

Surface Mount

# Voltage Controlled Oscillator

# ROS-1660+

5V Tuning for PLL ICs 1630 to 1660 MHz

### Features

- linear tuning characteristics
- low phase noise
- low pulling
- low pushing
- aqueous washable

### Applications

- wireless communications
- radio & radar astronomy



Generic photo used for illustration purposes only  
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)	SENSITIVITY (MHz/V)	PORT CAP (pF)		3 dB MODULATION BANDWIDTH (MHz)	Typ.			Max.	Typ.	Typ.
ROS-1660+	1630	1660	+0.5	-83	-107	-127	-147	0.5	4.5	33	20	180	-90	-19	-10	0.8	1	5	30

### Pin Connections

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

### Maximum Ratings

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

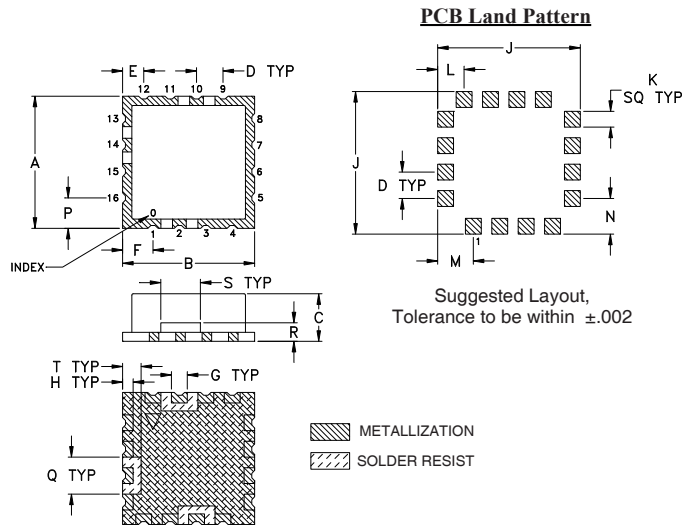
Permanent damage may occur if any of these limits are exceeded.

### Tape & Reel: F78

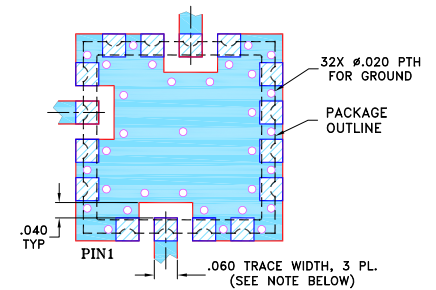
7" Reels with 10, 20, 50, 100 devices  
13" Reels with 200, 500, 1000 devices

### Environmental Ratings: ENV65

### 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

- 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-Circuits' applicable established test performance criteria and measurement instructions.  
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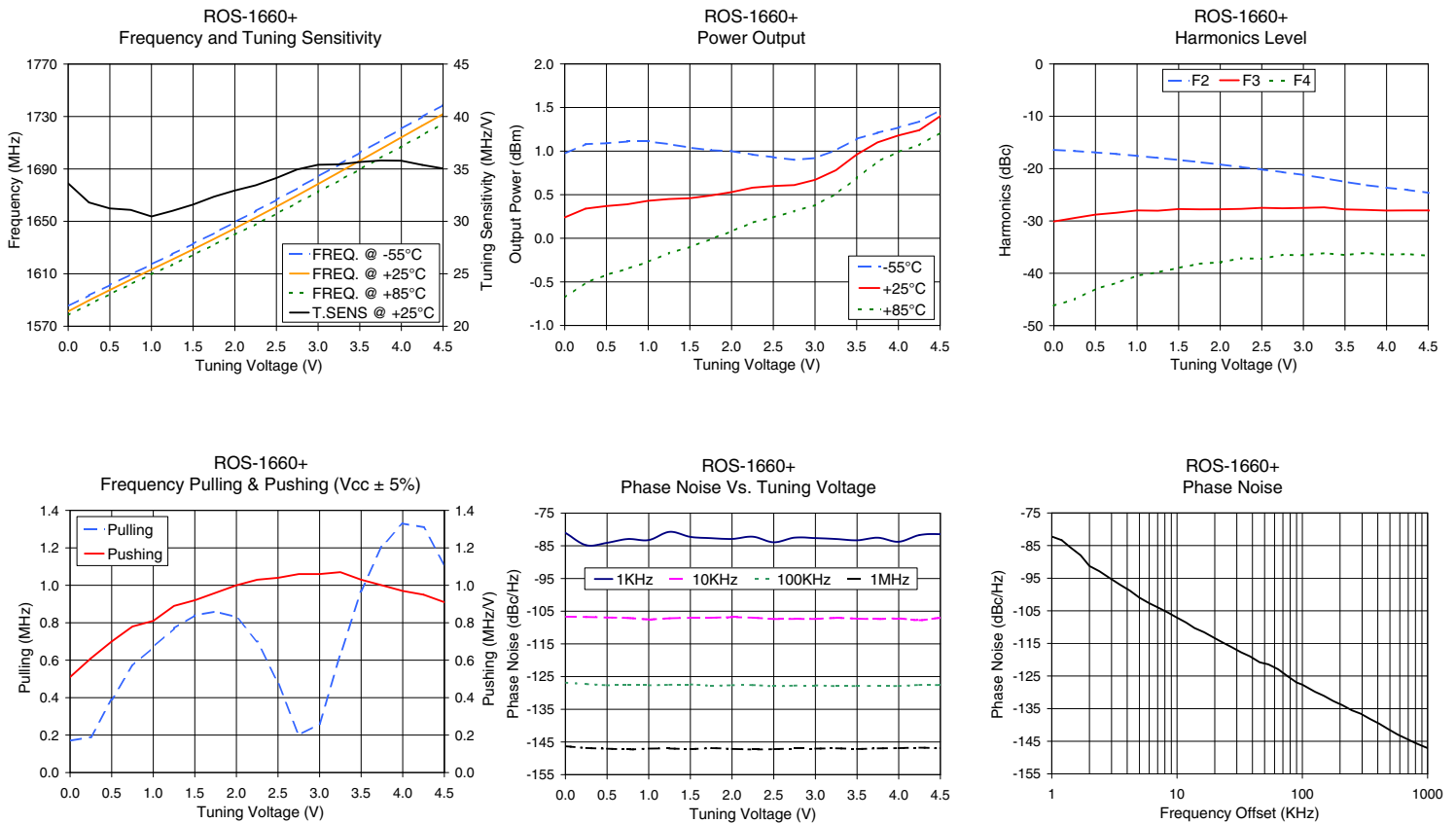


## Performance Data & Curves\*

## ROS-1660+

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 1648 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	33.62	1585.2	1581.3	1578.4	0.97	0.24	-0.68	20.45	-16.4	-30.1	-46.2	0.51	0.17	-81.0	-106.7	-126.9	-146.3	1.0	-82.23
0.25	31.80	1593.5	1589.7	1586.7	1.08	0.34	-0.51	20.50	-16.6	-29.4	-45.0	0.61	0.19	-84.8	-106.8	-127.3	-146.9	2.0	-91.26
0.50	31.23	1601.5	1597.7	1594.5	1.09	0.37	-0.42	20.52	-16.9	-28.8	-43.0	0.70	0.39	-84.1	-106.9	-127.7	-147.1	3.5	-96.96
0.75	31.09	1609.4	1605.5	1602.1	1.11	0.39	-0.35	20.52	-17.2	-28.4	-41.8	0.78	0.57	-82.9	-107.1	-127.6	-147.3	6.0	-102.68
1.00	30.47	1617.2	1613.3	1609.6	1.11	0.43	-0.27	20.55	-17.6	-28.0	-40.5	0.81	0.67	-83.3	-107.5	-127.7	-147.0	8.4	-105.48
1.25	31.00	1625.0	1620.9	1617.0	1.08	0.45	-0.17	20.56	-18.0	-28.1	-39.8	0.89	0.77	-80.7	-107.2	-127.5	-147.0	10.0	-107.10
1.50	31.60	1632.9	1628.6	1624.5	1.04	0.46	-0.10	20.58	-18.3	-27.7	-39.0	0.92	0.84	-82.3	-107.0	-127.4	-147.2	23.2	-114.74
1.75	32.36	1641.0	1636.5	1632.1	1.01	0.49	-0.01	20.59	-18.8	-27.8	-38.2	0.96	0.86	-82.7	-107.0	-127.8	-146.9	32.5	-117.74
2.00	32.95	1649.4	1644.6	1639.8	1.00	0.53	0.08	20.60	-19.2	-27.8	-37.9	1.00	0.83	-82.9	-106.9	-127.6	-147.1	53.6	-121.43
2.25	33.44	1657.8	1652.9	1647.8	0.96	0.58	0.18	20.62	-19.7	-27.7	-37.1	1.03	0.70	-82.2	-107.0	-127.6	-147.3	75.3	-124.89
2.50	34.14	1666.4	1661.2	1655.9	0.93	0.60	0.24	20.64	-20.2	-27.5	-37.2	1.04	0.48	-83.9	-107.4	-127.9	-147.2	100.0	-127.65
2.75	34.96	1675.2	1669.8	1664.1	0.90	0.61	0.31	20.66	-20.7	-27.6	-36.5	1.06	0.20	-82.5	-107.4	-127.8	-147.0	177.4	-132.71
3.00	35.40	1684.3	1678.5	1672.5	0.92	0.67	0.38	20.69	-21.2	-27.5	-36.5	1.06	0.26	-82.6	-107.4	-127.7	-147.0	208.3	-133.91
3.25	35.43	1693.3	1687.4	1681.1	1.01	0.78	0.51	20.72	-21.8	-27.4	-36.2	1.07	0.63	-82.9	-107.1	-127.9	-146.9	292.4	-136.55
3.50	35.66	1702.4	1696.2	1689.7	1.14	0.96	0.69	20.76	-22.5	-27.8	-36.5	1.03	0.97	-83.3	-107.3	-127.9	-147.2	349.6	-138.23
3.75	35.80	1711.5	1705.1	1698.4	1.21	1.10	0.88	20.79	-23.1	-27.9	-36.1	1.00	1.21	-82.5	-107.4	-127.9	-147.0	410.5	-139.59
4.00	35.78	1720.7	1714.1	1707.1	1.27	1.18	0.99	20.82	-23.6	-28.0	-36.4	0.97	1.33	-83.8	-107.2	-127.9	-146.9	576.3	-142.94
4.25	35.38	1729.8	1723.0	1715.8	1.34	1.24	1.07	20.85	-24.1	-28.0	-36.3	0.95	1.31	-81.7	-107.8	-127.6	-146.8	809.1	-145.64
4.50	35.04	1738.8	1731.9	1724.5	1.47	1.40	1.21	20.89	-24.6	-28.0	-36.6	0.91	1.11	-81.5	-107.0	-127.6	-146.9	1000.0	-147.11

\*at 25°C unless mentioned otherwise



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