# " OCXO " [ Oven Controlled Crystal Oscillators ]

| OC32T | OC32E | Best stability | Standard OCXO Series | DIP | 3.3V | 5.0V | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Square Wave | True Sine Wave | ± 5.0 ppb | | | | | 5 MHz | 40 MHz |

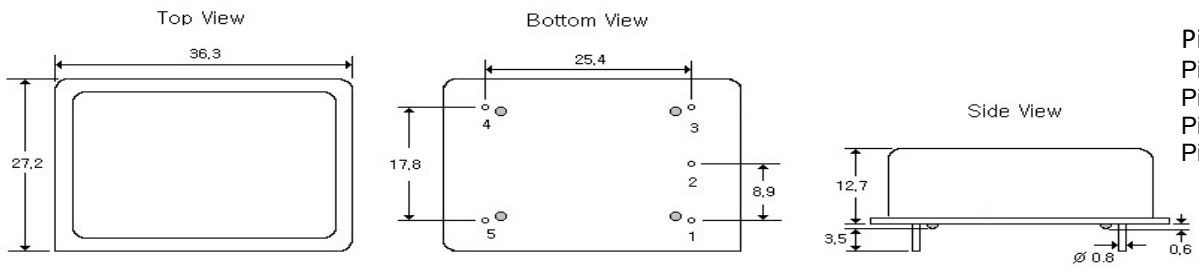
## Applications

- OC32_ ( 36.3 * 27.2 * 12.7 mm)
- Full Size 5 pin dip full metal package
- +3.3V , +5.0V Supply Voltages
- Voltage control ( Electronic Frequency Tuning ) is standard .

## General Specifications ( at+25°C and specified input voltage )

| Output Waveform | | Square wave. Waveform code is " T " | | True Sine Wave. Waveform code is " E " | |
|---|---|---|---|---|---|
| Supply Voltage | | +3.3 V | +5.0 V | +3.3 V | +5.0 V |
| Supply Voltage range , " Voltage code " | | +3.3V ± 5% , " 3 " | +5.0V ± 5% , " 5 " | +3.3V ± 5% , " 3 " | +5.0V ± 5% , " 5 " |
| Frequency Range | | 5 ~ 40.0 MHz<br>Standard Frequency : 10.0 MHz | | 5 ~ 40.0 MHz<br>Standard Frequency : 10.0 MHz | |
| Initial Calibration Tolerance | | ± 100 ppb ( max.)<br>Vcon = +1.65 V | ± 100 ppb ( max.)<br>Vcon = +2.5 V | ± 100 ppb ( max.)<br>Vcon = +1.65 V | ± 100 ppb ( max.)<br>Vcon = +2.5 V |
| Type of Crystal Cut Used | | " SC - cut " crystal or " IT - cut " crystal | | | |
| Frequency Stability | vs Temperature ( refer to +25°C ) | ± 3 ppb ( max.) over 0°C to +70°C | | | |
| | | ± 5.0 ppb ( max.) over -30°C to +70°C | | | |
| | | ± 10 ppb ( max.) over -40°C to +85°C | | | |
| | vs Voltage Change | ± 0.5ppb ( max.) , for a ± 5% input voltage change . | | | |
| | vs Warm-up time (+25°C) | 10 minute max. Within ± 10 ppb of its reference frequency. | | | |
| | vs Aging | ± 0.5 ppb max./after 30 days ; ± 50 ppb max./first year ; ± 300 ppb max.over 10 years. | | | |
| Voltage Control On pin 1 (EFC) ( Electronic Freq. Tuning ) | Freq. Deviation Range | ± 0.5 ppm min, ± 2 ppm max. Reference to fo at +25°C and over operating temperature range. | | | |
| | Control Voltage Range | +1.65V ± 1.65V | | +2.5V ± 2.5V | |
| | Transfer Function | Positive : Increasing control voltage increases output frequency . | | | |
| | Input Impedance | 50 K ohms min. | | | |
| | EFC Linearity | ± 10 % ( max.) | | | |
| Power | Power Dissipation ( at +25°C ) | 1.3 Watts max. at steady-state; 850 mA max. at turn-on. | | | |
| Output | Output Level ( for True Sine ) | --- | --- | +8 dBm ( typ.) , +10 dBm ( max.) | |
| | Harmonic ( for True Sine ) | --- | --- | -30 dBc ( min.) | |
| | Spurious ( for True Sine ) | --- | --- | -60 dBc ( min.) | |
| | Load | 15pF | | 50 Ω | |
| | Output Logic High ( $V_{OH}$ ) | +2.4 V ( min.) | +2.4 V ( min.) | --- | --- |
| | Output Logic Low ( $V_{OL}$ ) | + 0.4 V ( max.) | + 0.4 V ( max.) | --- | --- |
| | Duty Cycle ( $V_{DD}$ ) | 50 % ± 5% @ +1.4V | | | |
| | Rise and Fall Time | 7 nsec. ( max.) ( 20% → 80% of waveform ) | | | |
| | Phase Noise Offset [ 10.0 MHz ] ( typical ) | 10 Hz | 100 Hz | 1 KHz | 10 KHz |
| | | -120 dBc | -135 dBc | -145 dBc | -150 dBc |

## Outline Dimensions ( Unit : ±0.2 mm )




Pin Connections :
Pin 1 : Voltage Control
Pin 2 : Not Connected
Pin 3 : $V_{DD}$
Pin 4 : Output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# " OCXO " [ Oven Controlled Crystal Oscillators ]

| Square wave " OC _ T " | Clipped Sine Wave " OC _ S " | True Sine Wave" OC _ E " |
|---|---|---|

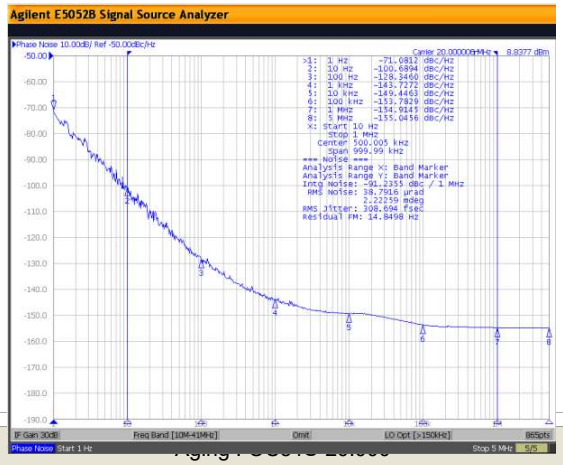
## Part Number Format and Example

| | [ 1 ] Holder Type | [ 2 ] Output Wave | [ 3 ] Supply Voltage | - | [ 4 ] Center Frequency | - | [ 5 ] Frequency Stability | / | [ 6 ] Operating Temp. Range |
|---|---|---|---|---|---|---|---|---|---|
| Examples (1) | OC12 | E | 3 | - | 10.000 | - | 200 | / | 0+70 |
| (2) | OC18 | E | 12 | - | 100.000 | - | 100 | / | -30+70 |
| (3) | OC51 | S | 3 | - | 10.000 | - | 30 | / | -20+70 |
| (4) | OC14 | T | 5 | - | 5.000 | - | 10 | / | -40+85 |

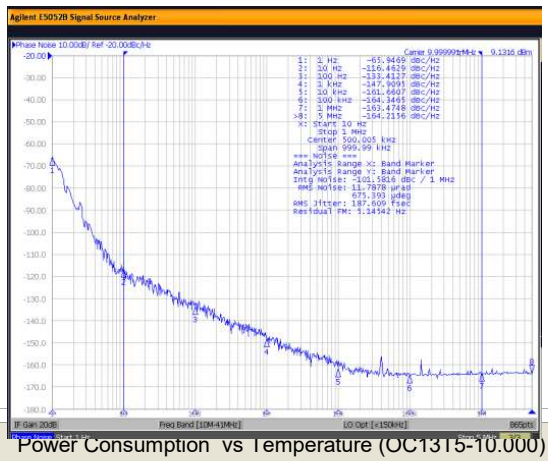
Ex (1) : OC12E3 - 10.000 - 200 / 0+70 [ OC12 type , True Sine wave , 3.3V , 10.000MHz , ± 200ppb from 0°C to 70°C ]
Ex (2) : OC18E12 - 100.000 - 100 / -30+70 [ OC18 type , True Sine wave , 12V , 100.000MHz , ± 100ppb from -30°C to 70°C ]
Ex (3) : OC51S3 - 10.000 - 30 / -20+70 [ OC51 type , Clipped Sine Wave , 3.3V , 10.000MHz , ± 30 ppb from -20°C to 70°C ]
Ex (4) : OC14T5 - 5.000 - 10 / -40+85 [ OC14 type , Square Wave , 5.0V , 5.000MHz , ± 10 ppb from -40°C to 85°C ]

| | |
|---|---|
| [ 1 ] | Holder Type |
| | " OC_ _ " stands for OCXO , |
| [ 2 ] | " T " stands for Square Wave , " E " stands for True Sine Wave , " S " stands for Clipped Sine Wave |
| | ex 1 : OC14T, OC14 package,Square Wave output ; ex 2 : OC18E, OC18 package,True Sine wave ; ex 3 : OC51S, OC51 package,Clipped Sine Wa |
| [ 3 ] | Supply voltage , " 3 " for 3.3V D.C , " 5 " for 5.0V D.C , " 12 " for 12V D.C |
| [ 4 ] | Center Frequency in MHz |
| [ 5 ] | Frequency stability in ± _ ppb ; ex 1 : ±200ppb ---200 , ex 2 : ± 30ppb ---30 , ex 3 : ± 5ppb --- 5 |
| [ 6 ] | Operating temperature range in °C |
| | ex 1 : 0 °C to 70°C ----- 0+70 ; ex 2 : -30 °C to 70°C ----- -30+70 ; ex 3 : -40 °C to 85°C ----- -40+85 |

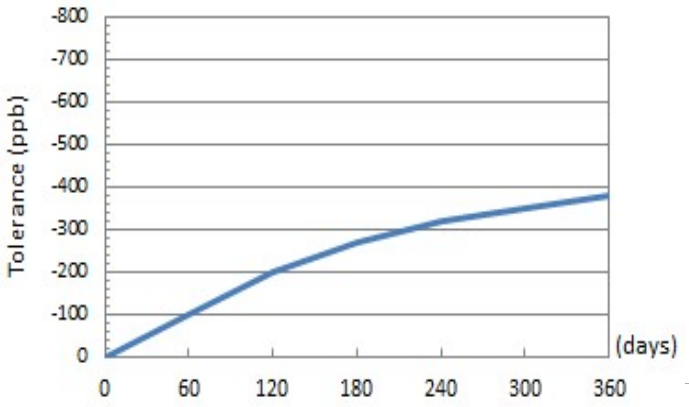
SSB Phase Noise : Clipped Sine Wave(OC51S-20.000)



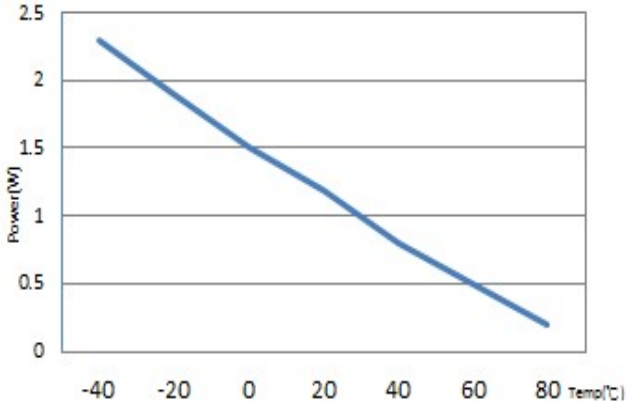

SSB Phase Noise : Square wave(OC13T-10.000)




Aging : OC51S-20.000




Power Consumption vs Temperature (OC1315-10.000)

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