

Engineering Development Model

Voltage Controlled Oscillator

SOS-EDR11144

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : FZ802

ELECTRICAL SPECIFICATIONS 50Ω				
Parameter	Min.	Typ.	Max.	Units
Frequency	1600		1600	MHz
Tuning Voltage	0.5		10.0	V
Power Output		+2		dBm
Phase Noise				
at 1 kHz offset		-89		dBc/Hz
at 10 KHz offset		-112		dBc/Hz
at 100 KHz offset		-133		dBc/Hz
at 1000 kHz offset		-153		dBc/Hz
Pulling at 12 dBr PK-PK all phases		0.2		MHz
Pushing at Vcc=5V±0.25V		0.1		MHz/V
Tuning Sensitivity		7		MHz/V
Harmonic Suppression		-19	-11	dBc
3 dB Modulation Bandwidth		190000		kHz
Supply Voltage		5		V
Supply Current			35	mA

MAXIMUM RATINGS	
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Supply Voltage (Vcc)	+7V
Absolute Tuning Voltage (Vtune)	+12V

PIN CONNECTIONS	
RF OUT	10
VCC	14
V-TUNE	2
GROUND	1,3,4,5,6,7,8,9,11,12,13,15,16

Notes
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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/MCStore/terms.jsp

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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			
0.0	11.56	1577.2	1570.6	1566.1	1.64	1.60	0.96	-17.2	-27.9	-30.9	0.02	1	-89
0.5	9.55	1582.8	1576.4	1572.0	1.71	1.62	0.97	-17.4	-29.2	-31.2	0.09	10	-112
1.0	8.54	1587.5	1581.1	1576.8	1.80	1.67	1.01	-17.5	-29.2	-31.6	0.11	100	-133
1.5	7.92	1591.8	1585.4	1581.0	1.87	1.73	1.06	-17.8	-28.8	-31.3	0.12	1000	-153
2.0	7.56	1595.8	1589.4	1585.0	1.93	1.80	1.13	-18.0	-29.4	-30.6	0.12		
2.5	7.35	1599.6	1593.1	1588.7	1.99	1.87	1.19	-18.2	-29.9	-30.8	0.12		
3.0	7.21	1603.3	1596.8	1592.3	2.05	1.92	1.26	-18.4	-29.9	-31.5	0.12		
3.5	7.11	1606.9	1600.4	1595.9	2.08	1.97	1.32	-18.5	-29.1	-31.5	0.11		
4.0	7.09	1610.6	1604.0	1599.4	2.09	2.03	1.37	-18.5	-29.5	-31.1	0.10		
4.5	7.13	1614.2	1607.5	1602.9	2.11	2.06	1.43	-18.6	-29.8	-31.1	0.10		
5.0	7.20	1617.8	1611.1	1606.4	2.11	2.08	1.47	-18.6	-30.2	-31.8	0.09		
5.5	7.29	1621.4	1614.7	1609.9	2.08	2.08	1.50	-18.6	-30.1	-31.7	0.08		
6.0	7.44	1625.1	1618.3	1613.5	2.06	2.06	1.50	-18.6	-29.6	-30.7	0.07		
6.5	7.59	1628.9	1622.0	1617.2	2.04	2.04	1.49	-18.7	-28.8	-30.4	0.06		
7.0	7.78	1632.7	1625.8	1620.9	2.02	2.01	1.47	-18.8	-28.6	-30.6	0.05		
7.5	8.01	1636.7	1629.7	1624.7	2.02	1.98	1.45	-18.7	-29.2	-31.4	0.04		
8.0	8.25	1640.7	1633.7	1628.7	2.05	1.96	1.43	-18.8	-28.6	-31.9	0.03		
8.5	8.52	1644.9	1637.8	1632.7	2.08	1.96	1.40	-18.9	-27.8	-30.2	0.00		
9.0	8.82	1649.2	1642.1	1636.9	2.12	1.97	1.40	-19.0	-27.1	-29.5	0.02		
9.5	9.12	1653.7	1646.5	1641.2	2.16	2.00	1.41	-19.1	-26.7	-30.1	0.05		
10.0	9.38	1658.3	1651.1	1645.7	2.21	2.04	1.44	-19.3	-26.4	-30.5	0.08		
10.5	9.58	1663.1	1655.8	1650.3	2.24	2.07	1.49	-19.3	-26.7	-30.9	0.13		
11.0	9.75	1667.9	1660.6	1655.0	2.27	2.11	1.53	-19.5	-26.8	-29.6	0.20		
11.5	9.82	1672.8	1665.4	1659.8	2.29	2.14	1.56	-19.4	-26.4	-29.6	0.29		
12.0	9.82	1677.8	1670.3	1664.7	2.29	2.15	1.61	-19.4	-25.6	-29.7	0.39		

Notes

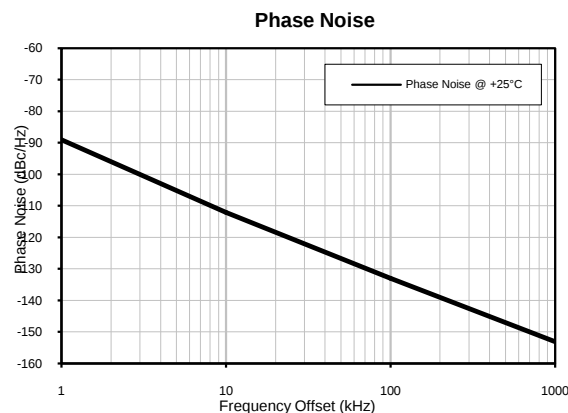
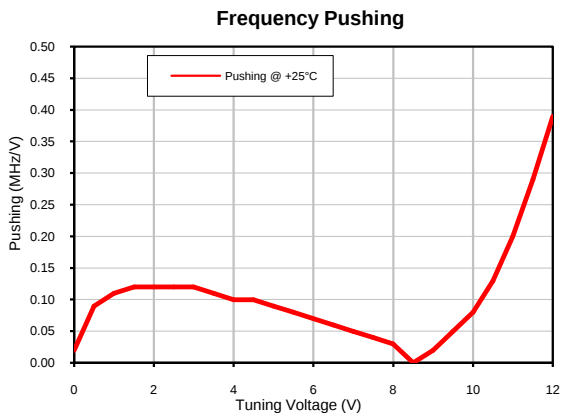
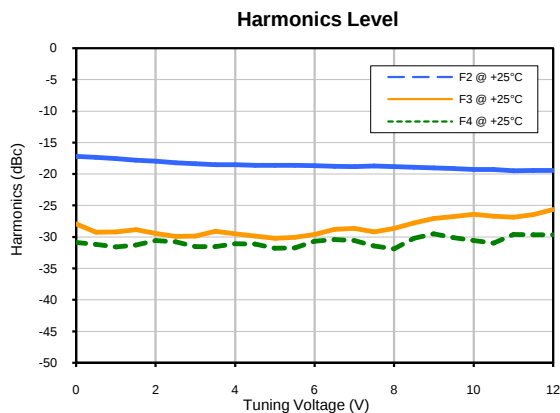
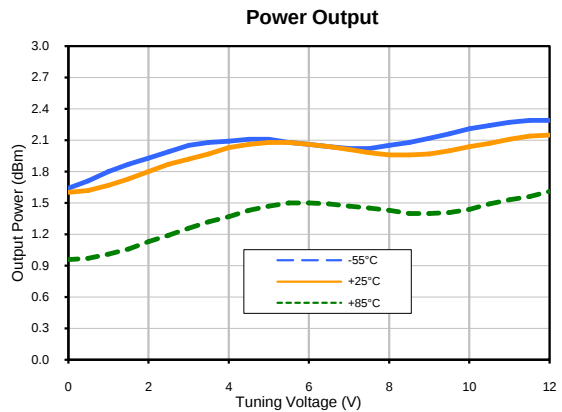
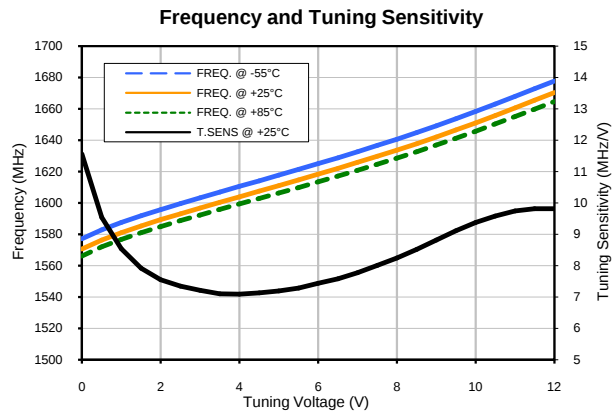
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Typical Performance Data

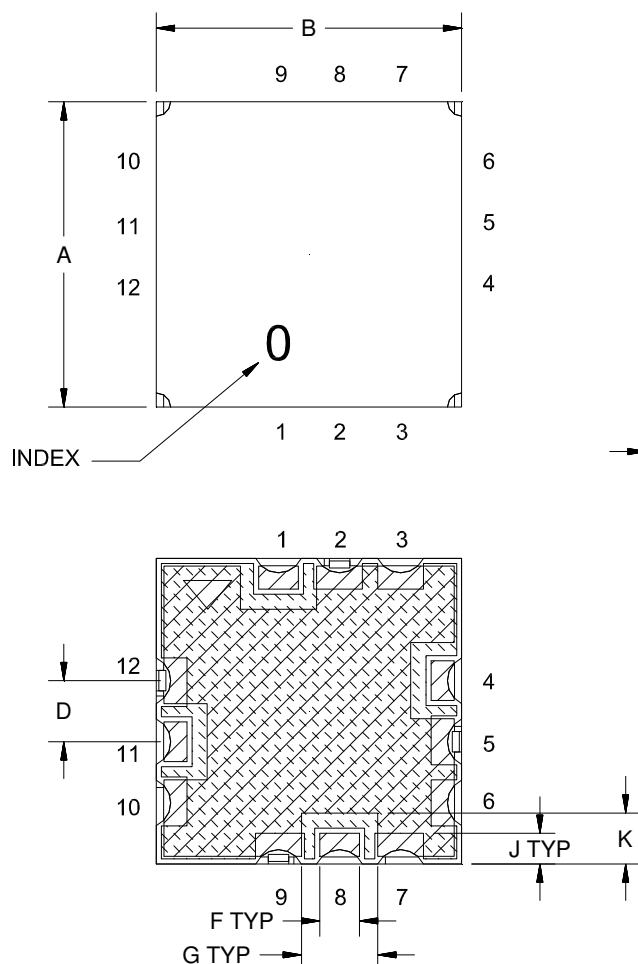


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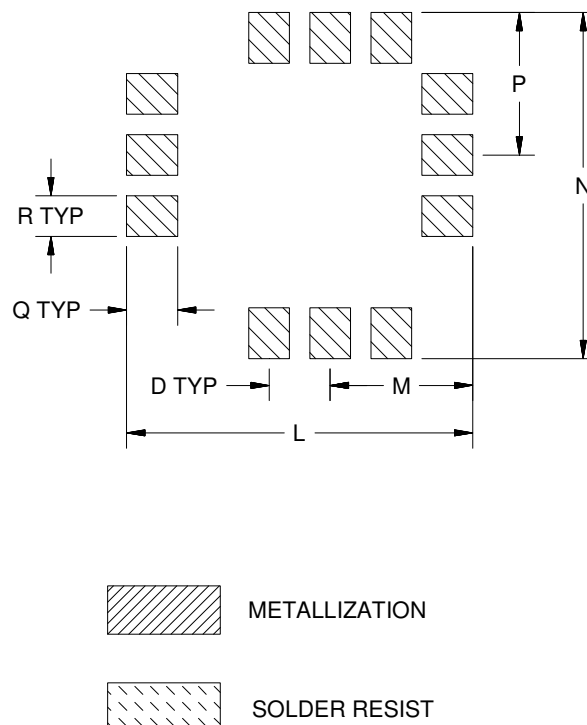
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Outline Dimensions



PCB Land Pattern



CASE #	A	B	C	D	E	F	G	H	J	K
FZ802	.300 (7.62)	.300 (7.62)	.070 (1.78)	.060 (1.52)	.120 (3.05)	.039 (0.99)	.075 (1.91)	.120 (3.05)	.030 (0.76)	.050 (1.27)

CASE #	L	M	N	P	Q	R	WT. GRAM
FZ802	.340 (8.64)	.140 (3.56)	.340 (8.64)	.140 (3.56)	.050 (1.27)	.040 (1.02)	.25

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

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:

For RoHS Case Styles: 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.



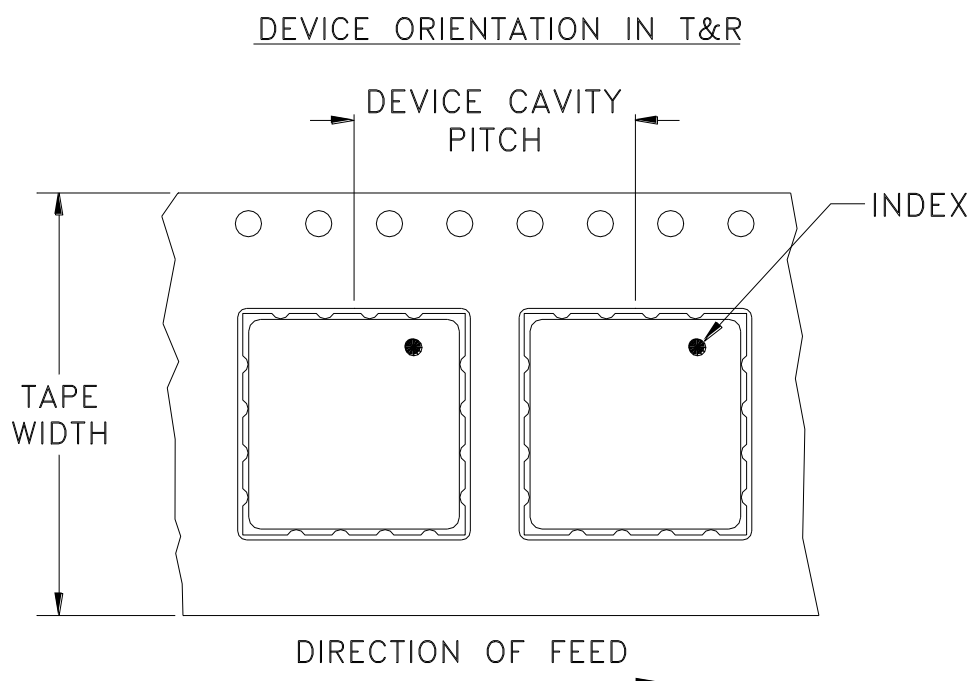
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Tape & Reel Packaging TR-F78



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note
16	12	7	10
			20
			50
			100
			200
		13	500, 1000

Note: Please consult individual model data sheet to determine device per reel availability.

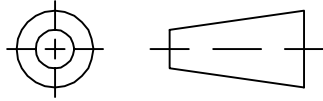
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



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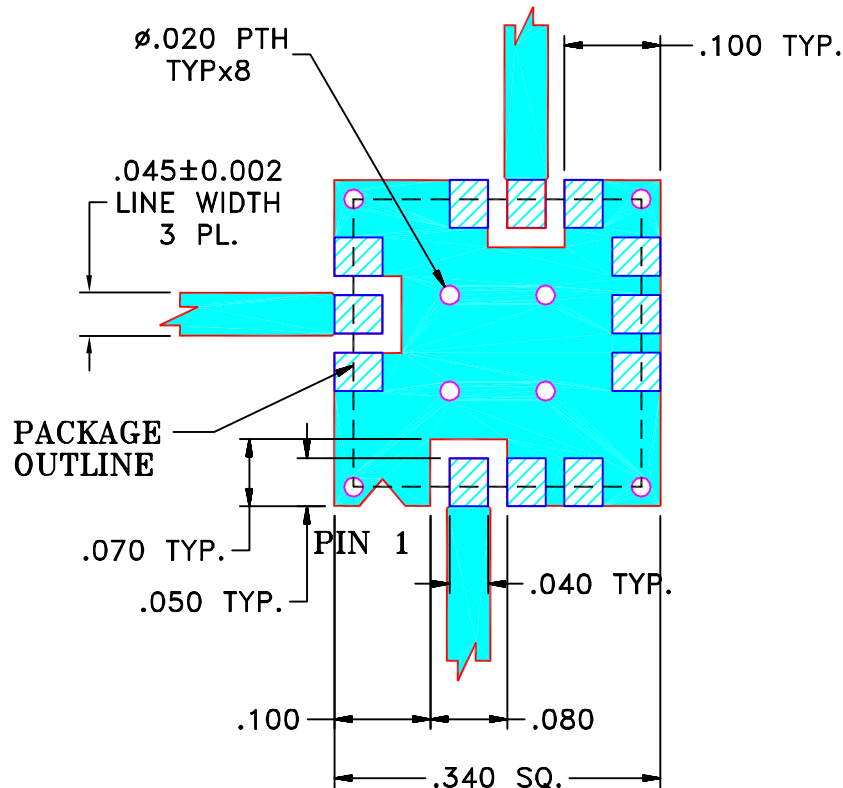
THIRD ANGLE PROJECTION



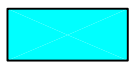
REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M89039	NEW RELEASE (FROM RAVON)	01/04	DK	HH
OR	R54816	NEW RELEASE (FROM RAVON)	01/04	DK	HH
A	M102713	ADDED "...WITH SMOBC"	01/12/06	GF	IL

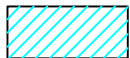
**SUGGESTED MOUNTING CONFIGURATION
FOR FZ802/FZ990 CASE STYLE, pl PIN CONNECTION.**

**NOTE:**

1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS $.025" \pm .002"$; COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.



DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)



DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

DRAWN

DK (RAV)

19/01/04

TOLERANCES ON:

CHECKED

RZ (RAV)

19/01/04

2 PL DECIMALS $\pm$

APPROVED

HH (RAV)

19/01/04

3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

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ASHEETA1.DWG REV:A DATE:01/12/95



Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

PL, pl, FZ802/FZ990, SOS, TB-271

SIZE

CODE IDENT

DRAWING NO:

REV:

A

15542

98-PL-143

A

FILE: 98PL143

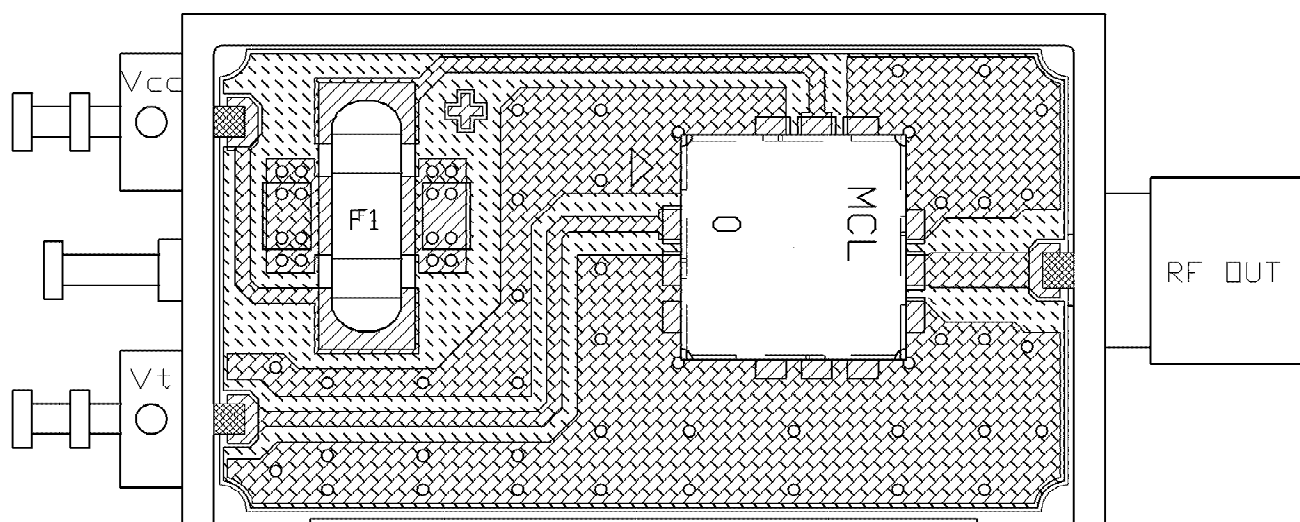
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SHEET:

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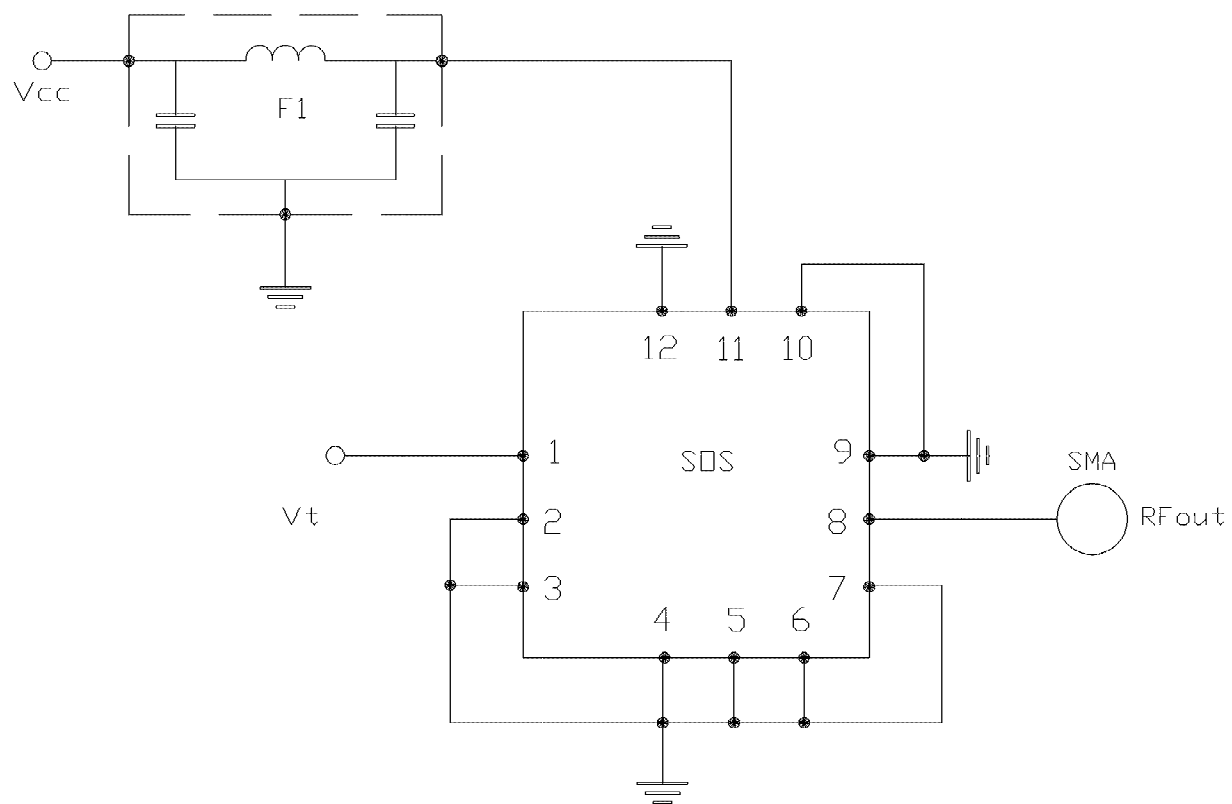
Evaluation Board and Circuit



TB-271

NOTES:

1. SMA FEMALE CONNECTORS.
2. PCB MATERIAL: RO4350B OR EQUIVALENT, DIALECTRIC CONSTANT=3.48,
DIALECTRIC THICKNESS=.020 INCH.



Schematic Diagram



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
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
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