

# Voltage Controlled Oscillator

# ROS-470-519+

5V Tuning for PLL IC's 340 to 470 MHz

## Features

- Linear tuning characteristics
- Low phase noise
- Low pushing
- Aqueous washable

## Applications

- Wireless communication
- Military communication
- Radar



CASE STYLE: CK605

PRICE: \$19.95 ea. QTY (5-49)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

The +Suffix has been added in order to identify 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)	SENSITIVITY (MHz/V)	PORT CAP (pF)	3 dB MODULATION BANDWIDTH (MHz)		Typ.	Typ.			Typ.	Typ.
ROS-470-519+	340	470	+6	-79	-102	-123	-143	0.5	5	55	100	30	-90	-35	-15	2	0.5	5	35

## Pin Connections

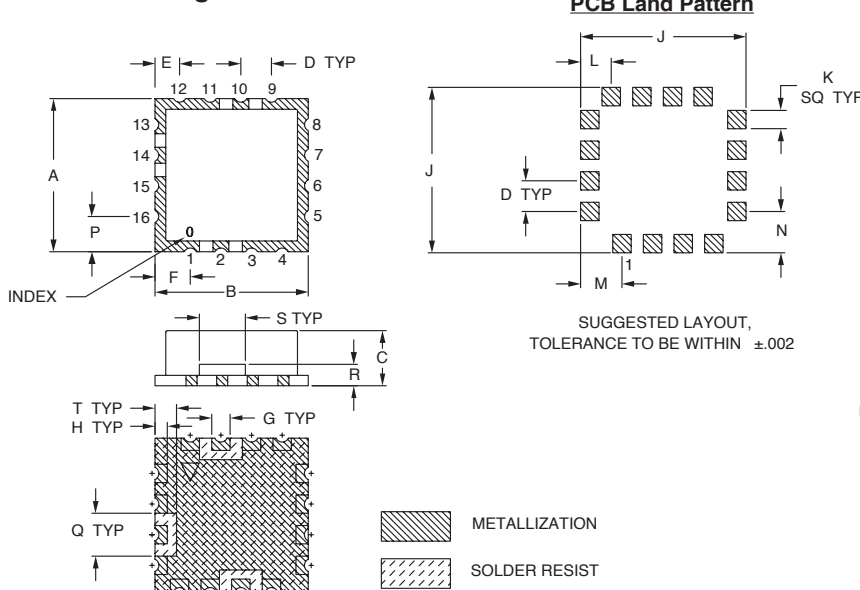
RF OUT	10
VCC	14
V-TUNE	2
GROUND	1,3,4,5,6,7,8,9,11,12,13,15,16

## Maximum Ratings

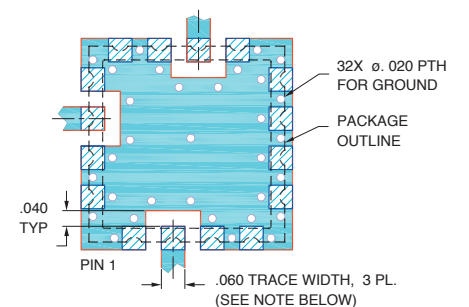
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	7V
Absolute Max. Tuning Voltage (Vtune)	7V
All specifications	50 ohm system

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

## Outline Drawing



## Demo Board MCL P/N: TB-10 Suggested PCB Layout (PL-012)



- NOTES:**
1. TRACE WIDTH IS SHOWN FOR RF4 WITH DIELECTRIC THICKNESS .030" ± .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

## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt.
.500	.500	.180	.100	.080	.115	.060	.040	.540	.060	.100	.135	.135	.115	.140	.070	.150	.070	grams
12.70	12.70	4.57	2.54	2.03	2.92	1.52	1.02	13.72	1.52	2.54	3.43	3.43	2.92	3.56	1.78	3.81	1.78	1.0



ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

**Notes:** 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

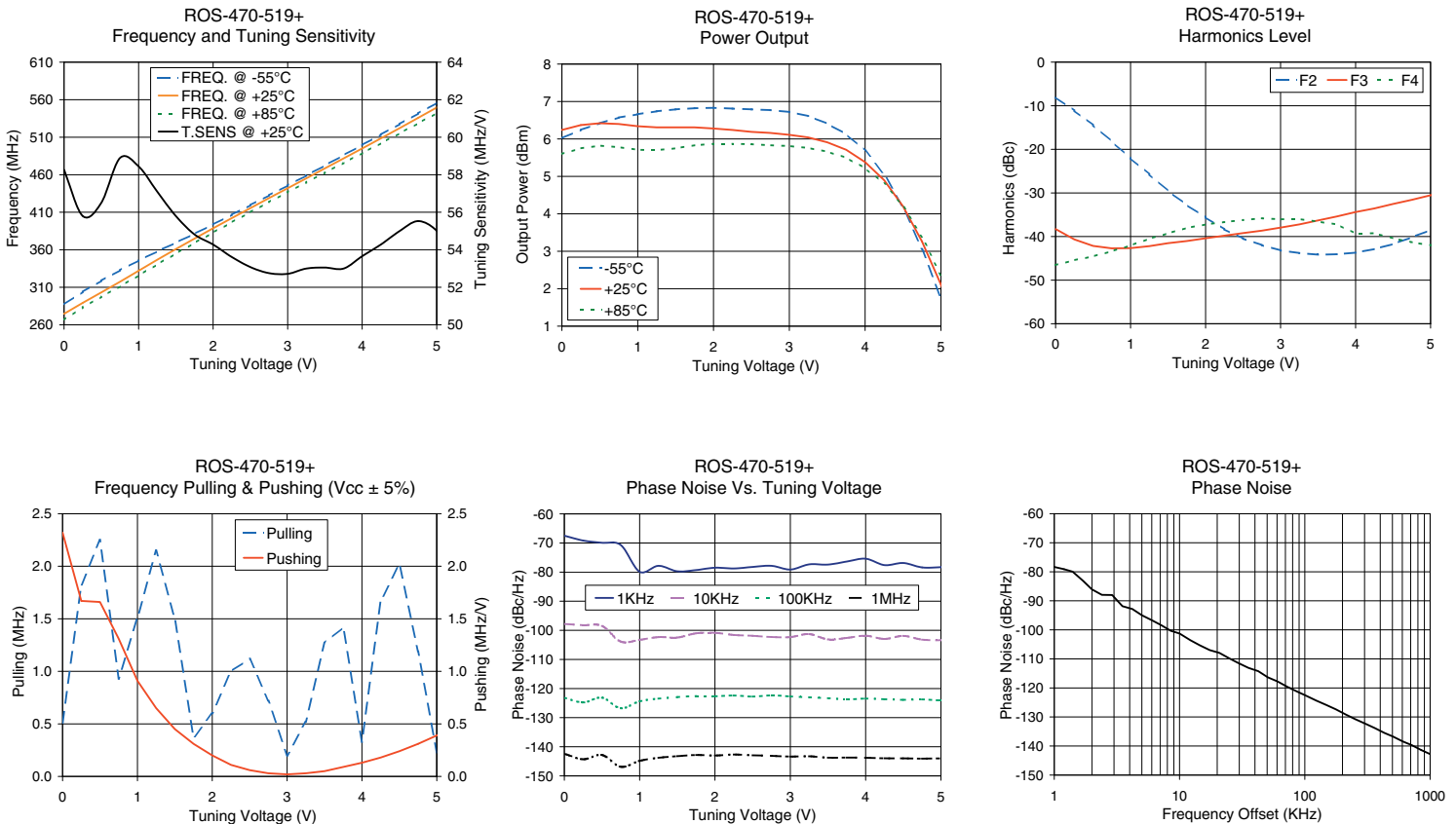
REV. OR  
M105590  
EDR-7788  
ROS-470-519+  
RAV  
090824  
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# Performance Data & Curves\*

# ROS-470-519+

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 409 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	58.27	287.2	274.7	266.6	6.02	6.24	5.60	26.44	-8.1	-38.3	-46.5	2.32	0.51	-67.5	-97.8	-123.2	-142.4	1.0	-78.33
0.50	56.50	318.8	303.2	297.3	6.42	6.42	5.82	25.34	-14.5	-42.2	-44.6	1.66	2.25	-69.9	-98.5	-123.1	-142.8	2.0	-86.06
0.75	58.89	332.8	317.3	311.1	6.57	6.40	5.78	25.32	-18.2	-42.7	-43.4	1.31	0.93	-70.7	-103.9	-126.8	-146.9	3.5	-91.85
1.00	58.45	345.6	332.1	325.8	6.66	6.34	5.71	25.55	-22.0	-42.7	-42.1	0.91	1.51	-79.9	-103.3	-124.4	-144.8	6.0	-96.66
1.25	57.10	357.8	346.7	340.5	6.74	6.31	5.70	25.82	-25.7	-42.2	-40.5	0.65	2.15	-77.8	-102.3	-123.5	-143.8	8.5	-100.32
1.50	55.80	369.5	361.0	354.9	6.79	6.31	5.75	26.07	-29.6	-41.5	-39.3	0.45	1.50	-79.7	-102.5	-122.9	-143.3	10.0	-101.26
1.75	54.81	381.4	374.9	369.1	6.82	6.31	5.83	26.30	-32.8	-41.0	-38.0	0.31	0.37	-79.3	-101.0	-122.6	-142.8	20.8	-107.94
2.00	54.28	393.7	388.6	382.9	6.83	6.28	5.87	26.51	-35.6	-40.4	-37.2	0.20	0.60	-78.5	-100.9	-122.7	-143.0	35.5	-113.10
2.25	53.61	406.6	402.2	396.6	6.81	6.24	5.87	26.72	-38.3	-39.8	-36.7	0.11	1.00	-78.8	-101.6	-122.4	-142.7	60.7	-117.78
2.50	53.08	419.6	415.6	410.1	6.79	6.19	5.86	26.89	-40.5	-39.2	-36.2	0.06	1.12	-78.2	-101.9	-122.8	-142.9	86.7	-121.23
2.75	52.75	432.6	428.8	423.5	6.77	6.16	5.83	27.05	-42.0	-38.7	-35.8	0.03	0.72	-77.8	-102.3	-122.3	-143.1	100.0	-122.47
3.00	52.72	445.7	442.0	436.6	6.72	6.11	5.81	27.19	-43.2	-38.0	-36.0	0.02	0.20	-79.1	-102.3	-122.7	-143.4	148.1	-125.84
3.25	53.00	459.0	455.2	449.7	6.61	6.04	5.76	27.30	-43.8	-37.2	-36.0	0.03	0.52	-77.4	-101.3	-123.0	-143.3	177.0	-127.38
3.50	53.05	472.4	468.5	462.8	6.41	5.91	5.66	27.39	-44.2	-36.3	-36.6	0.05	1.27	-77.4	-103.1	-123.3	-143.7	211.6	-129.12
3.75	53.00	485.9	481.7	475.8	6.13	5.71	5.50	27.46	-44.1	-35.4	-37.2	0.09	1.42	-76.4	-102.6	-123.7	-143.7	302.4	-132.27
4.00	53.66	499.5	495.0	488.8	5.69	5.38	5.22	27.52	-43.7	-34.4	-39.3	0.13	0.33	-75.4	-101.9	-123.5	-143.8	361.5	-133.80
4.25	54.28	513.4	508.4	501.9	5.06	4.90	4.81	27.58	-42.9	-33.6	-39.3	0.18	1.67	-77.6	-103.0	-123.7	-143.9	507.5	-136.76
4.50	54.99	527.5	522.0	515.1	4.18	4.20	4.21	27.63	-41.7	-32.5	-40.4	0.24	2.02	-76.9	-101.9	-123.9	-144.0	606.7	-138.46
4.75	55.53	541.7	535.7	528.5	3.06	3.26	3.39	27.70	-40.2	-31.6	-41.3	0.31	1.19	-78.4	-103.2	-123.7	-144.1	851.6	-141.42
5.00	55.02	555.8	549.6	542.1	1.75	2.11	2.35	27.80	-38.5	-30.5	-42.0	0.39	0.23	-78.3	-103.4	-124.1	-144.0	1000.0	-142.78

\*at 25°C unless mentioned otherwise



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