

Surface Mount Voltage Controlled Oscillator

ROS-660PV+

5V Tuning for PLL ICs 640 to 660 MHz



Generic photo used for illustration purposes only
CASE STYLE: CK605

Features

- low phase noise, -107 dBc/Hz at 10 kHz offset, typ.
- linear tuning, 10-14 MHz/V typ.
- 5V power supply
- aqueous washable
- protected by US patent 6,424,241

Applications

- wireless microphones
- UHF
- PLL circuitry

+RoHS Compliant

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) | | | | PULLING pk-pk @ 12 dB (MHz) | PUSHING (MHz/V) | TUNING SENSITIVITY (MHz/V) | HARMONICS (dBc) | | 3 dB MODULATION BANDWIDTH (MHz) | DC OPERATING POWER | | | |
|-----------------|--------------------|--------------------|---------------------------------|------|-------|--------|-----------------------------|-----------------|----------------------------|-----------------|-------|---------------------------------|--------------------|--------------|------|------|
| | | | SSB at offset frequencies: Typ. | | | | | | | Typ. | Typ. | | Typ. | Max. | Typ. | Max. |
| Min. | Max. | Typ. | Min. | Max. | 1 kHz | 10 kHz | 100 kHz | 1 MHz | Typ. | Typ. | Typ. | Max. | Voltage (V) | Current (mA) | | |
| 640 | 660 | 0 | 0.5 | 5.0 | -85 | -107 | -127 | -147 | 0.8 | 0.6 | 10-14 | -17 | -12 | 2.0 | 5 | 15 |

Pin Connections

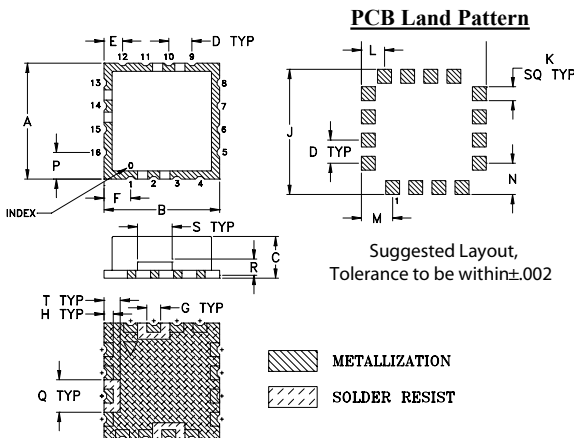
| | |
|--------|--------------------------------|
| RF OUT | 10 |
| VCC | 14 |
| V-TUNE | 2 |
| GROUND | 1,3,4,5,6,7,8,9,11,12,13,15,16 |

Maximum Ratings

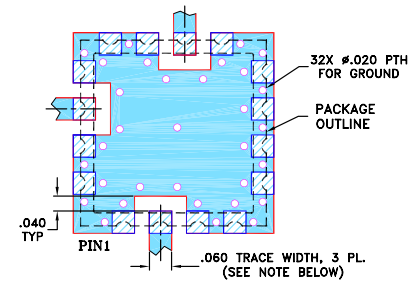
| | |
|--------------------------------------|----------------|
| Operating Temperature | -55°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc) | +6V |
| Absolute Max. Tuning Voltage (Vtune) | +6V |

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

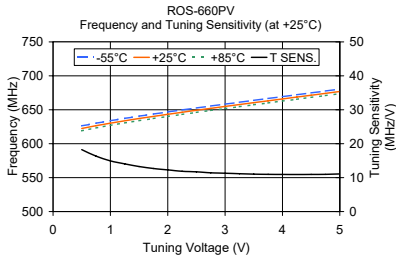
Outline Dimensions (inch/mm)

| 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 |

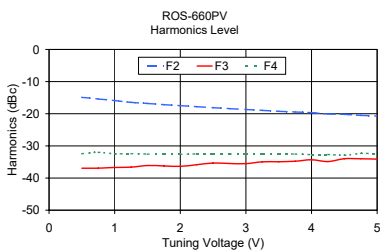
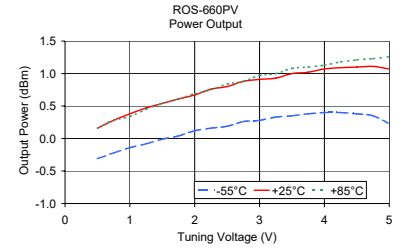
Notes

- 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-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document 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

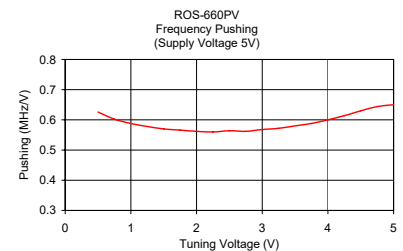




| V TUNE | TUNING SENS. (MHz/V) | FREQUENCY (MHz) | | | POWER OUTPUT (dBm) | | |
|--------|----------------------|-----------------|--------|--------|--------------------|-------|-------|
| | | -55°C | +25°C | +85°C | -55°C | +25°C | +85°C |
| 0.50 | 18.26 | 626.36 | 622.45 | 619.04 | -0.31 | 0.16 | 0.16 |
| 0.75 | 16.33 | 630.28 | 626.53 | 623.25 | -0.22 | 0.28 | 0.28 |
| 1.00 | 14.94 | 633.91 | 630.26 | 627.06 | -0.14 | 0.38 | 0.34 |
| 1.25 | 14.05 | 637.35 | 633.78 | 630.63 | -0.08 | 0.47 | 0.45 |
| 1.50 | 13.28 | 640.62 | 637.10 | 633.98 | -0.01 | 0.54 | 0.54 |
| 1.75 | 12.70 | 643.76 | 640.27 | 637.18 | 0.04 | 0.61 | 0.61 |
| 2.00 | 12.29 | 646.81 | 643.34 | 640.26 | 0.12 | 0.67 | 0.69 |
| 2.25 | 11.87 | 649.76 | 646.31 | 643.24 | 0.16 | 0.76 | 0.75 |
| 2.50 | 11.71 | 652.67 | 649.24 | 646.16 | 0.19 | 0.80 | 0.84 |
| 2.75 | 11.42 | 655.53 | 652.10 | 649.02 | 0.26 | 0.88 | 0.88 |
| 3.00 | 11.30 | 658.35 | 654.92 | 651.84 | 0.28 | 0.91 | 0.97 |
| 3.25 | 11.16 | 661.13 | 657.71 | 654.62 | 0.33 | 0.93 | 1.00 |
| 3.50 | 11.03 | 663.89 | 660.47 | 657.38 | 0.35 | 1.00 | 1.08 |
| 3.75 | 10.97 | 666.63 | 663.21 | 660.11 | 0.38 | 1.02 | 1.10 |
| 4.00 | 10.94 | 669.36 | 665.95 | 662.84 | 0.40 | 1.07 | 1.13 |
| 4.25 | 10.93 | 672.11 | 668.68 | 665.56 | 0.40 | 1.09 | 1.18 |
| 4.50 | 10.94 | 674.86 | 671.41 | 668.29 | 0.38 | 1.10 | 1.21 |
| 4.75 | 10.96 | 677.66 | 674.15 | 671.01 | 0.35 | 1.11 | 1.23 |
| 5.00 | 11.10 | 680.57 | 676.93 | 673.75 | 0.23 | 1.07 | 1.26 |



| V TUNE | HARMONICS (dBc) | | | FREQ. PUSHING (MHz/V) |
|--------|-----------------|--------|--------|-----------------------|
| | F2 | F3 | F4 | |
| 0.50 | -14.87 | -36.95 | -32.42 | 0.63 |
| 0.75 | -15.40 | -36.92 | -31.99 | 0.60 |
| 1.00 | -15.89 | -36.72 | -32.46 | 0.59 |
| 1.25 | -16.46 | -36.60 | -32.40 | 0.58 |
| 1.50 | -16.79 | -36.11 | -32.55 | 0.57 |
| 1.75 | -17.16 | -36.24 | -32.64 | 0.57 |
| 2.00 | -17.47 | -36.35 | -32.61 | 0.56 |
| 2.25 | -17.79 | -35.86 | -32.48 | 0.56 |
| 2.50 | -18.10 | -35.34 | -32.50 | 0.56 |
| 2.75 | -18.40 | -35.48 | -32.51 | 0.56 |
| 3.00 | -18.68 | -35.52 | -32.44 | 0.57 |
| 3.25 | -18.95 | -34.96 | -32.48 | 0.57 |
| 3.50 | -19.24 | -34.93 | -32.52 | 0.58 |
| 3.75 | -19.44 | -34.77 | -32.52 | 0.59 |
| 4.00 | -19.66 | -34.32 | -32.72 | 0.60 |
| 4.25 | -20.06 | -34.87 | -32.66 | 0.61 |
| 4.50 | -20.18 | -34.00 | -32.90 | 0.63 |
| 4.75 | -20.50 | -34.02 | -32.34 | 0.64 |
| 5.00 | -20.71 | -34.11 | -32.40 | 0.65 |



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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document 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