

# Surface Mount Voltage Controlled Oscillator

# ROS-2650+ ROS-2650

## Linear Tuning 2165 to 2650 MHz

### Features

- wide frequency range, 2165 to 2650 MHz
- low phase noise. -101 dBc/Hz at 10 kHz offset
- linear tuning, 27-36 MHz/V typ.
- aqueous washable
- protected by US patent 6,549,084

### Applications

- ISM



CASE STYLE: CK605  
PRICE: \$18.95 ea. QTY (5-49)

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

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

### Electrical Specifications

FREQUENCY (MHz)		POWER OUTPUT (dBm)	TUNING VOLTAGE (V)		PHASE NOISE (dBc/Hz) SSB at offset frequencies: Typ.				PULLING pk-pk @ 12 dB (MHz)	PUSHING (MHz/V)	TUNING SENSITIVITY (MHz/V)	HARMONICS (dBc)		3 dB MODULATION BANDWIDTH (MHz)	DC OPERATING POWER	
Min.	Max.	Typ.	Min.	Max.	1 kHz	10 kHz	100 kHz	1 MHz	Typ.	Typ.	Typ.	Typ.	Max.	Typ.	Vcc (volts)	Current (mA) Max.
2165	2650	5.0	0.5	19	-75	-101	-121	-141	5	1.0	27-36	-12	—	200	12	25

### Pin Connections

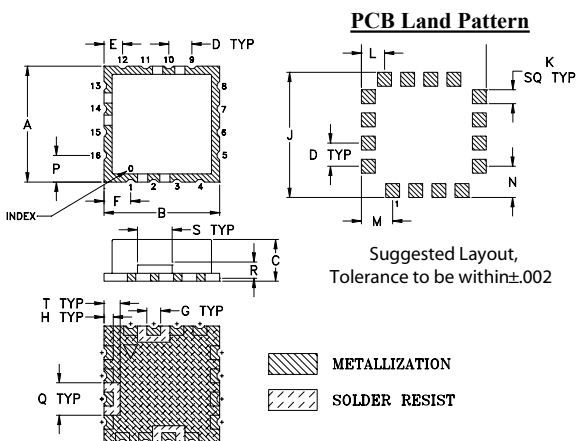
RF OUT	10
VCC	14
V-TUNE	2
GROUND	1,3,4,5,6,7,8,9,11,12,13,15,16

### Maximum Ratings

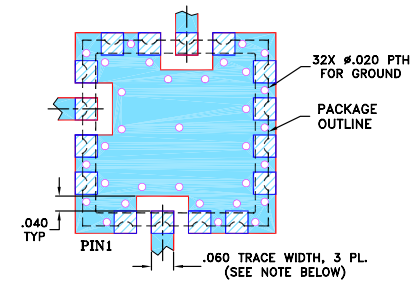
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	+13V
Absolute Max. Tuning Voltage (Vtune)	+20V

all specifications: 50 ohm system  
Permanent damage may occur if any of these limits are exceeded.

### Outline Drawing



### Demo Board MCL PIN: 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 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



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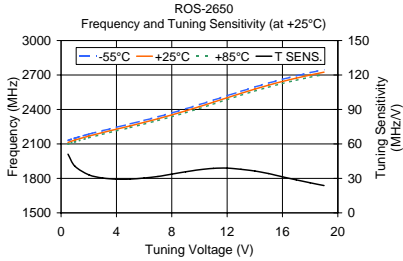
Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established 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).

For detailed performance specs & shipping online see web site

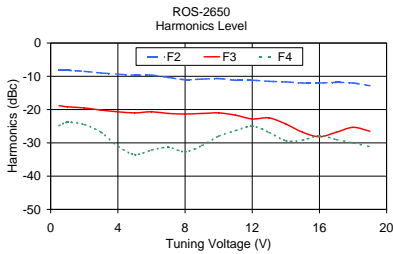
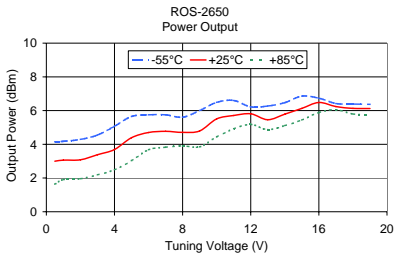
REV. C  
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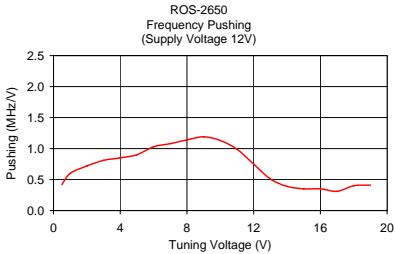
## Performance Data & Curves



V TUNE	TUNING SENS. (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)		
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C
0.50	51.07	2130.76	2113.25	2097.92	4.15	3.00	1.64
1.00	40.59	2150.71	2133.55	2118.57	4.18	3.06	1.91
2.00	33.12	2184.89	2168.01	2153.14	4.29	3.08	1.96
3.00	30.35	2215.67	2198.87	2183.99	4.55	3.38	2.19
4.00	29.31	2245.17	2228.37	2213.40	5.07	3.69	2.49
5.00	29.37	2274.68	2257.67	2242.55	5.65	4.39	3.03
6.00	30.29	2304.97	2287.73	2272.34	5.75	4.70	3.68
7.00	31.69	2336.55	2319.05	2303.44	5.75	4.77	3.83
8.00	33.69	2369.95	2352.21	2336.24	5.61	4.71	3.91
9.00	35.75	2405.35	2387.43	2371.14	6.00	4.79	3.85
10.00	37.54	2442.51	2424.54	2408.13	6.49	5.51	4.44
11.00	38.72	2481.04	2462.93	2446.38	6.60	5.71	4.92
12.00	38.97	2519.91	2501.91	2485.21	6.22	5.81	5.18
13.00	37.93	2558.21	2540.17	2523.43	6.27	5.46	4.87
14.00	36.43	2595.45	2576.97	2559.82	6.47	5.79	5.11
15.00	34.18	2630.50	2611.72	2594.11	6.86	6.13	5.44
16.00	31.37	2663.11	2643.73	2625.64	6.74	6.48	5.89
17.00	28.69	2693.32	2673.08	2654.33	6.42	6.24	6.05
18.00	26.15	2720.94	2700.01	2680.62	6.39	6.13	5.80
19.00	23.79	2746.13	2724.40	2704.48	6.37	6.12	5.75



V TUNE	HARMONICS (dBc)			FREQ. PUSHING (MHz/V)
	F2	F3	F4	
0.50	-8.16	-18.83	-24.83	0.42
1.00	-8.17	-19.17	-23.83	0.60
2.00	-8.50	-19.50	-24.50	0.72
3.00	-9.00	-20.16	-26.83	0.81
4.00	-9.34	-20.67	-31.00	0.85
5.00	-9.67	-21.00	-33.50	0.90
6.00	-9.67	-20.67	-32.17	1.03
7.00	-10.34	-21.17	-31.34	1.08
8.00	-11.00	-21.34	-32.67	1.14
9.00	-10.83	-21.17	-30.83	1.19
10.00	-10.66	-21.00	-28.00	1.13
11.00	-11.16	-21.66	-26.33	0.99
12.00	-11.17	-22.83	-25.00	0.75
13.00	-11.50	-22.50	-26.84	0.51
14.00	-11.67	-24.34	-29.34	0.39
15.00	-12.00	-26.83	-29.17	0.35
16.00	-12.00	-28.17	-27.83	0.35
17.00	-11.83	-26.83	-29.00	0.31
18.00	-12.00	-25.34	-30.00	0.40
19.00	-12.83	-26.50	-31.17	0.41



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