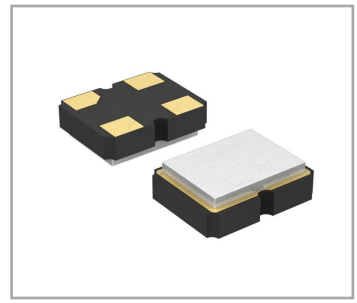
# OC Type Crystal Oscillator
# Typical 3.2 x 2.5 mm
# Frequency 1MHz to 80MHz

STARWAVE



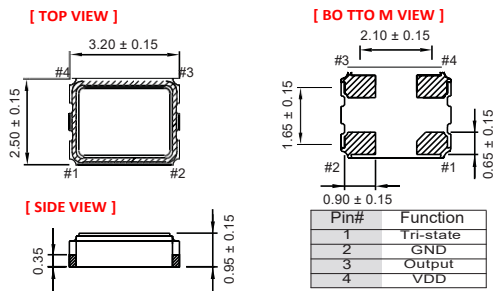
## FEATURE

- Typical 3.2 x 2.5 x 0.95 mm ceramic SMD package
- Operation supply voltage: 1.8V, 2.5V and 3.3V
- Output frequency up to 80MHZ
- Tri-State Enable/Disable
- Frequency Stability ±50ppm over -40°C to 105°C
- Pb-free/RoHS compliant

## TYPICAL APPLICATION

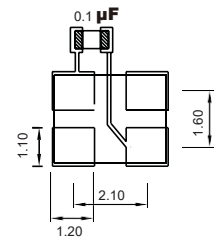
- WLAN/WiMax
- Mobile Phone
- DSC, Set-top Box , HDTV

## DIMENSION (mm)




| Pin# | Function |
|---|---|
| 1 | Tri-state |
| 2 | GND |
| 3 | Output |
| 4 | VDD |

## SOLDER PAD LAYOUT (mm)




**To ensure optimal oscillator performance, place a by-pass capacitor of 0.1µF as close to the part as possible between Vdd and GND pads.**

## ELECTRICAL SPECIFICATION

| Parameter | | 3.3V | | 2.5V | | 1.8V | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | Min. | Max. | Min. | Max. | Min. | Max. | |
| **Supply Voltage Variation ($V_{DD}$)** | | $V_{DD}$-5% | $V_{DD}$+5% | $V_{DD}$-5% | $V_{DD}$+5% | $V_{DD}$-5% | $V_{DD}$+5% | V |
| **Frequency Range** | | 4.00 | 54.00 | 4.00 | 54.00 | 4.00 | 54.00 | MHz |
| **Standard Frequency** | | 4.000MHz~54.000MHz | | | | | | MHz |
| **Supply Current** | **At 15pF Load** | - | 15 | - | 10 | - | 7 | mA |
| | **No Load Condition, 1.25MHz ≤ Fo < 10MHz** | - | 1.5 | - | 1.5 | - | 1.2 | mA |
| | **No Load Condition, 10MHz ≤ Fo < 20MHz** | - | 2 | - | 2 | - | 1.5 | mA |
| | **No Load Condition, 20MHz ≤ Fo < 80MHz** | - | 3 | - | 2.5 | - | 1.5 | mA |
| | **No Load Condition, 80MHz ≤ Fo < 125MHz** | - | 8 | - | 7 | - | 5 | mA |
| **Duty Cycle** | | 45 | 55 | 45 | 55 | 45 | 55 | % |
| **Output Level** | **Output High** | 2.97 | - | 2.25 | - | 1.62 | - | V |
| | **Output Low** | - | 0.33 | - | 0.25 | - | 0.18 | V |
| **Transition Time: Rise / Fall Time+** | **1.25MHz ≤ Fo < 10MHz** | - | 3 | - | 4 | - | 5 | nSec |
| | **10MHz ≤ Fo < 20MHz** | - | 3 | - | 3 | - | 4 | nSec |
| | **20MHz ≤ Fo < 80MHz** | - | 3 | - | 3 | - | 4 | nSec |
| | **80MHz ≤ Fo < 125MHz** | - | 3 | - | 3 | - | 4 | nSec |
| **Startup Time** | | - | 2 | - | 2 | - | 2 | mSec |
| **Tri-State (Input to Pin 1)** | **Enable (High Voltage or Floating)** | 2.31 | - | 1.75 | - | 1.26 | - | V |
| | **Disable (Low Voltage or GND)** | - | 0.99 | - | 0.75 | - | 0.54 | V |
| **Output Loading** | | 15 | | 15 | | 15 | | pF |
| **Stand by Current (@-40°C to 85°C)** | | - | 10 | - | 10 | - | 10 | µA |
| **Stand by Current (@-40°C to 125°C)** | | - | 20 | - | 20 | - | 20 | µA |
| **Period Jitter (Pk-Pk)** | | - | 40 | - | 40 | - | 40 | pSec |
| **RMS Phase Jitter (12kHz to 20MHz)** | | - | 1 | - | 1 | - | 1 | pSec |
| **Aging (@ 25°C, 1st Year)** | | - | ±3 | - | ±3 | - | ±3 | ppm |
| **Storage Temp. Range** | | -55 | +125 | -55 | +125 | -55 | +125 | °C |

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position
+Transition times are measured between 10% and 90% of $V_{DD}$ withan output load of 15pF

## FREQ. STABILITY vs. TEMP. RANGE

| Temp. (°C) \ ppm | ±15 | ± 20 | ±25 | ±50 |
|---|---|---|---|---|
| **-20~+70** | △ | ○ | ○ | ○ |
| **-40~+85** | X | △ | ○ | ○ |
| **-40~+105** | X | △ | ○ | ○ |

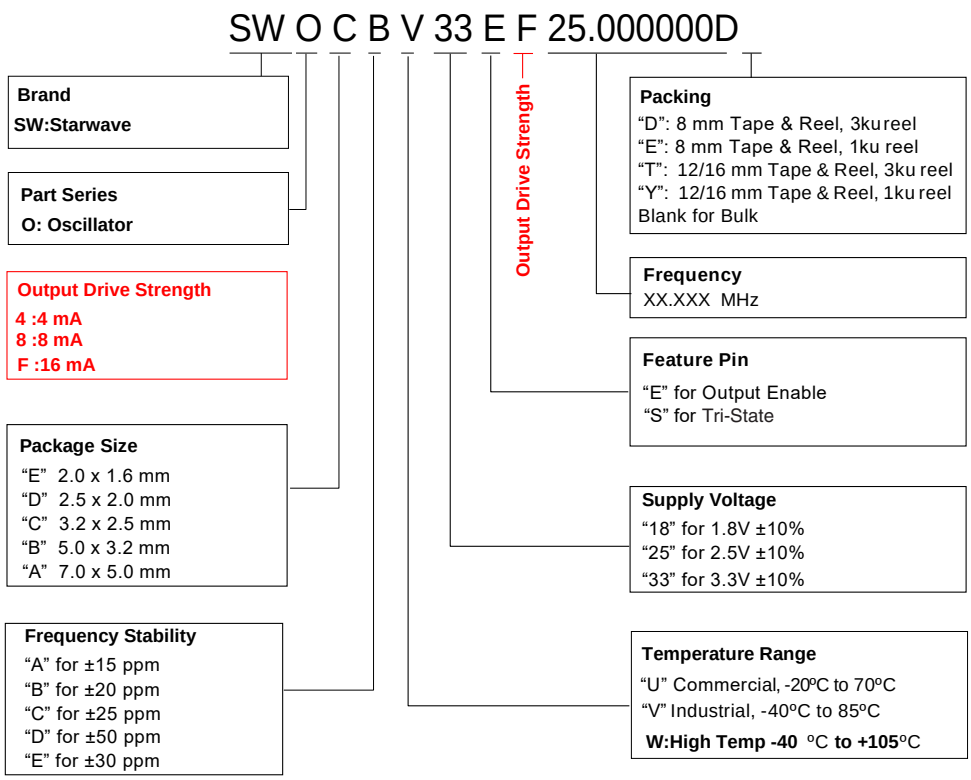
*O: Available △: Conditional X: Not available
*Inclusive of calibration @ 25 °C ,operating temperature rrange,input Voltage variation,load variation,aging (1st year),shock,and vibration

**Note: not all combination of options are available. Other specifications may be available upon request.**

# OC Type Crystal Oscillator
# Typical 3.2 x 2.5 mm
# Frequency 1MHz to 80MHz

STARWAVE

## Ordering Information




### Table 13. Ordering Codes for Supported Tape & Reel Packing Method

| Device Size (mm x mm) | 16 mm T&R (3ku) | 16 mm T&R (1ku) | 12 mm T&R (3ku) | 12 mm T&R (1ku) | 8 mm T&R (3ku) | 8 mm T&R (1ku) |
|---|---|---|---|---|---|---|
| 2.0 x 1.6 | – | – | – | – | D | E |
| 2.5 x 2.0 | – | – | – | – | D | E |
| 3.2 x 2.5 | – | – | – | – | D | E |
| 5.0 x 3.2 | – | – | T | Y | – | – |
| 7.0 x 5.0 | T | Y | – | – | – | – |