

OCXO (Oven Controlled Crystal Oscillators)**+5.0 V****OC189T5A; OC189T5S Series****HCMOS Square Wave****MERCURY**
Since 1973

Mercury OC189T5 is 20.3x20.3 mm 5 pin solder sealed metal package with 15.2x15.2 mm pin-to-pin spacing high stability low aging OCXO. Besides standard AT cut crystal, users can also choose SC cut crystal for better performance. 50 ohm load sine wave output is available as OC189E5 series.

**General Specifications**

| | | | | | | | |
|---|--|--|---|--|---|------------------|-----------|
| Output Wave From | | | HCMOS square wave. Wave form code is “T” | | | | |
| Frequency Range | | | 1.0 MHz ~100.0 MHz | | | | |
| Type of Crystal Cut Used | | | AT-cut. Use “A” for crystal code or SC-cut: use “S” for crystal code. Please refer to technical note TN031 for SC and AT-cut crystal comparison | | | | |
| Supply Voltage (Vcc) | | | +5.0 V _{D.C} ±5% (voltage code is “5”) | | | | |
| Initial Calibration Tolerance | | | ±0.5 ppm typical at time of shipment; Vcon = +2.5V, at +25°C | | | | |
| Frequency Stability vs | Operating Temperature Range (custom spec. on request) | | AT-cut crystal | | SC-cut crystal | | |
| | | | ±0.03 ppm over -20°C to +70°C | | ±0.01 ppm over -20°C to +70°C | | |
| | | | ±0.05 ppm over -20°C to +70°C | | ±0.03 ppm over -20°C to +70°C | | |
| | | | ±0.1 ppm over -20°C to +70°C | | ±0.05 ppm over -20°C to +70°C | | |
| | Aging | | ±0.05 ppm over -40°C to +85°C | | ±0.03 ppm over -40°C to +85°C | | |
| | | | ±0.1 ppm over -40°C to +85°C | | ±0.05 ppm over -40°C to +85°C | | |
| | | | ±0.5 ppm over -40°C to +85°C | | ±0.1 ppm over -40°C to +85°C | | |
| | Supply Voltage ±5% Variation | | ±20 ppb max. | | | | |
| Load ±5% variation | | ±20 ppb max. | | | | | |
| Warm-up time (at +25°C) | | 3 minutes max. Within ±0.1 ppm of its reference frequency. | | | | | |
| Voltage Control on pin 1 (EFC) (Electronics Frequency Tuning) | | Freq. Deviation Range | | AT: ±5 ppm typical SC: ±0.7 ppm typical | | | |
| | | Control Voltage Range | | 2.5 V ± 2.0 V | | | |
| | | Transfer Function | | Positive: Increasing control voltage increases output frequency. | | | |
| | | Input Impedance | | 100 Ω min. | | | |
| | | EFC Linearity | | ±10% max. | | | |
| | | Reference Voltage | | +4.0 V | | | |
| Power | Power Dissipation (at +25°C) | | Warm-up: 500 mA max. Steady-state: 200 mA max. at stead-state | | | | |
| Output | Load (Fan out) | | 15 pF HCMOS max. | | Duty Cycle (measured at 50%Vcc) | | 50% ± 10% |
| | Output Voltage Logic High (V _{OH}) | | +4.5 V min. | | Output Voltage Logic Low (V _{OL}) | | +0.5 max. |
| | Rise and Fall Time | | 5 nS max. (measured at 20% ð 80% of waveform) | | | | |
| | Reference Voltage Output | | +4.0 V _{D.C} ±0.3 V _{D.C.} or custom. | | | | |
| | Phase Noise | Offset | 10 Hz | 100 Hz | 1 KHz | 10 KHz | |
| | | 10 MHz AT-cut XTAL | -110 dBc typical | -135 dBc typical | -150 dBc typical | -155 dBc typical | |
| Storage Temperature | | | -40°C to +105°C | | | | |
| Shock | | | 2000 G's, 0.3 ms ½ sine | | | | |

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OCXO (Oven Controlled Crystal Oscillators)

OC189T5A; OC189T5S Series

+5.0 V

HCMOS Square Wave

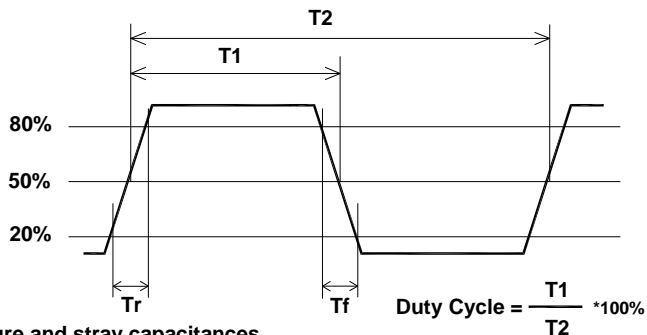
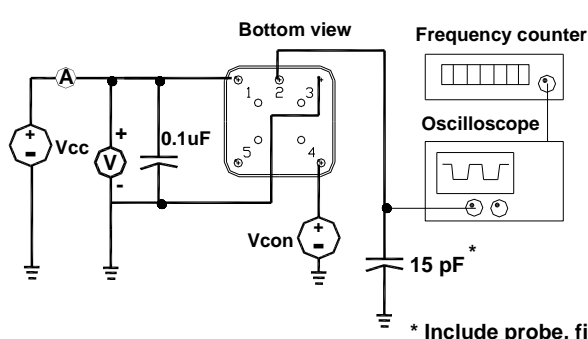


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Vibration

10 to 2000 Hz / 10 G's

OC189T5 Test Circuit



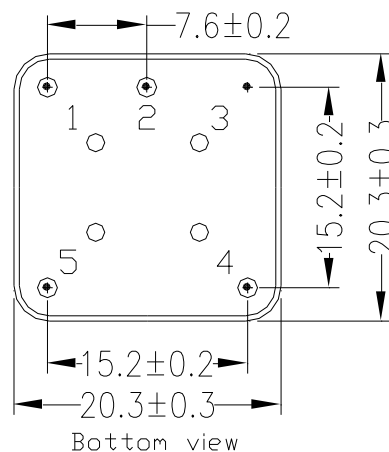
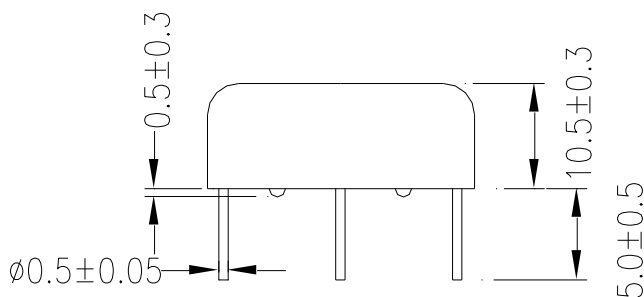
OC189T5 Series Package Dimensions and Pin Connections:

unit mm

Pin 1: Supply Control
Pin 4: Voltage Control EFC

Pin 2: RF Output
Pin 5: Reference Voltage Output

Pin 3: Ground / Case



Part Number Format and Example:

Example: OC189T5A-10.000-0.1/-20+70

| | | | | | | | |
|---------|---|---|--------|---|-----|---|--------|
| OC189T5 | A | — | 10.000 | — | 0.1 | / | -20+70 |
|---------|---|---|--------|---|-----|---|--------|

| | | | | | | | |
|---|---|------|---|------|---|-------|---|
| ① | ② | dash | ③ | Dash | ④ | slash | ⑤ |
|---|---|------|---|------|---|-------|---|

①: OC189T5: OC189 series; "T" for CMOS Square wave; "5" for +5.0 V supply voltage

②: Crystal type. "A" for AT-cut crystal; "S" for SC-cut crystal ③: Frequency in MHz

④: Frequency stability in ppm ⑤: Operating temperature range in Celsius