39.7	-0.23		
11.0	16.30	480.8	476.0	471.0	7.78	8.49	8.56	-38.3	-43.3	-35.7	-0.37		
12.0	11.90	490.3	487.9	483.7	7.40	8.25	8.35	-37.6	-42.5	-32.1	-0.58		
13.0	16.80	511.1	504.8	500.4	6.94	7.76	8.08	-37.9	-40.0	-32.6	0.93		
14.0	19.60	531.2	524.4	519.3	7.04	7.73	7.95	-34.5	-36.7	-33.1	0.73		
15.0	17.30	548.7	541.7	536.1	7.34	7.96	8.11	-32.7	-35.2	-34.0	0.38		
16.0	14.60	563.3	556.3	550.4	7.41	8.08	8.21	-29.5	-33.2	-41.1	0.12		

REV. X1
POS-535+
070201
Page 1 of 1



IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



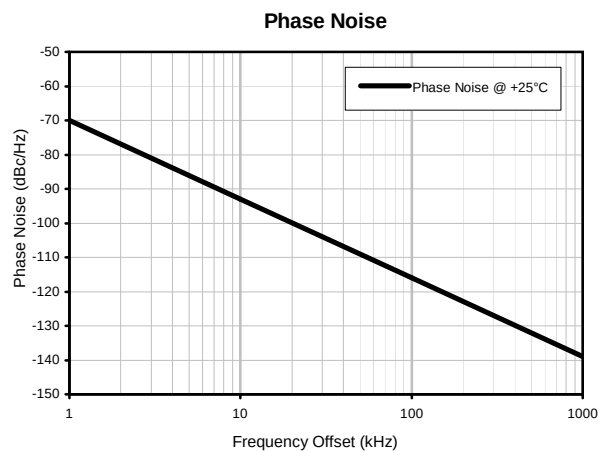
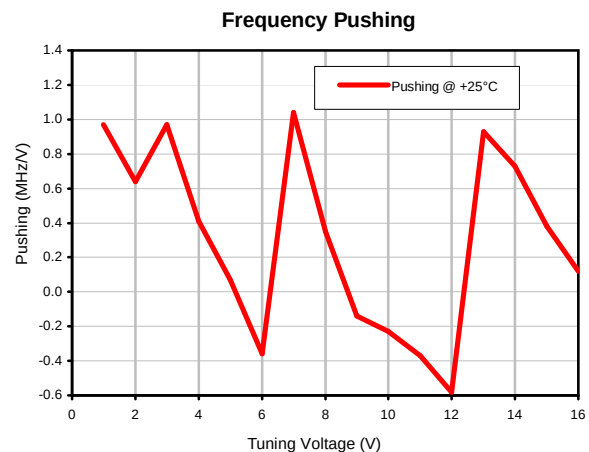
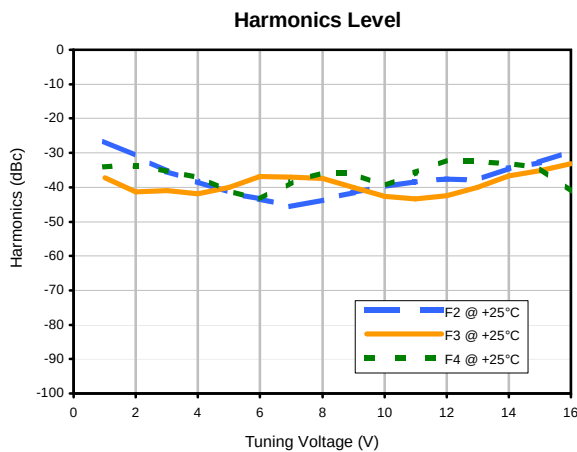
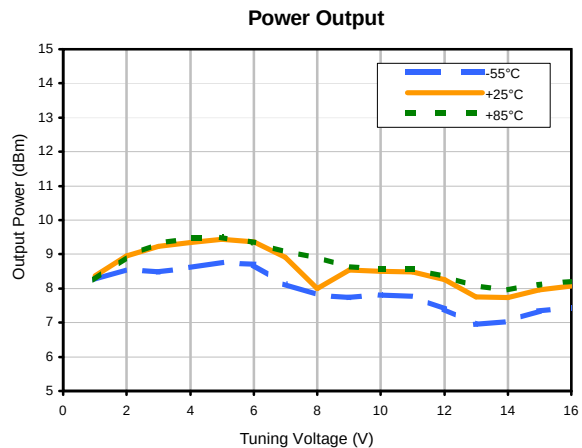
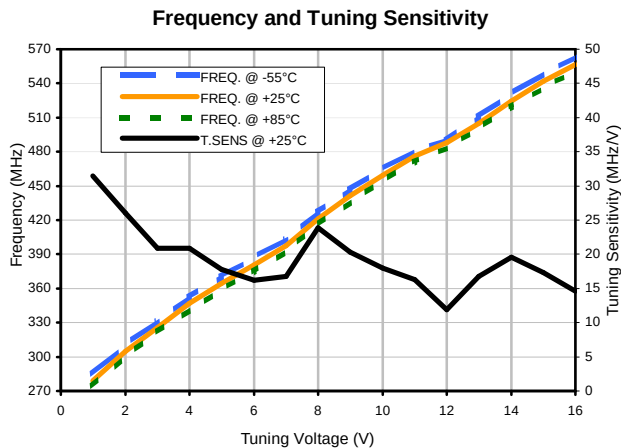
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see



Voltage Controlled Oscillator

POS-535+

Typical Performance Data



REV. X1
POS-535+
070201
Page 1 of 1



The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see

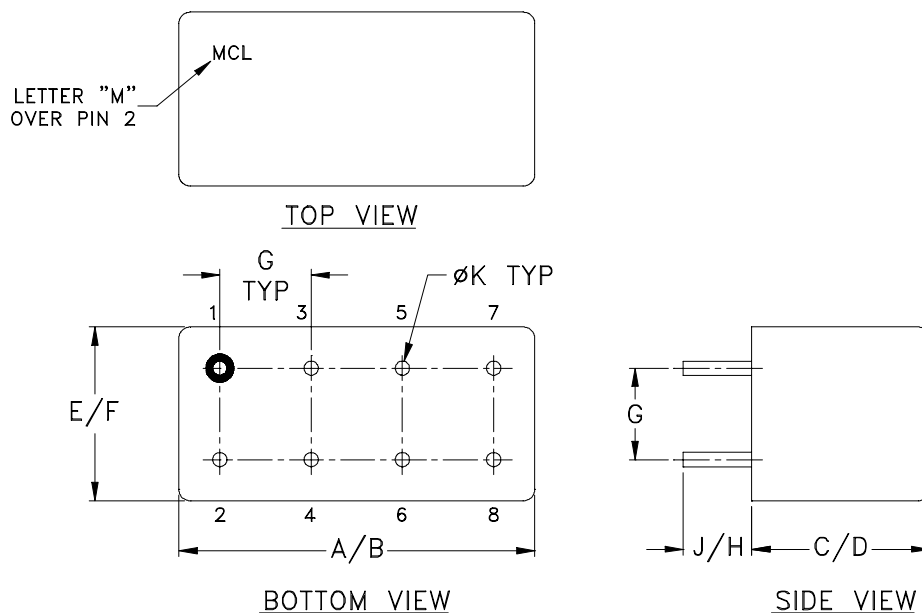
Mini-Circuits®

RF/MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

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

Notes:

- Header material: C.R.S.
Pin material: #52 alloy.
Cover material: Cupro-Nickel.
- Pin finish: Electro Tin-Silver.
- Insulated spacer available. Request P/N B14-045-01.
- Tolerance on pin diameter $\pm .005$ inch.
- Glass meniscus 0.015 inch max.
- Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.

Mini-Circuits®

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

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



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 100° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A



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
Gross Leak	125°C Bubble Test	MIL-STD-202, Method 112, Condition D
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D