

Surface Mount

# Voltage Controlled Oscillator

## SOS-4250-119+

5V Tuning for PLL IC's 4120 to 4280 MHz

### Features

- low pushing
- small size 0.3" x 0.3"
- aqueous washable



CASE STYLE: FZ990  
PRICE: \$ 20.60 ea. QTY (5-49)

### Applications

- wireless communications
- WiMAX

**+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. |
| SOS-4250-119+ | 4120        | 4280 | 2.5                | -67   | -96 | -117 | -138 | 0.5    | 4.5               | 57 - 89               | 13            | 120                             | -90                         | -24             | -13  | 2                           | 3               | 5                  | 40   |

### Pin Connections

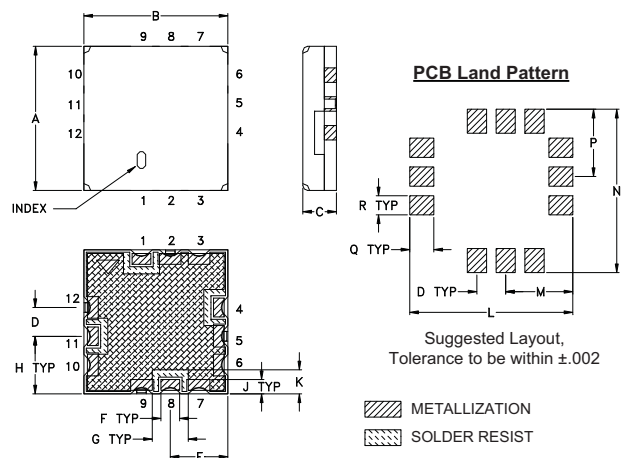
|        |                     |
|--------|---------------------|
| RF OUT | 8                   |
| VCC    | 11                  |
| V-TUNE | 1                   |
| GROUND | 2,3,4,5,6,7,9,10,12 |

### Maximum Ratings

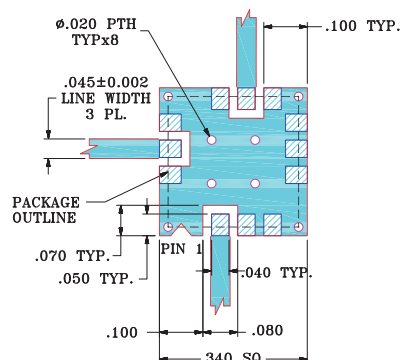
|                                      |                |
|--------------------------------------|----------------|
| Operating Temperature                | -55°C to 85°C  |
| Storage Temperature                  | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc)   | 6V             |
| Absolute 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 P/N: TB-271 Suggested PCB Layout (PL-143)



#### NOTE:

1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .025" ± .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    | wt.   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| .300 | .300 | .100 | .060 | .120 | .039 | .075 | .120 | .030 | .050 | .340 | .140 | .340 | .140 | .050 | .040 | grams |
| 7.62 | 7.62 | 2.54 | 1.52 | 3.05 | 0.99 | 1.91 | 3.05 | 0.76 | 1.27 | 8.64 | 3.56 | 8.64 | 3.56 | 1.27 | 1.02 | .25   |

#### Notes

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REV. B  
M143682  
EDR-10454/2MP  
SOS-4250-119+  
RAV  
131010  
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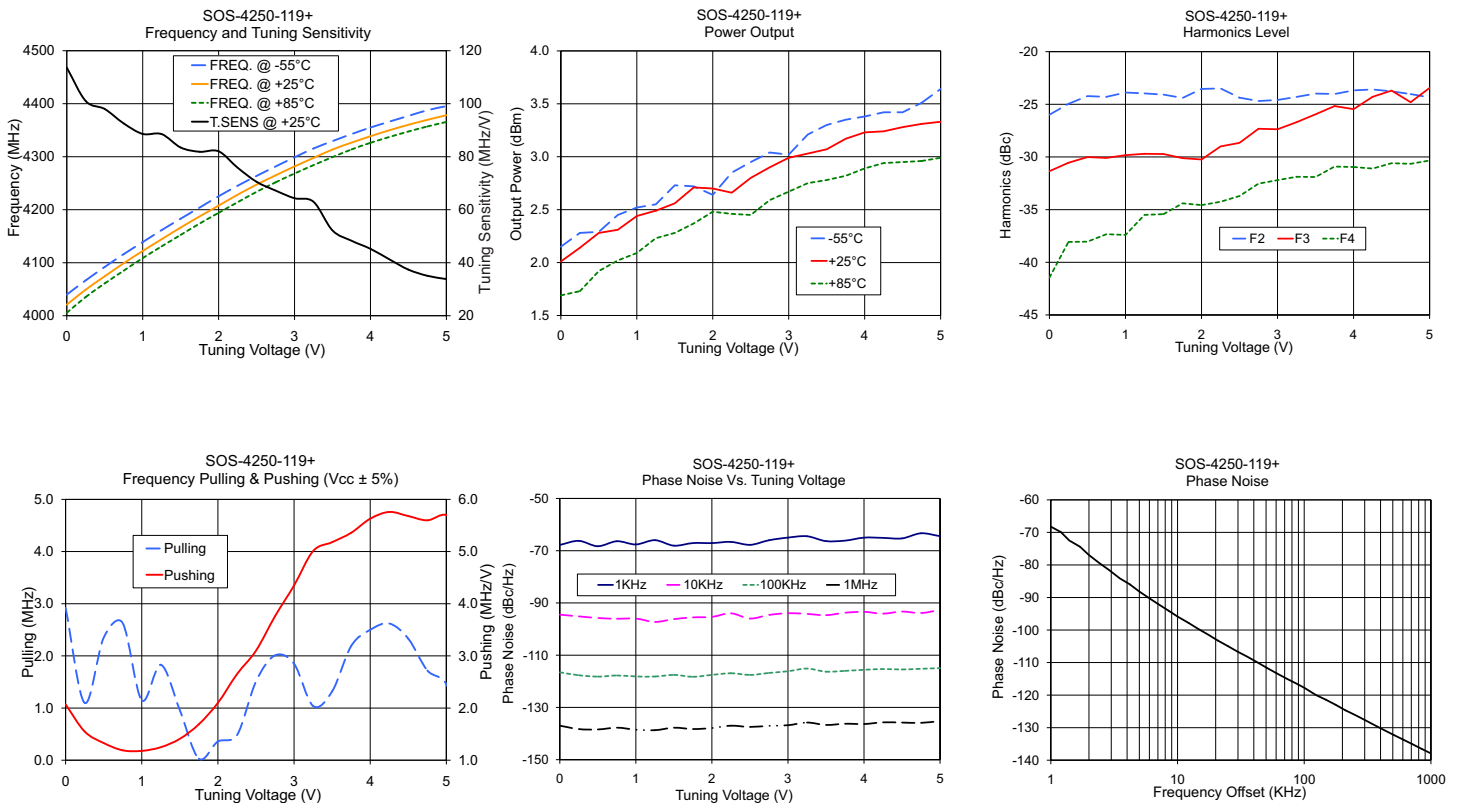


# Performance Data & Curves\*

# SOS-4250-119+

| 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 4200 MHz (dBc/Hz) |
|--------|-------------------|-----------------|--------|--------|--------------------|-------|-------|----------|-----------------|-------|-------|--------------------|------------------|---------------------------------|-------|--------|--------|-------------------|----------------------------------|
|        |                   | -55°C           | +25°C  | +85°C  | -55°C              | +25°C | +85°C |          | F2              | F3    | F4    |                    |                  | 1kHz                            | 10kHz | 100kHz | 1MHz   |                   |                                  |
|        |                   |                 |        |        |                    |       |       |          |                 |       |       |                    |                  |                                 |       |        |        |                   |                                  |
| 0.00   | 113.63            | 4039.9          | 4020.9 | 4005.6 | 2.15               | 2.01  | 1.69  | 32.00    | -26.0           | -31.4 | -41.5 | 2.07               | 2.92             | -67.80                          | -94.5 | -116.5 | -137.0 | 1.0               | -68.24                           |
| 0.25   | 101.00            | 4066.7          | 4049.3 | 4035.3 | 2.28               | 2.14  | 1.73  | 32.14    | -25.0           | -30.6 | -38.1 | 1.55               | 1.10             | -66.23                          | -95.2 | -117.7 | -138.3 | 2.0               | -76.95                           |
| 0.50   | 97.99             | 4092.0          | 4074.5 | 4060.9 | 2.29               | 2.28  | 1.92  | 32.25    | -24.2           | -30.0 | -38.0 | 1.33               | 2.35             | -68.30                          | -95.8 | -118.2 | -138.4 | 3.5               | -84.12                           |
| 0.75   | 92.55             | 4116.3          | 4099.0 | 4085.0 | 2.45               | 2.31  | 2.02  | 32.32    | -24.3           | -30.1 | -37.3 | 1.19               | 2.63             | -66.37                          | -96.0 | -117.8 | -137.8 | 6.0               | -90.24                           |
| 1.00   | 88.62             | 4138.9          | 4122.1 | 4108.8 | 2.52               | 2.44  | 2.09  | 32.47    | -23.9           | -29.8 | -37.4 | 1.18               | 1.15             | -67.61                          | -96.0 | -118.1 | -138.5 | 8.5               | -94.05                           |
| 1.25   | 88.53             | 4161.6          | 4144.3 | 4130.8 | 2.55               | 2.49  | 2.23  | 32.57    | -24.0           | -29.7 | -35.5 | 1.25               | 1.83             | -65.97                          | -97.3 | -118.2 | -138.7 | 10.0              | -95.86                           |
| 1.50   | 83.47             | 4183.1          | 4166.4 | 4152.5 | 2.73               | 2.56  | 2.28  | 32.66    | -24.1           | -29.7 | -35.4 | 1.41               | 0.96             | -68.08                          | -96.2 | -117.5 | -137.8 | 20.8              | -103.22                          |
| 1.75   | 81.87             | 4204.1          | 4187.3 | 4174.0 | 2.72               | 2.71  | 2.37  | 32.79    | -24.4           | -30.1 | -34.4 | 1.69               | 0.03             | -67.08                          | -95.5 | -118.3 | -138.3 | 35.5              | -108.19                          |
| 2.00   | 82.04             | 4225.4          | 4207.8 | 4194.1 | 2.64               | 2.70  | 2.48  | 32.87    | -23.5           | -30.2 | -34.6 | 2.10               | 0.36             | -67.09                          | -95.3 | -117.5 | -137.9 | 60.7              | -113.30                          |
| 2.25   | 75.85             | 4245.2          | 4228.3 | 4214.0 | 2.85               | 2.66  | 2.46  | 32.93    | -23.5           | -29.0 | -34.3 | 2.65               | 0.48             | -66.63                          | -94.0 | -116.9 | -137.0 | 86.7              | -116.45                          |
| 2.50   | 70.54             | 4263.7          | 4247.2 | 4233.7 | 2.95               | 2.80  | 2.45  | 33.08    | -24.4           | -28.7 | -33.7 | 3.10               | 1.51             | -67.76                          | -96.0 | -117.6 | -137.5 | 100.0             | -117.73                          |
| 2.75   | 67.23             | 4281.5          | 4264.9 | 4251.7 | 3.04               | 2.90  | 2.59  | 33.17    | -24.7           | -27.3 | -32.5 | 3.76               | 2.01             | -66.00                          | -94.6 | -116.8 | -137.0 | 148.1             | -121.40                          |
| 3.00   | 64.34             | 4298.9          | 4281.7 | 4268.3 | 3.02               | 2.99  | 2.67  | 33.24    | -24.6           | -27.4 | -32.2 | 4.35               | 1.85             | -64.99                          | -93.9 | -116.1 | -136.8 | 211.6             | -124.67                          |
| 3.25   | 62.99             | 4315.6          | 4297.8 | 4284.2 | 3.21               | 3.03  | 2.75  | 33.27    | -24.3           | -26.7 | -31.9 | 5.01               | 1.04             | -64.47                          | -94.2 | -115.1 | -135.8 | 302.4             | -127.68                          |
| 3.50   | 52.20             | 4329.5          | 4313.5 | 4299.3 | 3.30               | 3.07  | 2.78  | 33.33    | -24.0           | -26.0 | -31.9 | 5.18               | 1.32             | -66.34                          | -94.7 | -116.3 | -136.7 | 361.5             | -129.29                          |
| 3.75   | 48.30             | 4342.7          | 4326.6 | 4313.7 | 3.35               | 3.17  | 2.82  | 33.43    | -24.0           | -25.2 | -30.9 | 5.36               | 2.19             | -66.14                          | -93.7 | -116.0 | -136.2 | 507.5             | -132.22                          |
| 4.00   | 45.25             | 4355.1          | 4338.6 | 4326.2 | 3.38               | 3.23  | 2.89  | 33.48    | -23.7           | -25.5 | -31.0 | 5.63               | 2.50             | -65.00                          | -93.4 | -115.6 | -136.3 | 606.7             | -133.71                          |
| 4.25   | 41.27             | 4366.3          | 4350.0 | 4337.3 | 3.42               | 3.24  | 2.94  | 33.50    | -23.6           | -24.3 | -31.1 | 5.76               | 2.62             | -65.09                          | -94.1 | -115.3 | -135.7 | 851.6             | -136.59                          |
| 4.50   | 37.41             | 4377.0          | 4360.3 | 4347.5 | 3.42               | 3.28  | 2.95  | 33.52    | -23.8           | -23.7 | -30.6 | 5.68               | 2.33             | -65.30                          | -93.3 | -115.5 | -135.8 | 1000.0            | -137.92                          |

\*at 25°C unless mentioned otherwise



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