

Voltage Controlled Oscillator

ZX95-470A+

5V Tuning for PLL IC's 410 to 470 MHz

Features

- linear tuning characteristics
- low phase noise
- low pulling
- low pushing
- protected by US patent 6,790,049

Applications

- R & D
- lab
- instrumentation
- wireless communications
- industrial microwave & RF
- defense communications & radar



CASE STYLE: GB956

Connectors	Model
SMA	ZX95-470A-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				TUNING					NON HARMONIC SPURIOUS (dBc)	HARMONICS (dBc)			PULLING pk-pk @12 dB (MHz)	PUSHING (MHz/V)	DC OPERATING POWER	
	Min.	Max.		Typ.	1	10	100	1000	VOLTAGE RANGE (V)	SENSI-TIVITY (MHz/V)	PORT CAP (pF)	3 dB MODULATION BANDWIDTH (MHz)		Typ.	Typ.	Max.			Typ.	Typ.
ZX95-470A+	410	470	+6.3	-85	-114	-135	-155	0.5	5	25-30	63	30	-90	-26	-15	0.4	1	5	35	

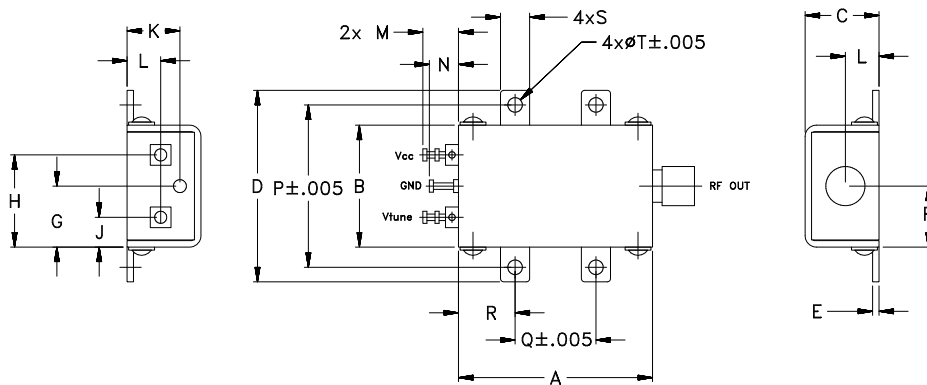
Maximum Ratings

Operating Temperature -55°C to 85°C
 Storage Temperature -55°C to 100°C
 Absolute Max. Supply Voltage (Vcc) 6.5V
 Absolute Max. Tuning Voltage (Vtune) 7.0V
 All specifications 50 ohm system

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

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	.18	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	4.57	25.40	12.70	8.89	4.57	2.69	35.0

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

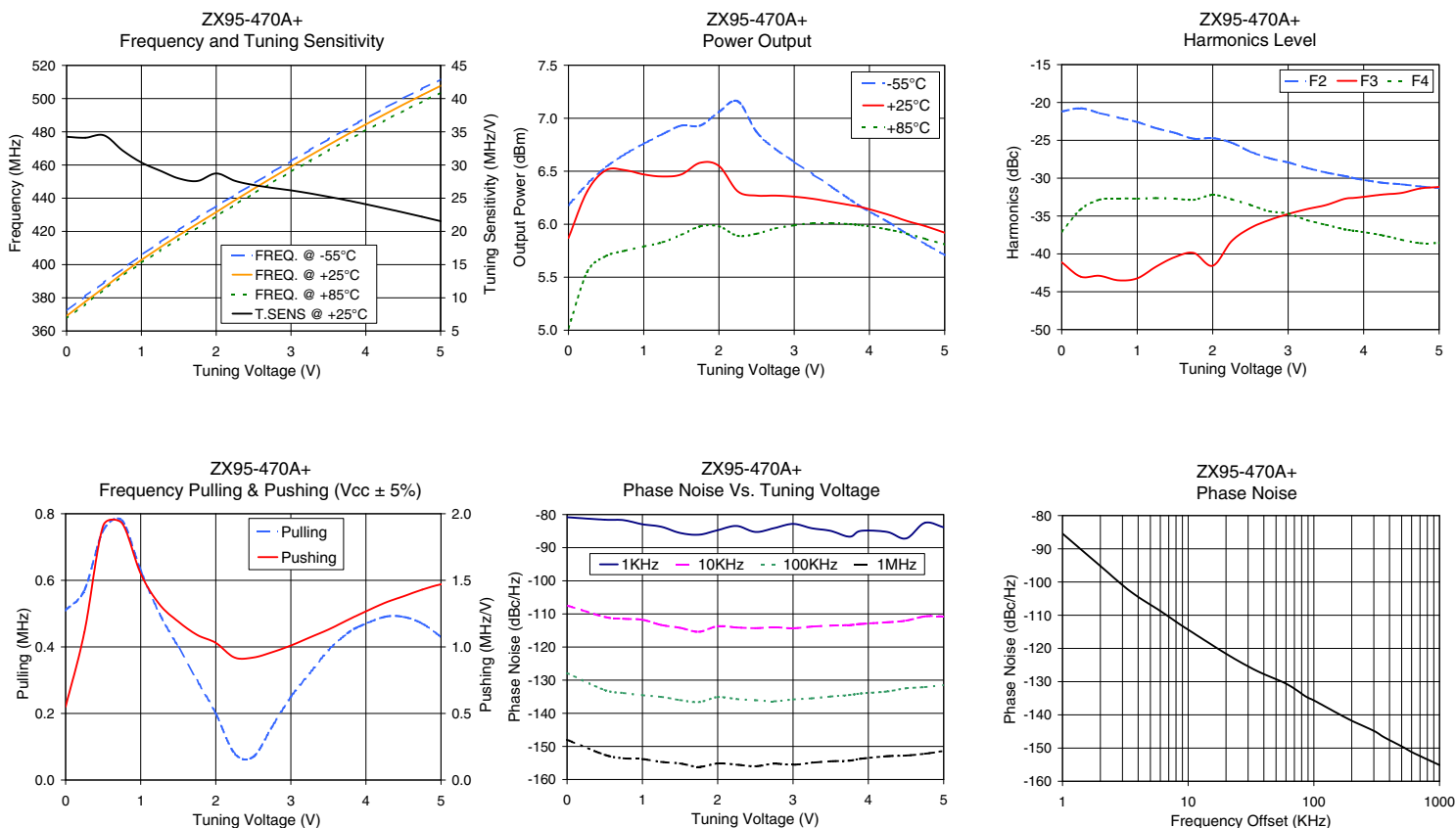


Performance Data & Curves*

ZX95-470A+

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 440 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	34.24	372.1	369.0	367.4	6.18	5.87	5.02	24.29	-21.2	-41.1	-37.1	0.55	0.51	-80.8	-107.5	-127.9	-148.0	1.0	-85.43
0.50	34.46	389.3	386.1	384.9	6.54	6.51	5.70	24.51	-21.4	-42.9	-32.8	1.91	0.75	-81.5	-110.9	-133.0	-152.5	2.0	-95.18
0.75	32.17	397.5	394.7	393.3	6.66	6.51	5.75	24.57	-22.0	-43.5	-32.7	1.93	0.78	-81.7	-111.5	-133.9	-153.6	3.5	-102.95
1.00	30.38	405.7	402.8	401.0	6.76	6.47	5.79	24.63	-22.6	-43.2	-32.7	1.55	0.63	-82.9	-111.8	-134.6	-153.8	6.0	-108.72
1.25	29.14	413.5	410.4	408.4	6.85	6.45	5.83	24.68	-23.4	-41.7	-32.6	1.32	0.50	-83.7	-113.3	-135.1	-154.7	8.5	-112.63
1.50	27.97	420.9	417.7	415.5	6.93	6.47	5.90	24.72	-24.0	-40.4	-32.7	1.19	0.40	-85.6	-114.2	-136.0	-155.1	10.0	-114.37
1.75	27.59	428.2	424.7	422.4	6.93	6.58	5.98	24.73	-24.8	-39.9	-32.9	1.09	0.30	-86.1	-115.4	-136.6	-156.2	20.8	-121.98
2.00	28.73	435.3	431.6	429.2	7.06	6.55	5.98	24.75	-24.7	-41.6	-32.2	1.03	0.20	-84.7	-113.7	-135.1	-155.2	35.5	-126.83
2.25	27.61	442.0	438.7	436.1	7.16	6.31	5.89	24.87	-25.3	-38.3	-32.8	0.92	0.08	-83.4	-114.1	-135.7	-155.5	60.7	-130.70
2.50	26.99	448.8	445.6	442.8	6.87	6.27	5.91	24.93	-26.5	-36.6	-33.6	0.92	0.07	-85.3	-114.3	-136.1	-156.0	86.7	-134.53
2.75	26.55	455.6	452.4	449.4	6.71	6.27	5.96	24.98	-27.4	-35.5	-34.4	0.96	0.16	-84.1	-114.0	-136.4	-155.2	100.0	-135.64
3.00	26.18	462.4	459.0	456.0	6.59	6.26	5.99	25.03	-27.9	-34.7	-34.7	1.01	0.25	-82.8	-114.3	-135.8	-155.5	148.1	-139.17
3.25	25.73	469.0	465.6	462.4	6.47	6.24	6.01	25.08	-28.7	-34.1	-35.6	1.07	0.32	-84.1	-113.8	-135.5	-154.9	177.0	-140.74
3.50	25.22	475.6	472.0	468.7	6.35	6.21	6.01	25.13	-29.3	-33.6	-36.2	1.13	0.39	-84.9	-113.5	-134.9	-154.5	211.6	-142.21
3.75	24.67	481.9	478.3	474.9	6.23	6.18	6.00	25.18	-29.7	-32.7	-36.8	1.20	0.44	-86.7	-113.4	-134.5	-154.3	302.4	-144.89
3.90	24.32	485.7	482.0	478.5	6.16	6.16	5.99	25.21	-30.1	-32.6	-37.0	1.24	0.46	-84.9	-113.0	-134.0	-153.7	361.5	-146.73
4.25	23.49	494.2	490.5	486.8	6.02	6.09	5.95	25.28	-30.6	-32.2	-37.6	1.33	0.49	-85.3	-112.5	-133.4	-153.0	507.5	-149.63
4.50	22.86	500.1	496.4	492.6	5.91	6.03	5.91	25.33	-30.8	-32.0	-38.1	1.38	0.49	-87.2	-112.1	-132.5	-152.8	606.7	-151.28
4.75	22.21	505.9	502.1	498.2	5.81	5.98	5.86	25.39	-31.1	-31.4	-38.6	1.43	0.47	-82.5	-110.8	-132.1	-152.2	851.6	-153.90
5.00	21.54	511.5	507.6	503.6	5.71	5.92	5.81	25.44	-31.3	-31.2	-38.5	1.47	0.43	-83.8	-110.7	-131.5	-151.4	1000.0	-155.11

*at 25°C unless mentioned otherwise



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