

Coaxial

Voltage Controlled Oscillator

ZX95-2952A-S+

5V Tuning for PLL ICs 2748 to 2952 MHz

Features

- high power output, +5.5 dBm typ
- low phase noise
- low pulling
- low pushing
- protected by US patent 6,790,049

Applications

- r & d
- lab
- instrumentation
- wireless communications
- WiMAX



CASE STYLE: GB956

Connectors	Model
SMA	ZX95-2952A-S+

+RoHS Compliant

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

Electrical Specifications

MODEL NO.	FREQ. (MHz)		POWER OUTPUT (dBm)	PHASE NOISE dBc/Hz SSB at offset frequencies,kHz Typ.				TUNING					NON HARMONIC SPURIOUS (dBc)	HARMONICS (dBc)		PULLING pk-pk @12 dB (MHz)	PUSHING (MHz/V)	DC OPERATING POWER	
								VOLTAGE RANGE (V)	SENSI- TIVITY (MHz/V)	PORT CAP (pF)	3 dB MODULATION BANDWIDTH (MHz)								
	Min.	Max.		Typ.	1	10	100	1000	Min.	Max.	Typ.	Typ.		Typ.	Typ.			Typ.	Max.
ZX95-2952A-S+	2748	2952	+5.5	-71	-99	-120	-140	0.5	4.5	65-97	28	40	-90	-21	-15	1.5	1	5	35

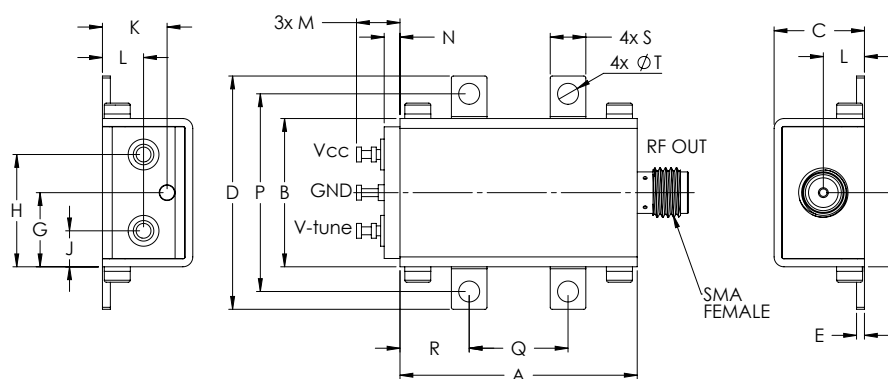
Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	7V
Absolute Max. Tuning Voltage (Vtune)	7V
All specifications	50 ohm system



NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminals. See Application Note [AN-40-10](#).

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	Wt.
1.20	.75	.46	1.18	.04	.38	.38	.57	.18	.33	.21	.22	.08	1.00	.50	.35	.18	.106	grams
30.48	19.05	11.68	29.97	1.02	9.65	9.65	14.48	4.57	8.38	5.33	5.59	2.03	25.40	12.70	8.89	4.57	2.69	35.0

Notes

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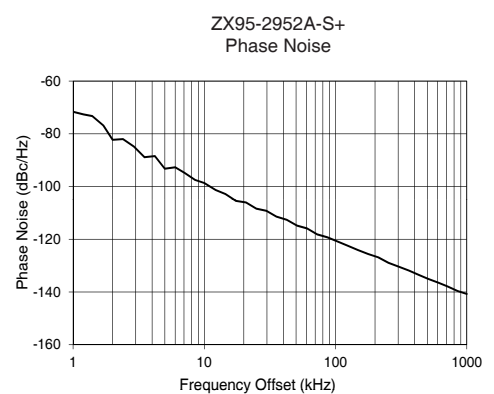
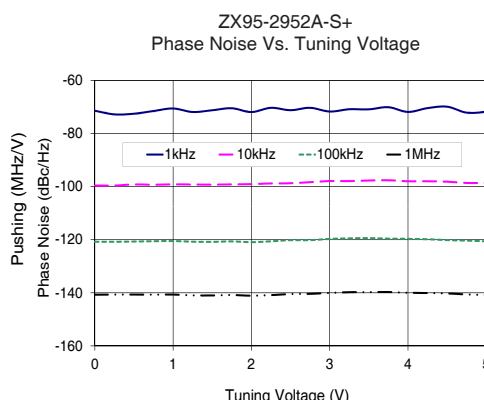
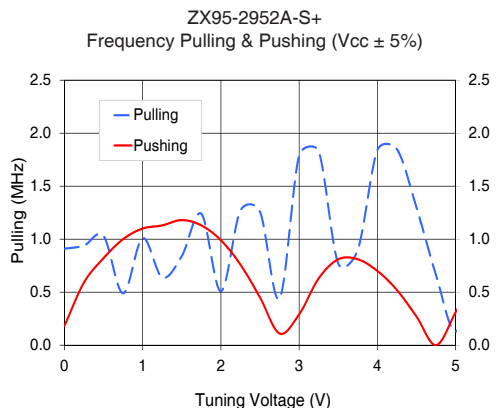
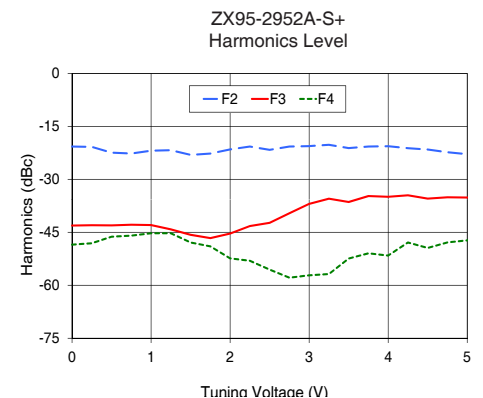
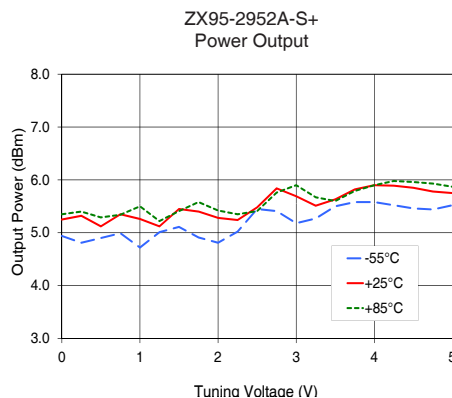
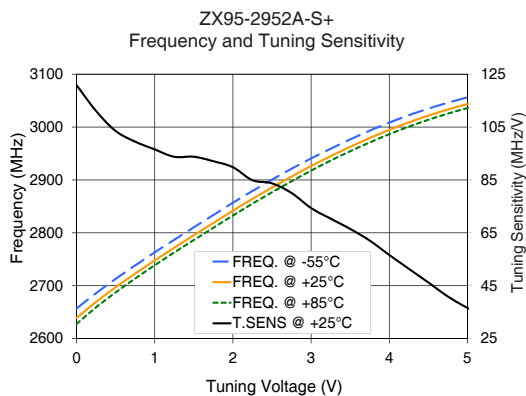
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Page 1 of 2

Performance Data & Curves*

ZX95-2952A-S+

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 2850 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	120.90	2656.8	2638.9	2627.7	4.94	5.25	5.35	25.11	-20.7	-43.1	-48.5	0.18	0.91	-71.42	-99.6	-120.8	-140.7	1.0	-71.64
0.25	111.09	2686.0	2669.1	2659.1	4.81	5.32	5.40	25.10	-20.8	-43.0	-48.1	0.59	0.94	-72.79	-99.6	-120.8	-140.7	2.0	-82.26
0.50	103.54	2712.9	2696.9	2687.3	4.90	5.12	5.29	25.13	-22.5	-43.1	-46.3	0.82	1.03	-72.53	-99.2	-120.7	-140.7	3.5	-88.88
0.75	99.48	2738.4	2722.8	2713.6	4.99	5.35	5.34	25.12	-22.7	-42.9	-45.9	1.00	0.49	-71.52	-99.3	-120.6	-140.7	6.0	-92.69
1.00	96.54	2763.1	2747.7	2738.7	4.72	5.26	5.50	25.14	-21.9	-43.0	-45.3	1.10	1.01	-70.56	-99.1	-120.5	-140.7	8.5	-97.48
1.25	93.76	2786.9	2771.8	2762.9	5.01	5.12	5.22	25.19	-21.8	-44.2	-45.3	1.13	0.64	-71.89	-99.2	-120.8	-141.0	10.0	-98.67
1.50	93.77	2810.4	2795.2	2786.3	5.11	5.45	5.41	25.16	-23.1	-45.7	-47.9	1.18	0.84	-71.23	-99.2	-120.8	-141.0	20.8	-106.05
1.75	92.08	2833.7	2818.7	2809.6	4.91	5.40	5.58	25.16	-22.7	-46.6	-49.0	1.13	1.24	-70.48	-99.2	-120.6	-140.9	35.5	-111.42
2.00	89.82	2856.9	2841.7	2832.6	4.81	5.28	5.42	25.23	-21.5	-45.4	-52.4	0.99	0.51	-71.91	-99.0	-120.9	-141.1	60.7	-115.88
2.25	84.91	2879.1	2864.2	2855.1	5.02	5.24	5.35	25.32	-20.7	-43.2	-53.1	0.76	1.27	-70.31	-98.8	-120.6	-140.9	86.7	-119.25
2.50	83.72	2900.6	2885.4	2876.6	5.45	5.48	5.41	25.39	-21.7	-42.3	-55.6	0.45	1.26	-71.21	-98.7	-120.2	-140.5	100.0	-120.53
2.75	80.07	2921.2	2906.3	2897.4	5.41	5.84	5.76	25.39	-20.7	-39.6	-57.9	0.11	0.44	-70.31	-98.3	-120.2	-140.4	148.1	-124.07
3.00	74.38	2940.6	2926.3	2917.6	5.18	5.69	5.90	25.47	-20.6	-37.0	-57.2	0.29	1.79	-71.71	-97.9	-119.7	-140.1	177.0	-125.59
3.25	70.35	2959.1	2944.9	2936.6	5.27	5.51	5.67	25.58	-20.2	-35.5	-56.8	0.63	1.83	-70.85	-97.9	-119.5	-139.8	211.6	-126.86
3.50	66.49	2976.7	2962.5	2954.3	5.50	5.63	5.60	25.63	-21.2	-36.4	-52.4	0.81	0.77	-70.89	-97.7	-119.4	-139.8	361.5	-131.84
3.75	62.07	2993.3	2979.1	2970.9	5.58	5.82	5.79	25.65	-20.7	-34.7	-51.0	0.81	0.90	-70.08	-97.6	-119.6	-139.7	507.5	-135.03
4.00	56.63	3008.5	2994.7	2986.5	5.58	5.90	5.90	25.66	-20.6	-35.0	-51.6	0.70	1.84	-71.86	-98.0	-119.7	-140.0	606.7	-136.45
4.25	51.40	3022.4	3008.8	3000.7	5.52	5.89	5.98	25.67	-21.2	-34.5	-47.9	0.52	1.85	-70.43	-98.0	-119.8	-140.1	851.6	-139.63
4.50	46.23	3034.9	3021.7	3013.7	5.46	5.85	5.96	25.69	-21.6	-35.5	-49.4	0.27	1.30	-69.89	-98.1	-120.2	-140.3	1000.0	-140.74

*at 25°C unless mentioned otherwise



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Voltage Controlled Oscillator

ZX95-2952A-S+

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	120.9	2656.8	2638.9	2627.7	4.9	5.3	5.4	-20.7	-43.1	-48.5	0.2	1	-71
0.3	111.1	2686.0	2669.1	2659.1	4.8	5.3	5.4	-20.8	-43.0	-48.1	0.6	10	-99
0.5	103.5	2712.9	2696.9	2687.3	4.9	5.1	5.3	-22.5	-43.1	-46.3	0.8	100	-120
0.8	99.5	2738.4	2722.8	2713.6	5.0	5.4	5.3	-22.7	-42.9	-45.9	1.0	1000	-140
1.0	96.5	2763.1	2747.7	2738.7	4.7	5.3	5.5	-21.9	-43.0	-45.3	1.1		
1.3	93.8	2786.9	2771.8	2762.9	5.0	5.1	5.2	-21.8	-44.2	-45.3	1.1		
1.5	93.8	2810.4	2795.2	2786.3	5.1	5.5	5.4	-23.1	-45.7	-47.9	1.2		
1.8	92.1	2833.7	2818.7	2809.6	4.9	5.4	5.6	-22.7	-46.6	-49.0	1.1		
2.0	89.8	2856.9	2841.7	2832.6	4.8	5.3	5.4	-21.5	-45.4	-52.4	1.0		
2.3	84.9	2879.1	2864.2	2855.1	5.0	5.2	5.4	-20.7	-43.2	-53.1	0.8		
2.5	83.7	2900.6	2885.4	2876.6	5.5	5.5	5.4	-21.7	-42.3	-55.6	0.5		
2.8	80.1	2921.2	2906.3	2897.4	5.4	5.8	5.8	-20.7	-39.6	-57.9	0.1		
3.0	74.4	2940.6	2926.3	2917.6	5.2	5.7	5.9	-20.6	-37.0	-57.2	0.3		
3.3	70.4	2959.1	2944.9	2936.6	5.3	5.5	5.7	-20.2	-35.5	-56.8	0.6		
3.5	66.5	2976.7	2962.5	2954.3	5.5	5.6	5.6	-21.2	-36.4	-52.4	0.8		
3.8	62.1	2993.3	2979.1	2970.9	5.6	5.8	5.8	-20.7	-34.7	-51.0	0.8		
4.0	56.6	3008.5	2994.7	2986.5	5.6	5.9	5.9	-20.6	-35.0	-51.6	0.7		
4.3	51.4	3022.4	3008.8	3000.7	5.5	5.9	6.0	-21.2	-34.5	-47.9	0.5		
4.5	46.2	3034.9	3021.7	3013.7	5.5	5.9	6.0	-21.6	-35.5	-49.4	0.3		
4.8	40.9	3046.1	3033.2	3025.4	5.4	5.8	5.9	-22.3	-35.1	-47.9	0.0		
5.0	36.6	3056.2	3043.4	3035.9	5.5	5.8	5.9	-22.9	-35.2	-47.3	0.3		
5.3	32.9	3065.2	3052.6	3045.1	5.6	5.8	5.9	-22.2	-35.2	-46.3	0.7		
5.5	29.7	3073.3	3060.8	3053.4	5.7	5.9	5.9	-21.5	-34.3	-45.7	1.0		
5.8	27.0	3080.6	3068.2	3060.9	5.7	6.0	6.0	-21.6	-34.9	-45.8	1.3		
6.0	24.6	3087.2	3075.0	3067.7	5.7	6.0	6.1	-22.3	-34.7	-45.1	1.6		
6.3	22.5	3093.2	3081.1	3073.9	5.7	6.1	6.1	-22.8	-33.6	-45.0	1.9		
6.5	20.7	3098.6	3086.8	3079.6	5.7	6.1	6.2	-23.2	-33.2	-45.6	2.1		
6.8	19.1	3103.7	3091.9	3084.9	5.7	6.1	6.2	-23.2	-34.1	-44.6	2.2		
7.0	19.1	3108.3	3096.7	3089.7	5.7	6.1	6.2	-23.3	-34.6	-45.6	2.4		

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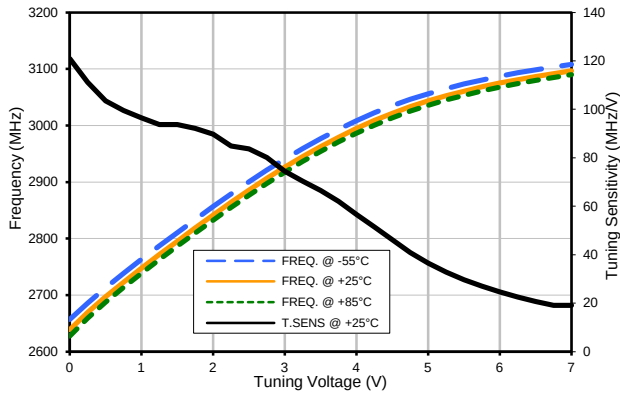


Voltage Controlled Oscillator

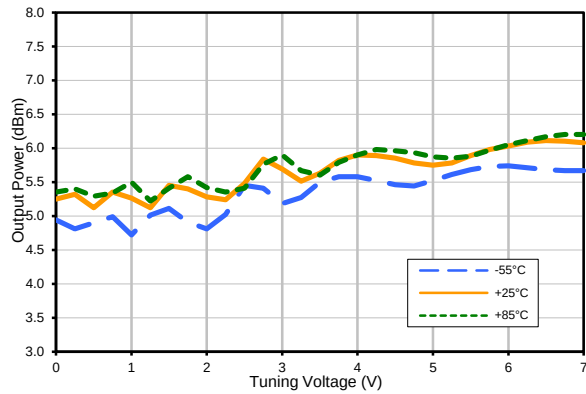
ZX95-2952A-S+

Typical Performance Data

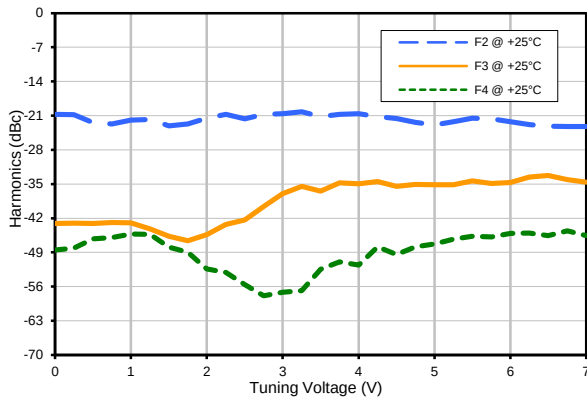
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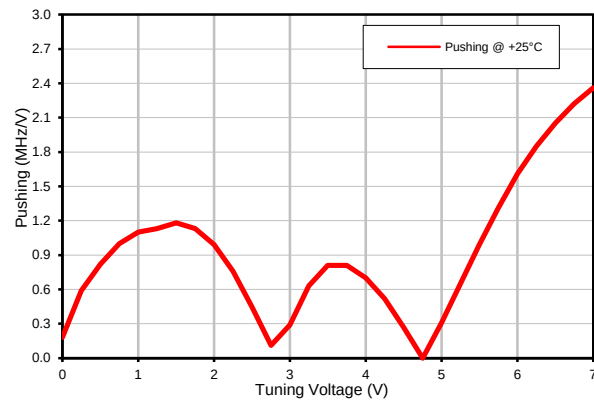
Power Output



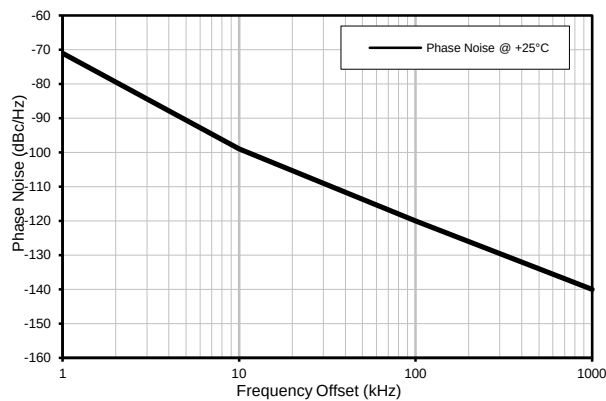
Harmonics Level



Frequency Pushing



Phase Noise



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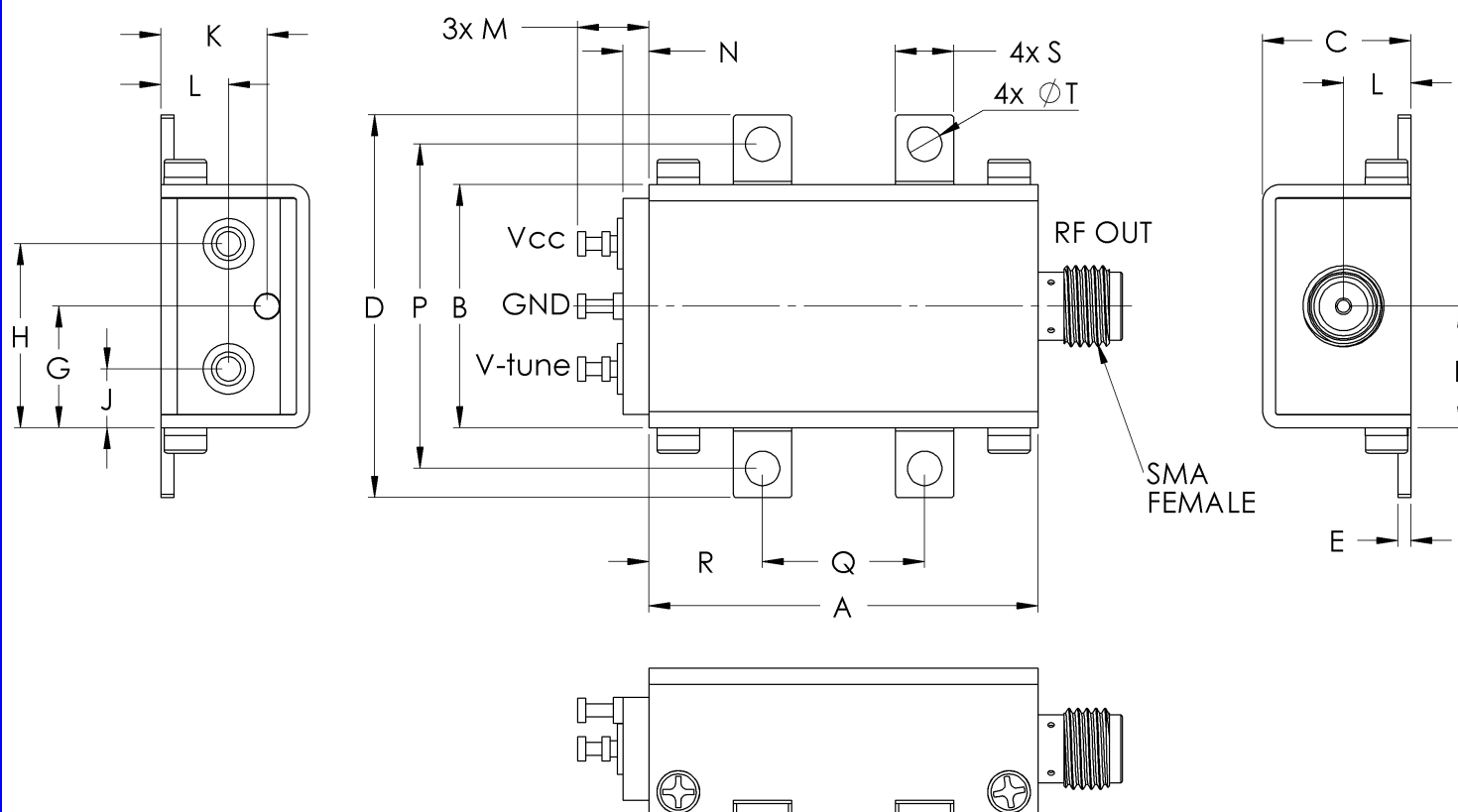


Case Style

GB

Outline Dimensions

GB956



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N
GB956	1.20 (30.48)	.75 (19.15)	.46 (11.61)	1.18 (30.07)	.04 (1.02)	.38 (9.53)	.38 (9.53)	.57 (14.43)	.18 (4.62)	.33 (8.31)	.21 (5.28)	.22 (5.59)	.08 (2.03)

CASE #.	P	Q	R	S	T	WT GRAMS
GB956	1.00 (25.4)	.50 (12.7)	.35 (8.89)	.18 (4.57)	.106 (2.69)	35

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

Note:

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

Mini-Circuits®

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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