

Low Phase Noise

# Voltage Controlled Oscillator

# ROS-690+

5V Tuning for PLL IC's 655 to 690 MHz

### Features

- linear tuning characteristics
- low phase noise
- low pushing
- low pulling
- 0.5-5V tuning voltage range
- aqueous washable

### Applications

- PLL circuitry
- frequency synthesizers
- wireless microphones



CASE STYLE: CK605

**+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.	Typ.
ROS-690+	655	690	-1	-89	-111	-131	-151	0.5	5	12-13	80	50	-90	-24	-16	0.4	0.4	5	17

### Pin Connections

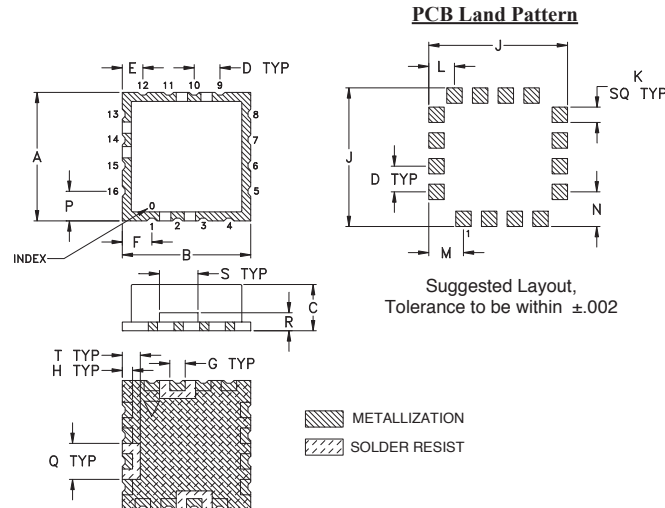
RF OUT	10
VCC	14
V-TUNE	2
GROUND	1,3,4,5,6,7,8,9,11,12,13,15,16

### Maximum Ratings

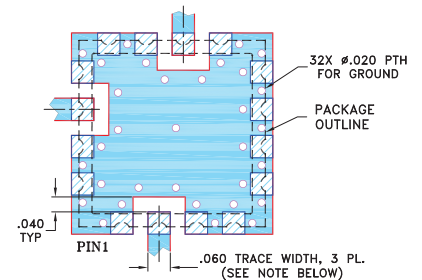
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	7V
Absolute Max. Tuning Voltage (Vtune)	7V
All specifications	50 ohm system

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

### Outline Drawing



### 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.
- 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

**Notes**

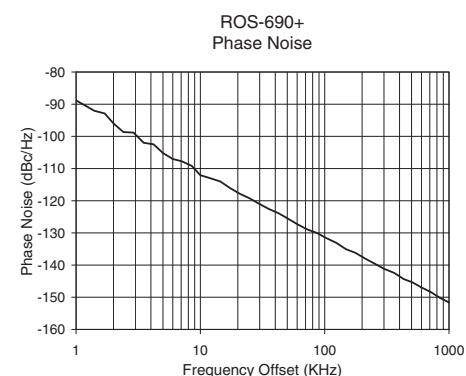
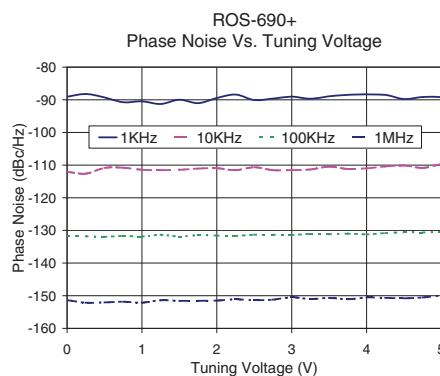
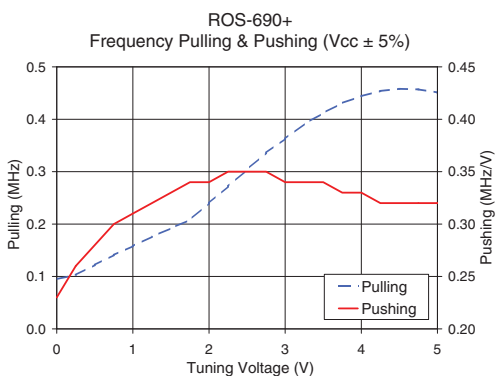
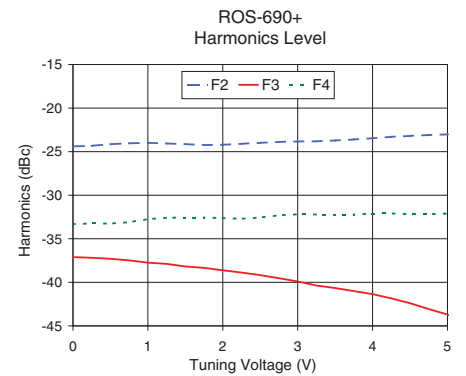
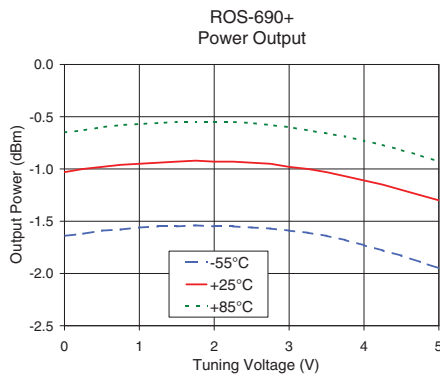
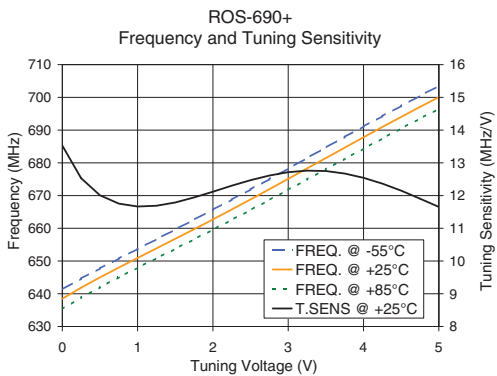
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# Performance Data & Curves\*

# ROS-690+

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 688 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	13.53	641.3	638.5	635.3	-1.64	-1.03	-0.65	11.53	-24.4	-37.1	-33.3	0.23	0.10	-89.1	-112.1	-131.8	-151.3	1.0	-88.82
0.50	12.01	647.7	645.0	642.0	-1.59	-0.98	-0.60	11.55	-24.2	-37.3	-33.3	0.28	0.12	-89.3	-110.9	-132.0	-152.1	2.0	-95.97
0.75	11.75	650.8	648.0	645.0	-1.58	-0.96	-0.58	11.56	-24.0	-37.5	-33.1	0.30	0.14	-90.8	-110.8	-131.7	-151.8	3.5	-102.00
1.00	11.66	653.7	650.9	648.0	-1.56	-0.95	-0.57	11.57	-24.0	-37.7	-32.7	0.31	0.16	-90.5	-111.4	-131.9	-152.1	6.0	-107.04
1.25	11.69	656.7	653.9	650.8	-1.55	-0.94	-0.56	11.58	-24.1	-37.9	-32.6	0.32	0.18	-91.3	-111.6	-131.3	-151.4	8.5	-109.16
1.50	11.79	659.6	656.8	653.7	-1.55	-0.93	-0.55	11.59	-24.1	-38.2	-32.6	0.33	0.19	-90.0	-111.4	-131.9	-151.6	10.0	-112.06
1.75	11.94	662.6	659.7	656.6	-1.54	-0.92	-0.55	11.60	-24.2	-38.3	-32.6	0.34	0.21	-91.0	-111.1	-131.5	-151.6	20.8	-117.86
2.00	12.12	665.7	662.7	659.6	-1.55	-0.93	-0.55	11.61	-24.2	-38.6	-32.6	0.34	0.24	-89.5	-110.9	-131.6	-151.5	35.5	-122.55
2.25	12.30	668.7	665.7	662.6	-1.55	-0.93	-0.55	11.62	-24.1	-38.9	-32.7	0.35	0.27	-88.4	-111.5	-131.7	-151.1	60.7	-127.38
2.50	12.47	671.9	668.8	665.6	-1.56	-0.94	-0.56	11.63	-24.0	-39.2	-32.6	0.35	0.30	-90.1	-110.7	-131.3	-151.4	86.7	-130.01
2.75	12.61	675.0	671.9	668.7	-1.57	-0.95	-0.58	11.63	-23.9	-39.5	-32.3	0.35	0.34	-89.6	-111.6	-131.3	-151.2	100.0	-131.37
3.00	12.71	678.2	675.1	671.8	-1.59	-0.98	-0.60	11.64	-23.8	-39.9	-32.2	0.34	0.36	-89.0	-111.5	-131.4	-150.5	148.1	-135.05
3.25	12.76	681.5	678.3	674.9	-1.61	-1.00	-0.63	11.65	-23.8	-40.4	-32.2	0.34	0.39	-89.7	-111.3	-131.1	-151.0	177.0	-136.21
3.50	12.75	684.7	681.5	678.1	-1.64	-1.03	-0.66	11.66	-23.7	-40.7	-32.2	0.34	0.41	-88.9	-110.5	-131.2	-150.7	211.6	-137.97
3.75	12.67	687.9	684.6	681.2	-1.68	-1.07	-0.69	11.66	-23.6	-41.0	-32.2	0.33	0.43	-88.5	-111.2	-131.0	-151.1	302.4	-141.22
4.00	12.54	691.1	687.8	684.3	-1.73	-1.11	-0.73	11.67	-23.5	-41.4	-32.1	0.33	0.44	-88.4	-111.0	-131.2	-150.5	361.5	-142.41
4.25	12.36	694.3	690.9	687.4	-1.78	-1.15	-0.77	11.68	-23.3	-41.8	-32.1	0.32	0.45	-88.5	-110.4	-130.8	-150.6	507.5	-145.36
4.50	12.15	697.4	694.0	690.5	-1.83	-1.20	-0.82	11.68	-23.2	-42.4	-32.2	0.32	0.46	-89.8	-110.1	-130.6	-150.8	600.0	-146.95
4.75	11.91	700.5	697.1	693.5	-1.89	-1.25	-0.87	11.69	-23.1	-43.1	-32.2	0.32	0.46	-89.2	-110.9	-130.6	-150.5	851.6	-150.26
5.00	11.65	703.5	700.1	696.5	-1.95	-1.30	-0.93	11.69	-23.0	-43.7	-32.1	0.32	0.45	-89.2	-109.8	-130.4	-150.0	1000.0	-151.61

\*at 25°C unless mentioned otherwise



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