

## Surface Mount

## Voltage Controlled Oscillator

JTOS-300P

5V Tuning for PLL IC's 148 to 174 MHz

## Features

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

## Applications

- PLL circuitry
- measurement instrumentation
- frequency synthesizers



CASE STYLE: BK377  
PRICE: Contact Sales Dept.

## Electrical Specifications

| Frequency<br>(MHz) |      | Power<br>Output<br>(dBm) | Tuning<br>Voltage<br>(V) |      | Phase Noise<br>(dBc/Hz)<br>SSB at offset frequencies:<br>Typ. |           |            |          | Pulling<br>pk-pk<br>@ 12 dB <sub>r</sub><br>(MHz) | Pushing<br>(MHz/V) | Tuning<br>Sensitivity<br>(MHz/V) | Harmonics<br>(dBc) |      | 3 dB<br>Modulation<br>Bandwidth<br>(MHz) | Power<br>Supply |                         |
|--------------------|------|--------------------------|--------------------------|------|---------------------------------------------------------------|-----------|------------|----------|---------------------------------------------------|--------------------|----------------------------------|--------------------|------|------------------------------------------|-----------------|-------------------------|
| Min.               | Max. | Typ.                     | Min.                     | Max. | 1<br>kHz                                                      | 10<br>kHz | 100<br>kHz | 1<br>MHz | Typ.                                              | Typ.               | Typ.                             | Typ.               | Max. | Typ.                                     | Voltage<br>(V)  | Current<br>(mA)<br>Max. |
| 148                | 174  | +10                      | 0.5                      | 5.0  | -82                                                           | -102      | -122       | -142     | 1.0                                               | 0.2                | 10-14                            | -27                | -20  | 0.12                                     | 12              | 20                      |

## Pin Connections

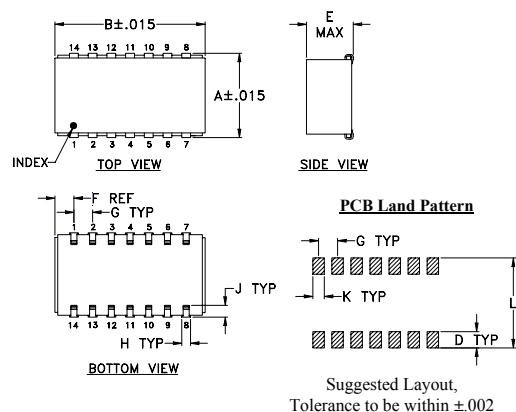
|        |                           |
|--------|---------------------------|
| RF OUT | 13                        |
| VCC    | 2                         |
| V-TUNE | 5                         |
| GROUND | 1,3,4,6,7,8,9,10,11,12,14 |

## Maximum Ratings

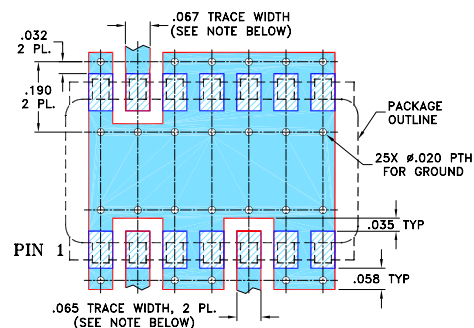
|                                      |                |
|--------------------------------------|----------------|
| Operating Temperature                | -55°C to 85°C  |
| Storage Temperature                  | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc)   | +16V           |
| Absolute 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-04  
Suggested PCB Layout (PL-005)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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     | wt    |
|-------|-------|----|------|------|------|------|------|------|------|-------|-------|
| .505  | .800  | -- | .100 | .250 | .100 | .100 | .047 | .065 | .065 | .525  | grams |
| 12.83 | 20.32 | -- | 2.54 | 6.35 | 2.54 | 2.54 | 1.19 | 1.65 | 1.65 | 13.34 | 3.0   |



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine

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For detailed performance specs  
& shipping online see web site



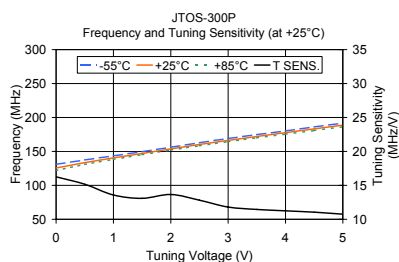
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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained 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).

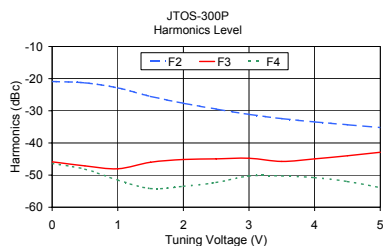
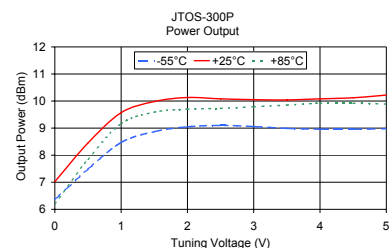
REV. B  
M102713  
JTOS-300P  
FL/TD/CP  
120621  
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## Performance Data &amp; Curves

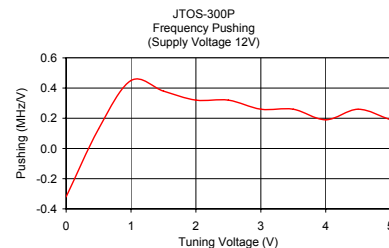
## JTOS-300P



| V<br>TUNE | TUNING<br>SENS.<br>(MHz/V) | FREQUENCY (MHz) |        |        | POWER OUTPUT (dBm) |       |       |
|-----------|----------------------------|-----------------|--------|--------|--------------------|-------|-------|
|           |                            | -55°C           | +25°C  | +85°C  | -55°C              | +25°C | +85°C |
| 0.00      | 16.26                      | 130.97          | 125.58 | 121.94 | 6.36               | 7.02  | 6.21  |
| 0.50      | 15.16                      | 137.44          | 133.44 | 130.82 | 7.48               | 8.45  | 7.85  |
| 1.00      | 13.58                      | 143.41          | 140.40 | 138.32 | 8.47               | 9.57  | 9.16  |
| 1.50      | 13.09                      | 149.57          | 147.01 | 145.24 | 8.87               | 9.98  | 9.59  |
| 2.00      | 13.65                      | 156.17          | 153.67 | 152.09 | 9.05               | 10.13 | 9.70  |
| 2.50      | 12.81                      | 162.85          | 160.26 | 158.44 | 9.10               | 10.08 | 9.73  |
| 3.00      | 11.80                      | 169.07          | 166.24 | 164.40 | 9.06               | 10.05 | 9.79  |
| 3.50      | 11.45                      | 174.77          | 172.00 | 170.06 | 8.99               | 10.04 | 9.85  |
| 4.00      | 11.24                      | 180.29          | 177.66 | 175.50 | 8.96               | 10.08 | 9.92  |
| 4.50      | 11.05                      | 186.11          | 183.22 | 180.88 | 8.96               | 10.12 | 9.92  |
| 5.00      | 10.75                      | 191.68          | 188.65 | 186.34 | 8.98               | 10.22 | 9.89  |



| V<br>TUNE | HARMONICS (dBc) |        |        | FREQ. PUSHING<br>(MHz/V) |
|-----------|-----------------|--------|--------|--------------------------|
|           | F2              | F3     | F4     |                          |
| 0.00      | -20.87          | -45.87 | -46.37 | -0.32                    |
| 0.50      | -21.30          | -47.14 | -48.14 | 0.13                     |
| 1.00      | -22.87          | -48.04 | -51.54 | 0.45                     |
| 1.50      | -25.50          | -46.00 | -54.17 | 0.38                     |
| 2.00      | -27.65          | -45.15 | -53.48 | 0.32                     |
| 2.50      | -29.45          | -44.95 | -52.29 | 0.32                     |
| 3.00      | -31.10          | -44.77 | -50.27 | 0.26                     |
| 3.50      | -32.42          | -45.76 | -50.26 | 0.26                     |
| 4.00      | -33.45          | -44.95 | -50.79 | 0.19                     |
| 4.50      | -34.33          | -43.99 | -51.99 | 0.26                     |
| 5.00      | -35.22          | -42.89 | -53.89 | 0.19                     |



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