# CARDINAL COMPONENTS

# COSI5 Series Ovenized Oscillator

COSI5 Series
36.3 x 27.2 x 12.7 mm
5 Pin Metal Package

## Features

- Ovenized Quartz Crystal High Precision Square Wave Generator
- LVTTL Output
- 5.0V nominal Supply Voltage
- 5.0MHz - 40MHz Frequency Range
- Voltage control option available

## Applications

SONET / SDH / DWDM
Test & Measurement
Telecom Transmission & Switching Equipment
Base Stations / Picocell
Wireless Communication Equipment

## Electrical Characteristics

| Parameter | Min | Typ | Max | Unit | Condition |
|---|---|---|---|---|---|
| Frequency | 5 | - | 40 | MHz | |
| Frequency Stability vs Temperature | ±5 | - | ±10 | ppb | ±3ppb available over temp range 0 to 70°C |
| Frequency Stability vs Supply | - | - | ±0.5 | ppb | ±5% voltage change |
| Warm-up | - | - | ±10 | ppb | In 10 minutes @ +25°C, referenced to 1 hour |
| Aging | - | - | ±0.5 | ppb | per day at time of shipment |
| | - | - | ±50 | ppb | per year |
| | - | - | ±0.3 | ppm | 10 years |
| Operating Temperature Range | -40 | - | +85 | °C | |
| Supply Voltage [1] $V_{CC}$ | 4.75 | 5.0 | 5.25 | V | 3.3V input voltage available |
| Current | - | - | 850 | mA | @turn on |
| Steady State | - | - | 1.3 | W | @ 25°C |
| Spurious | - | - | -60 | dBc | |
| Phase Noise 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz | - | -120<br>-135<br>-145<br>-150 | - | dBc/Hz | |
| Storage Temperature Range | -55 | - | +125 | °C | |
| Vcontrol Range (If Vc option selected) | 0 | 2.5 | 5.0 | V | |
| Pullability (If Vc option selected) | ±0.5 | - | - | ppm | Slope positive |
| Input Impedance (If Vc option selected) | 100 | - | - | kΩ | |

## HCMOS

| Parameter | Min | Typ | Max | Unit | Condition |
|---|---|---|---|---|---|
| Output Waveform | | LVTTL | | | Sinewave output is available |
| "1" Level | 2.4 | - | - | V | |
| "0" Level | - | - | 0.4 | V | |
| Load | - | 15 | - | pF | |
| Duty Cycle | 45 | 50 | 55 | % | @+1.4V |

Note: [1] Place a 10nF power supply bypass capacitor next to device for correct operation

## Device Marking

| | | |
|---|---|---|
| COSI5*xxx* | = | Model number/Part number* |
| *xx.xx*M | = | Frequency (M = MHz) |
| *YMD* | = | Date code (Year-Month-Day: See Table below) |
| *z* | = | Internal Code |
| S/N: *xxx* | = | Serial number |

COSI5*xxx*
*xx.xx*M
*YMDz*
S/N: *xxx*

* A unique number is assigned for your exact specifications.
Specifications such as frequency stability, supply voltage and operating temperature range, etc. are not identified from marking.
External packaging labels and packing list will correctly identify the ordered Cardinal part number.

Codes for Date Code YMD (Year Month Day)

| Code | 3 | 4 | 5 | 6 | 7 | Code | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | 2023 | 2024 | 2025 | 2026 | 2027 | Month | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | G | H | J | K | L | M | N | P | R | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |

## Environmental / ESD Ratings

Reliability: Environmental

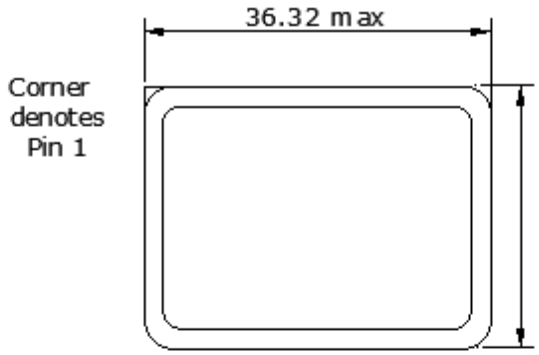
| Parameter | Ref Standard | Condition |
|---|---|---|
| Solderability | MIL-STD-202, Method 208 | |
| Mechanical Shock | MIL-STD-202, Method 213 Test Cond J | 30g, 11ms, half-sine |
| Vibration | MIL-STD-202, Method 201 | 1.52mm p-p Total, 10 to 55 Hz |
| Thermal Shock | MIL-STD-202, Method 107 Test Cond B | 5 cycles -65 to +125°C |

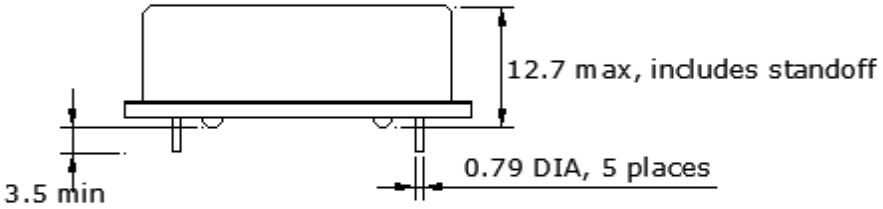
| Model | Min Voltage |
|---|---|
| Human Body Model | 2000V |
| Machine Model | 200V |

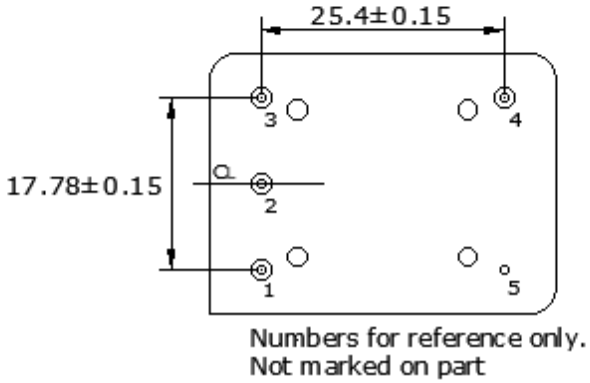
**Cardinal Components Inc. certifies this device is in accordance with the RoHS (exemption 7a) and REACH directives.**
Cardinal guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Mercury, PBB's, PBDE's
Moisture Sensitivity Level: 1 As defined in J-STD-020D
Second Level Interconnect code: e3
Product Weight: 16.5g

## Mechanical Dimensions




PIN CONNECTIONS

| Pin | Function |
|---|---|
| 1* | Vc input or N.C. |
| 2* | Ref Voltage or N.C. |
| 3 | Vcc |
| 4 | Output |
| 5 | Ground/Case |

* If not specified in parameters then not internally connected

**Termination coating: Sn plated, 0.2~1.0µm**

For Optimum Jitter Performance, Cardinal recommends:

- A ground plane under the device
- Do not route large transient signals (both current and voltage) under the device
- Do not place near a large magnetic field such as a high frequency switching power supply
- Do not place near piezoelectric buzzers or mechanical fans
- Minimize air flow across the device

## Important Notice

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### Contacting Cardinal Components

Cardinal Components
19013 36th Ave. West
Lynnwood, WA 98036-5761
U.S.A.

Tel: 973-785-1333
Fax: 425.776.2760
email: sales@cardinalxtal.com
URL: www.cardinalxtal.com