

# OX1510 Series

OCXO, Sine wave, HCMOS, 27.8 x 27.8 x 15.5mm



- Surface mount package, high stability OCXO
- Unit weight: 20gm max
- RoHS compliant

| Output characteristics                    |                                                                                   |               |                                                        |
|-------------------------------------------|-----------------------------------------------------------------------------------|---------------|--------------------------------------------------------|
| Parameter                                 | Specification                                                                     |               | Remarks/Test condition                                 |
| Frequency range                           | 5.0MHz ~ 40.0MHz                                                                  |               | HCMOS output<br>Standard: 10MHz, 12.8MHz, 20MHz, 40MHz |
| Frequency range                           | 5.0MHz ~ 150.0MHz                                                                 |               | Sinewave output<br>Standard: 10MHz, 100MHz, 125MHz     |
| Supply voltage (Vs)                       | 3.3V typical (HCMOS)                                                              |               | Min: 3.15V, Max: 3.45V                                 |
|                                           | 5.0V typical (HCMOS, Sinewave)                                                    |               | Min: 4.75V, Max: 5.25V                                 |
|                                           | 12.0V typical (Sinewave)                                                          |               | Min: 11.4V, Max: 12.6V                                 |
| Reference voltage VREF output             | 3.0V                                                                              |               | For Vs = 3.3V                                          |
|                                           | 4.0V                                                                              |               | For Vs = 5.0V                                          |
|                                           | 5.0V                                                                              |               | For Vs = 12.0V, For f≤40MHz                            |
|                                           | 10.0V                                                                             |               | For Vs = 12.0V, For f>40MHz                            |
| Warm-up current consumption               | 900.0mA max                                                                       |               | Vs = 3.3V                                              |
|                                           | 600.0mA max                                                                       |               | Vs = 5.0V                                              |
|                                           | 350.0mA max                                                                       |               | Vs = 12.0V                                             |
| Steady state current consumption @25°C    | 350.0mA max                                                                       |               | Vs = 3.3V                                              |
|                                           | 250.0mA max                                                                       |               | Vs = 5.0V                                              |
|                                           | 150.0mA max                                                                       |               | Vs = 12.0V                                             |
| RF output                                 |                                                                                   |               |                                                        |
| Output waveform                           | Sine wave                                                                         | HCMOS         |                                                        |
| Output load                               | 50.0Ω                                                                             | 15.0pF        | ±10%                                                   |
| Output level                              | Min: +7.0dBm                                                                      | -             |                                                        |
| Harmonics                                 | -30.0dBc max                                                                      | -             |                                                        |
| Spurious                                  | -90.0dBc max                                                                      | -             |                                                        |
| Duty cycle                                | -                                                                                 | 40%/60%'      | @ Vs/2                                                 |
| Rise/Fall time                            | -                                                                                 | 5.0ns         | @ 10% ~ 90% Vs                                         |
| Warm-up time at +25°C                     | 3.0 minute typical, 5.0 minute max                                                |               | Δf final/ fnominal < ±0.1ppm                           |
| Phase noise                               | Contact factory                                                                   |               |                                                        |
| Frequency stability (Typical, @ 10.00MHz) |                                                                                   |               |                                                        |
| Initial tolerance                         | ±300.0ppb max                                                                     |               | At +25°C, Vc @ centre value                            |
| vs Operating temperature range            | ±5.0ppb ~ ±200.0ppb                                                               |               | Table 1                                                |
| vs Supply voltage variation               | ±10.0ppb max                                                                      |               | Vs ± 5%                                                |
| vs Load change                            | ±5.0ppb max                                                                       |               | RL ± 10%                                               |
| Long term aging/day                       | AT-cut: ±10.0ppb max    SC-cut: ±2.0ppb max                                       |               | After 30 days operation                                |
| Long term aging 1 <sup>st</sup> year      | AT-cut: 300.0ppb typical, ±500.0ppb max<br>SC-cut: 50.0ppb typical, ±200.0ppb max |               | After 30 days operation                                |
| Frequency adjustment range                |                                                                                   |               |                                                        |
| Electronic frequency control (EFC)        | AT-cut: ±2.0ppm min, ±5.0ppm max<br>SC-cut: ±0.8ppm min                           |               |                                                        |
| EFC voltage Vc                            | Vref/2 ± Vref/2                                                                   |               |                                                        |
| EFC slope                                 | Positive                                                                          |               |                                                        |
| EFC input impedance                       | 100.0kΩ min                                                                       |               |                                                        |
| Absolute maximum ratings                  |                                                                                   |               |                                                        |
| Supply voltage Vs                         | Min: -0.5V                                                                        | Max: Vs + 10% | Vs to GND                                              |
| Control voltage Vc                        | Min: -0.5V                                                                        | 15V           | Vc to GND                                              |
| Storage temperature                       | -55°C ~ +125°C                                                                    |               |                                                        |

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Specifications subject to change without notification

# OX1510 Series

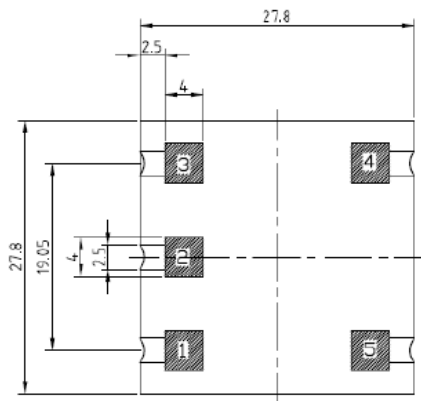
OCXO, Sine wave, HCMOS, 27.8 x 27.8 x 15.5mm



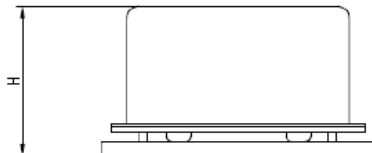
Table 2: Frequency stability vs operating temperature range

| Temperature (°C) | ±5.0ppb  | ±10.0ppb | ±25.0ppb | ±50.0ppb | ±100.0ppb | ±200.0ppb |
|------------------|----------|----------|----------|----------|-----------|-----------|
| 0°C ~ +50        | SC-cut v | SC-cut v | SC-cut v | AT-cut v | AT-cut v  | AT-cut v  |
| -10°C ~ +60      | SC-cut v | SC-cut v | SC-cut v | AT-cut v | AT-cut v  | AT-cut v  |
| -20°C ~ +70      | SC-cut v | SC-cut v | SC-cut v | SC-cut v | AT-cut v  | AT-cut v  |
| -30°C ~ +70      | Enquire  | SC-cut v | SC-cut v | SC-cut v | SC-cut v  | AT-cut v  |
| -40°C ~ +75      | Enquire  | Enquire  | SC-cut v | SC-cut v | SC-cut v  | SC-cut v  |
| -40°C ~ +85      | Enquire  | Enquire  | SC-cut v | SC-cut v | SC-cut v  | SC-cut v  |
| -55°C ~ +85      | X        | Enquire  | Enquire  | SC-cut v | SC-cut v  | SC-cut v  |

Mechanical dimensions and Pin functions

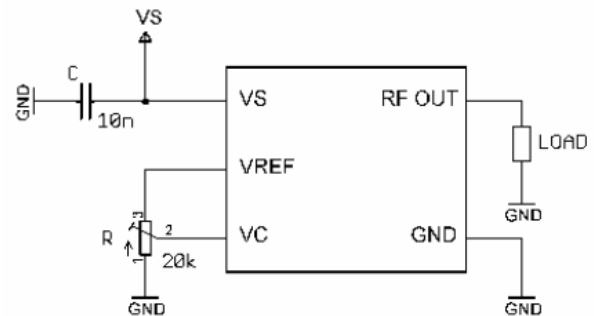


no pcbtrack  
beneath this  
area



## Pin connections

| Pin # | Symbol         | Function              |
|-------|----------------|-----------------------|
| 1     | RF OUT         | RF Output             |
| 2     | GND            | Ground                |
| 3     | V <sub>C</sub> | Control Voltage (EFC) |
| 4     | VREF           | Reference voltage     |
| 5     | V <sub>S</sub> | Supply Voltage        |



## ACT part number

ACT will provide a unique part number with full specification based on your requirements, please provide the following details.

| ACT series | Frequency (MHz) | Supply voltage (V) | Output type | Frequency stability (ppb) | Operating temperature range (°C) |
|------------|-----------------|--------------------|-------------|---------------------------|----------------------------------|
| OX1510     |                 |                    |             |                           |                                  |

# OX1510 Series

OCXO, Sine wave, HCMOS, 27.8 x 27.8 x 15.5mm



Table 3: Environmental conditions

| Test                                           | IEC60068 part... | IEC 60679-1 Clause | MIL-STD-202G Method | MIL-PRF-810F Method | MIL-PRF-55310D Clause | Test conditions (IEC)                                            |
|------------------------------------------------|------------------|--------------------|---------------------|---------------------|-----------------------|------------------------------------------------------------------|
| Sealing tests (if applicable)                  | 2-17             | 5.6                | 112E                |                     | 3.6                   | Gross leak: Test QC,<br>Fine leak : Test QK                      |
| Solderability resistance to soldering heat     | 2-20<br>2-58     | 5.6                | 208H<br>210F        |                     | 3.6.52<br>3.6.48      | Test Ta Method 1<br>Test Td1 Method 2<br>Test Td2 Method 2       |
| Shock                                          | 2-27             | 5.6.8              | 213B                | 516.4               | 3.6                   | Test Ea, 3 x per axes 100g,<br>6 ms half sine pulse              |
| Vibration, sinusoidal                          | 2-6              | 5.6.7.1            | 201A<br>204D        | 516.4-4             | 3.6.38.1<br>3.6.38.2  | Test Fc, 30 min per axes,<br>10Hz - 55Hz 0, 75mm; 55Hz-2kHz, 10g |
| Vibration, random                              | 2-64             | 5.6.7.3            | 214A                | 514.5               | 3.6.38.3<br>3.6.38.4  | Test Fdb                                                         |
| Endurance Tests<br>-Ageing<br>- extended aging |                  | 5.7.1<br>5.7.2     | 108A                |                     | 4.8                   | 30 days @ 85°C, OCXO @ 25°C<br>1000h, 2000h, 8000h @ 85°C        |

Drawing control: (Internal use only)

Issue number: 1

Date: 01/06/2017

Internal reference: O1

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