

# Voltage Controlled Oscillator

ROS-615R+

50Ω 580 to 615 MHz

## The Big Deal:

- Good Harmonic Suppression
- Low Phase Noise
- Robust design and construction
- Small size .500" x .500" x .180"



CASE STYLE: CK605

## Product Overview:

The ROS-615R+ is a Voltage Controlled Oscillator, designed to operate from 580 to 615 MHz for PLL circuitry applications. The ROS-615R+ is packaged in a metal case (size of .500" x .500" x .180") to shield against unwanted signals and noise.

## Key Features

Feature	Advantages
Low Current, 17 mA typ. at 5 V VCC	At only 17 mA, the ROS-615R+ is ideal for applications with limited available power or densely packed applications where thermal and power management is critical.
Linear Tuning Sensitivity Ratio: 1.13:1 typ.	Optimal for loop filter design.
Good Harmonic Suppression, -21 dBc typ.	Provides clear signals suitable for systems requiring high spectral purity.
Low Phase Noise: -111 dBc/Hz typ at 10kHz offset	Low phase noise improves system EVM (Error Vector Magnitude).
Good Pulling, 0.3 MHz typ.	Improves immunity against changes in output load.
Good Pushing, 0.2 MHz/V typ.	Provides increased immunity against noisy DC lines and improves output frequency stability vs. variations in supply voltage.
Small size, .500" x .500" x .180"	The small size enables the ROS-615R+ to be used in compact designs.

# Voltage Controlled Oscillator

## ROS-615R+

5V Tuning for PLL ICs 580 to 615 MHz



CASE STYLE: CK605

### Features

- low phase noise, -111 dBc/Hz typ. @ 10kHz offset
- linear tuning characteristics
- low pulling, 0.3 MHz typ.
- low pushing, 0.2 MHz/V typ.
- aqueous washable

### Applications

- wireless communications
- PLL circuitry

**+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.	Typ.			Max.	Typ.	Max.	Vcc	Current (mA)
									Min.	Max.													
ROS-615R+	580	615	-1	-87	-111	-132	-153	0.5	5	12 - 13	47	52	-90	-21	-13	0.3	0.2	5	17				

### 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

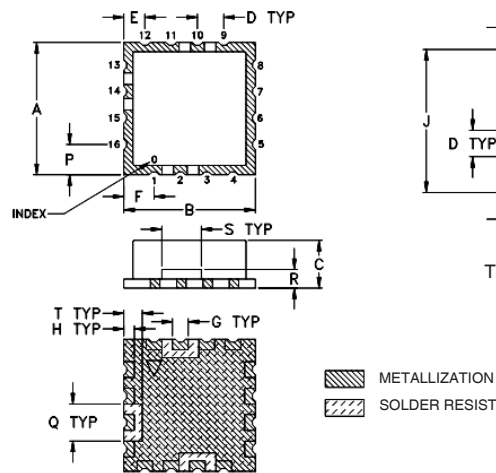
Permanent damage may occur if any of these limits are exceeded.

### Tape & Reel: F37

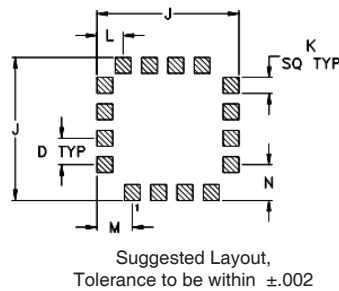
7" Reels with 10, 20, 50, 100 devices  
13" Reels with 200, 500 devices

### Environmental Ratings: ENV65

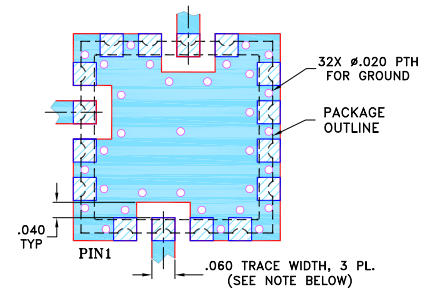
### Outline Drawing



### PCB Land Pattern



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



### NOTES:

1. TRACE WIDTH IS SHOWN FOR FR4 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 BOTTOM IS CONTINUOUS GROUND PLANE.
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### Outline Dimensions (inch/mm)

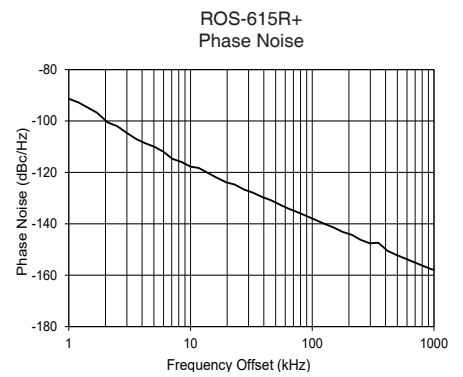
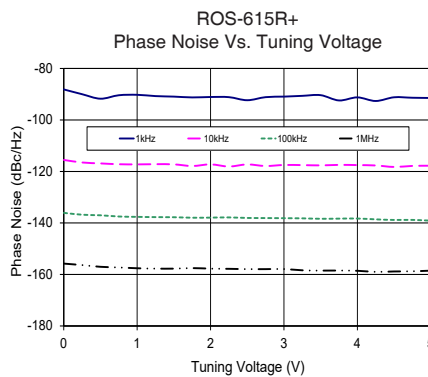
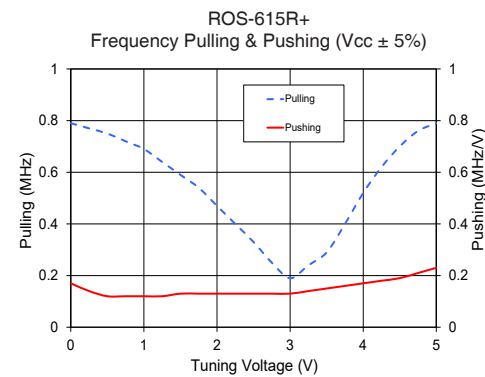
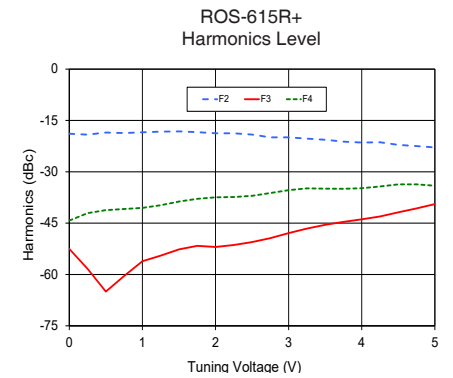
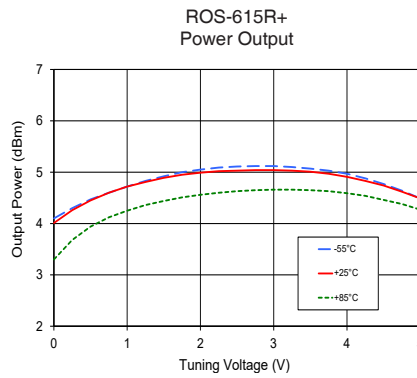
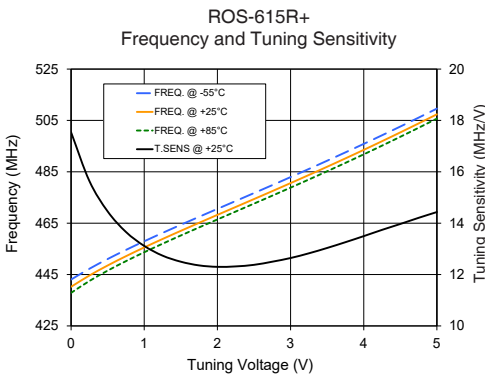
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt.
.500	.180	.100	.080	.115	.060	.040	.540	.060	.100	.135	.135	.115	.140	.070	.150	.070		grams
12.70	4.57	2.54	2.03	2.92	1.52	1.02	13.72	1.52	2.54	3.43	3.43	2.92	3.56	1.78	3.81	1.78		1.0

# Performance Data & Curves\*

# ROS-615R+

V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			I <sub>cc</sub> (mA)	HARMONICS (dBc)			FREQ. PUSH (MHz/V)	FREQ. PULL (MHz)	PHASE NOISE (dBc/Hz) at offsets				FREQ OFFSET (kHz)	PHASE NOISE at 598 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	14.87	567.8	564.4	561.6	-1.90	-1.08	-0.85	12.19	-19.0	-28.2	-38.1	0.10	0.18	-89.32	-113.5	-134.2	-153.3	1.0	-89.79
0.50	12.60	574.6	571.5	569.0	-1.77	-0.95	-0.77	12.23	-19.3	-27.7	-37.4	0.04	0.16	-89.62	-113.6	-134.4	-153.8	2.0	-97.37
0.75	12.06	577.7	574.6	572.2	-1.72	-0.91	-0.73	12.24	-19.4	-27.6	-37.3	0.03	0.14	-89.60	-113.4	-134.1	-153.7	3.5	-103.55
1.00	11.73	580.7	577.6	575.2	-1.69	-0.87	-0.70	12.26	-19.5	-27.6	-36.7	0.03	0.13	-91.55	-113.6	-134.4	-154.3	6.0	-108.62
1.25	11.52	583.6	580.6	578.2	-1.65	-0.83	-0.66	12.27	-19.6	-27.6	-36.2	0.02	0.14	-90.58	-113.6	-134.2	-154.5	7.1	-110.21
1.50	11.43	586.5	583.5	581.0	-1.62	-0.79	-0.62	12.28	-19.6	-27.5	-35.6	0.01	0.15	-90.72	-113.7	-134.1	-154.2	8.5	-112.01
1.75	11.41	589.3	586.3	583.9	-1.59	-0.76	-0.58	12.29	-19.7	-27.4	-35.3	0.01	0.16	-91.00	-113.3	-134.1	-153.9	20.8	-119.98
2.00	11.46	592.2	589.2	586.7	-1.56	-0.73	-0.54	12.30	-19.8	-27.2	-35.0	0.00	0.17	-90.62	-113.4	-134.2	-154.4	35.5	-124.86
2.25	11.55	595.1	592.0	589.6	-1.54	-0.70	-0.51	12.31	-19.9	-27.1	-35.0	0.01	0.17	-91.72	-113.5	-134.4	-154.5	60.7	-129.40
2.50	11.67	598.0	594.9	592.4	-1.52	-0.68	-0.47	12.33	-19.9	-26.9	-34.9	0.01	0.18	-90.49	-113.1	-134.3	-154.4	86.7	-132.64
2.75	11.84	601.0	597.8	595.3	-1.50	-0.66	-0.43	12.34	-20.0	-26.8	-34.6	0.02	0.18	-90.05	-113.1	-133.9	-154.0	100.0	-133.88
3.00	12.03	604.0	600.8	598.2	-1.49	-0.64	-0.40	12.35	-20.2	-26.9	-34.1	0.02	0.19	-89.82	-113.0	-134.1	-153.4	148.1	-137.22
3.25	12.22	607.0	603.8	601.2	-1.47	-0.62	-0.38	12.36	-20.3	-27.0	-33.6	0.02	0.21	-90.40	-112.9	-133.8	-153.9	177.0	-138.86
3.50	12.42	610.1	606.9	604.2	-1.46	-0.60	-0.36	12.37	-20.4	-27.1	-33.3	0.02	0.23	-89.76	-113.1	-133.7	-153.7	211.6	-140.38
3.75	12.59	613.3	610.0	607.3	-1.44	-0.59	-0.34	12.38	-20.4	-27.1	-33.0	0.01	0.25	-88.75	-112.4	-133.9	-153.8	302.4	-143.59
4.00	12.74	616.4	613.1	610.4	-1.43	-0.57	-0.33	12.39	-20.5	-27.0	-32.6	0.00	0.27	-89.27	-112.4	-133.6	-153.5	361.5	-145.14
4.25	12.86	619.7	616.3	613.5	-1.42	-0.56	-0.32	12.40	-20.5	-26.8	-32.3	0.01	0.29	-87.52	-112.3	-133.4	-153.7	507.5	-147.99
4.50	12.93	622.9	619.5	616.7	-1.42	-0.56	-0.32	12.41	-20.5	-26.6	-31.9	0.03	0.30	-88.34	-112.0	-133.2	-153.5	606.7	-149.73
4.75	12.96	626.2	622.7	619.9	-1.42	-0.55	-0.32	12.42	-20.6	-26.5	-31.9	0.04	0.32	-88.44	-111.8	-133.0	-153.2	851.6	-152.70
5.00	12.93	629.5	626.0	623.1	-1.43	-0.55	-0.33	12.43	-20.7	-26.7	-32.0	0.06	0.33	-87.34	-111.9	-133.0	-153.3	1000.0	-154.07

\*at 25°C unless mentioned otherwise



## Additional 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.
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