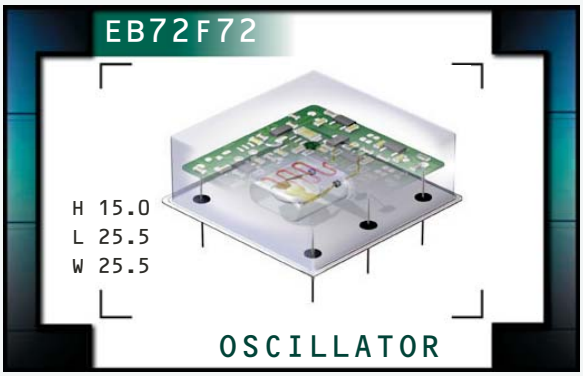
# EB72F72 Series

- Oven Controlled Crystal Oscillator (OCXO)
- SC-Cut Crystal
- HCMOS output
- 3.3V supply voltage
- 5 pin DIP package
- External control voltage
- Stability to ±30ppb




## ELECTRICAL SPECIFICATIONS

| | | |
|---|---|---|
| **Frequency Range** | 10.000MHz, 12.288MHz, 12.800MHz, 16.000MHz, 19.440MHz, or 20.000MHz | |
| **Operating Temperature Range (OTR)** | | 0°C to 50°C, 0°C to 70°C, or -20°C to 70°C |
| **Storage Temperature Range** | | -55°C to 125°C |
| **Supply Voltage ($V_{DD}$)** | | 3.3$V_{DC}$ ±5% |
| **Frequency Tolerance / Stability** | | |
| vs. Initial Tolerance | at Nominal $V_{DD}$ and $V_C$, at 25°C | ±500ppb or ±300ppb Maximum |
| vs. Temperature Stability | at Nominal $V_{DD}$ and $V_C$ | ±30ppb, ±50ppb, ±80ppb, ±100ppb, ±200ppb, or ±280ppb Maximum |
| vs. Vdd | $V_{DD}$ ±5% | ±20ppb Maximum |
| vs. Load | Vload ±5% | ±20ppb Maximum |
| vs. Aging (1 Day) | after 72 Hours of Operation | 2.0ppb Maximum |
| vs. Aging (1 Year) | after 72 Hours of Operation | ±100ppb Maximum |
| vs. Aging (10 Years) | after 72 Hours of Operation | ±500ppb Maximum |
| **Crystal Cut** | | SC-Cut |
| **Warm Up Time** | to ±50ppb of Final Frequency at 1 Hour at 25°C | 3 Minute Maximum |
| **Power Consumption** | at Steady State, at 25°C | 1.2 Watts Maximum |
| | During Warm Up, at 25°C | 3.6 Watts Maximum |
| **Output Voltage Logic High ($V_{OH}$)** | $I_{OH}$ = -4mA | 2.6$V_{DC}$ Minimum |
| **Output Voltage Logic Low ($V_{OL}$)** | $I_{OL}$ = +4mA | 0.4$V_{DC}$ Maximum |
| **Rise Time / Fall Time** | Measured at 20% to 80% of Waveform | 6nSec Maximum |
| **Duty Cycle** | Measured at 50% of Waveform | 50 ±5(%) |
| **Load Drive Capability** | | 15pF HCMOS Load Maximum |
| **Frequency Deviation** | Referenced to $F_O$ at $V_C$ = 1.65$V_{DC}$; $V_{DD}$=5.0$V_{DC}$ over OTR | ±0.5ppm Minimum |
| **Control Voltage Range** | | 0.0$V_{DC}$ to $V_{DD}$ |
| **Control Voltage ($V_C$)** | | 1.65$V_{DC}$ ±1.65$V_{DC}$ |
| **Transfer Function** | | Positive Transfer Characteristic |
| **Reference Voltage Output** | | 2.8$V_{DC}$ ±0.2$V_{DC}$ (Pin 4) |
| **Linearity** | | ±10% Maximum |
| **Input Impedance** | | 10kOhms Typical |
| **Typical Phase Noise (at 12.800MHz)** | 1Hz Offset | -90dBc/Hz |
| | 10Hz Offset | -100dBc/Hz |
| | 100Hz Offset | -130dBc/Hz |
| | 1kHz Offset | -145dBc/Hz |
| | 10kHz Offset | -150dBc/Hz |

| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|---|---|---|---|---|---|---|
| ECLIPTEK CORP. | OSCILLATOR | EB72F72 | 5 pin DIP | 3.3V | OS2M | 05/07 |

## PART NUMBERING GUIDE

**EB72F72 D 10 B V 2 - 20.000M**

**INITIAL TOLERANCE**
D=±500ppb
E=±300ppb

**FREQUENCY STABILITY**
2 Digit Code Per Table 1

**OPERATING TEMPERATURE RANGE**
1 Letter Code Per Table 1

**FREQUENCY**

**DUTY CYCLE**
2=50% ±5%

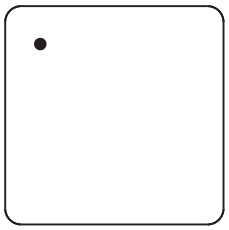
**VOLTAGE CONTROL OPTION**
V=Voltage Control on Pin 3 and Reference Voltage Output on Pin 4

### TABLE 1: PART NUMBERING CODES

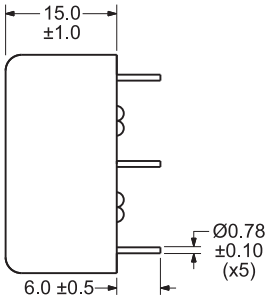
| Operating Temperature Range | | | FREQUENCY STABILITY X Denotes availability | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ±30ppb | ±50ppb | ±80ppb | ±100ppb | ±200ppb | ±280ppb |
| | | Code | 03 | 05 | 08 | 10 | 20 | 28 |
| | 0°C to +50°C | A | X | X | X | X | X | X |
| | 0°C to +70°C | B | | X | X | X | X | X |
| | -20°C to +70°C | C | | | X | X | X | X |

## MECHANICAL DIMENSIONS

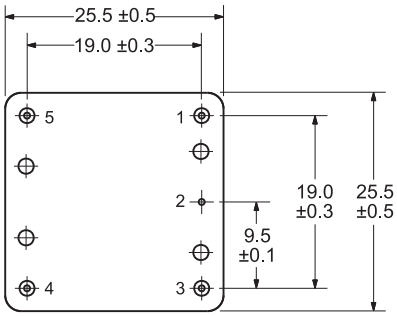
ALL DIMENSIONS IN MILLIMETERS



Pin 1: Output
Pin 2: Case/Ground
Pin 3: Voltage Control




Pin 4: Reference Voltage Output
Pin 5: Supply Voltage




## ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

| Characteristic | Specification |
|---|---|
| Gross Leak Test | MIL-STD-883, Method 1014, Condition C |
| Mechanical Shock | MIL-STD-202, Method 213, Condition C |
| Vibration | MIL-STD-883, Method 2007, Condition A |
| Lead Integrity | MIL-STD-883, Method 2004 |
| Solderability | MIL-STD-883, Method 2002 |
| Temperature Cycling | MIL-STD-883, Method 1010 |
| Resistance to Soldering Heat | MIL-STD-883, Method 210 |
| Resistance to Solvents | MIL-STD-883, Method 215 |

## MARKING SPECIFICATIONS

Line 1: ECLIPTEK

Line 2: XX.XXX M
- Frequency in MHz (5 Digits Maximum + Decimal)

Line 3: XX Y ZZ
- Week of Year
- Last Digit of Year
- Ecliptek Manufacturing Identifier

Note: Pin 1 shall be designated with a dot

| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|---|---|---|---|---|---|---|
| ECLIPTEK CORP. | OSCILLATOR | EB72F72 | 5 pin DIP | 3.3V | OS2M | 05/07 |