

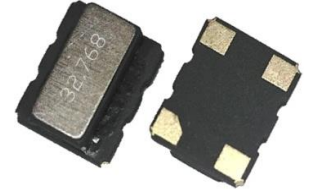
| | | | | | | | | |
|--------------|-------------------|---------------------|-------------|------------|--------------|--------------|--------------|--------------|
| TCXO | nA Current | ± 5 ppm | CMOS | SMD | 15 pF | 1.8 V | 2.5 V | 3.0 V |
| ME32T | 32.768 KHz | -40 to 85 °C | | | | 3.3 V | 5.0 V | |

Features

- CMOS 32.768 KHz TCXO with a maximum frequency stability of ± 5 ppm (±2.62 minutes / year) over -40 to +85°C, providing a much better timekeeping accuracy than the competition
- A proprietary temp. compensation technique is applied to the built-in 32.768 KHz tuning fork crystal & temp. sensor
- A 1.5 µA typical current consumption makes it ideal for battery-operated devices
- 3.28 x 2.5 x 1.3 mm ceramic SMD package, ideal for new miniaturizing applications

Applications:

- Frequency reference for real time clocks (RTCs)
- Portable instruments
- Timing synchronization for networks, servers, hubs, routers and switches
- If ±1.0 ~ ±2.5 ppm frequency stability is required , please use Mercury's M572T series (mA current consumption)
- If temperature compensation is not required , please use Mercury's " HG57 " series (nA current consumption) or " HA " series (uA current consumption)
- Smart metering, data loggers
- GPS receivers. Telematics.



General specifications of all available packages , at Ta=+25°C , CL=15pF

| Output Wave Form | | Square wave [CMOS] | | | | |
|--|--|---|-----------|-----------|-----------|------------|
| Nominal Frequency | | 32.768 KHz | | | | |
| Standard Supply Voltages (Custom V _{DD} is also available) | V _{DD} | 1.8 ± 5 % | 2.5 ± 5 % | 3.0 ± 5 % | 3.3 ± 5 % | 5.0 ± 10 % |
| | Voltage code | 18 | 25 | 3 | 33 | 5 |
| Power Supply Current (I _{CC}) (typical) | | 0.79 uA | 1.05 uA | 1.25 uA | 1.37 uA | 2.05 uA |
| Initial Calibration Tolerance | | ± 1.5 ppm (max.) at T _{amb} = +25° C ± 3° C | | | | |
| Frequency Stability over Temperature (max.) | | ± 3.8 ppm (-10°C to +60°C) | | | | |
| | | ± 5 ppm (-40°C to +85°C) | | | | |
| | | ± 8 ppm (-40°C to +105°C) | | | | |
| Timing error over time [± 5 ppm (-40°C to +85°C)] | | ± 0.432 sec/day ; ± 12.960 sec/month ; ± 2.628 minutes / year , w.r.t fo at +25°C. | | | | |
| Frequency Stability | vs Aging | ± 3.0 ppm / year (max.) first year at +25° C | | | | |
| | vs V _{DD} Tolerance Change | ± 0.2 ppm (max.) for a ± 5 % input voltage change | | | | |
| | vs Load Change | ± 0.2 ppm (max.) for a ± 10 % loading condition change | | | | |
| | vs Reflow | ± 1.0 ppm (max.) 1 reflow and measured 24 hours afterwards | | | | |
| | vs all range of V _{DD} (Δf / V) | ± 1.0 ppm / volt (max.) V _{DD} = 1.7 V to 5.5 V . | | | | |
| Output Logic / Output Load | | CMOS / 15 pF | | | | |
| Supply Voltage Variation (ΔV _{DD}) | | 0.25 V (max.) Condition : ΔV / Δt = 1 V / us | | | | |
| Output Voltage Level | V _{OH} | V _{DD} - 0.4 V (min.) ; I _{OH} = 0.1 mA , all V _{DD} range | | | | |
| Output Voltage Level | V _{OL} | 0.4 V (max.) ; I _{OL} = - 0.1 mA , all V _{DD} range | | | | |
| Start - up Time | | 1 sec. (max.) at +25°C ; 3 sec. (max.) over -40°C to +85°C | | | | |
| Rise Time and Fall Time | | 100 nano. sec. max. Measured at 20% ↔ 80% of the waveform , 15 pF load. | | | | |
| Duty Cycle | | 50% ±10% typical | | | | |
| Pad 1 OE Thresholds | | V _{Ih} = 0.8 * V _{DD} , V _{Iil} = 0.2 * V _{DD} ; Open connection prohibit | | | | |

| Block Diagram | Package Dimensions and Suggested Land Pattern |
|---------------|---|
| | <p>Pad 1 : Output Enable Pad 2 : Ground Pad 3 : Frequency output Pad 4 : Supply Voltage</p> |

Part Number Format and Example

| | | | | |
|-------|----------------|----------|---------------------|-----------------------|
| [1] | [2] | [3] | [4] | [5] |
| ME32T | Supply Voltage | 32.768 K | Frequency Stability | Operating Temp. Range |

| | | | | | | | | | |
|----------|-----|-------|---|---|----------|---|-----|---|--------|
| Examples | (1) | ME32T | 5 | - | 32.768 K | - | 5.0 | / | -40+85 |
|----------|-----|-------|---|---|----------|---|-----|---|--------|

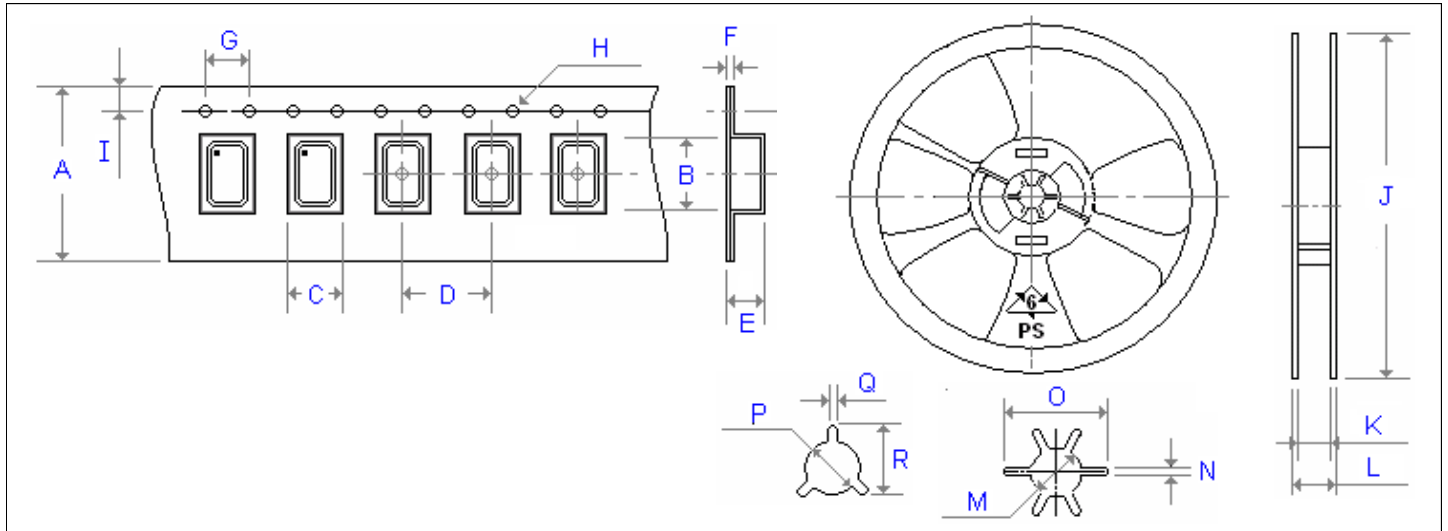
ME32T5 - 32.768K - 5.0 / -40+85

[ME32T type, CMOS , 5.0V, 32.768 KHz , ± 5.0 ppm from -40°C to 85°C]

Emboss Taping and Reel Specifications

[VCXO]

[(VC)TCXO]



Carrier Type Dimensions (unit : mm)

| | A | B | C | D | E | F | G | H | I | pcs / reel |
|-------------|------|------|------|------|-----|-----|-----|--------|------|------------|
| G_324 (6) | 8.0 | 3.4 | 2.7 | 4.0 | 1.4 | 0.3 | 4.0 | ∅ 1.50 | 1.75 | 3000 |
| G_534 | 12.0 | 5.3 | 3.6 | 8.0 | 1.4 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 1000 |
| G_576 | 16.0 | 7.3 | 5.3 | 8.0 | 1.9 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 1000 |
| G_42 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| G_43 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| G_62 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| G_63 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| (V)M_22 | 8.0 | 2.8 | 2.3 | 4.0 | 1.1 | 0.3 | 4.0 | ∅ 1.50 | 1.75 | 3000 |
| (V)M_32 | 8.0 | 3.4 | 2.7 | 4.0 | 1.4 | 0.3 | 4.0 | ∅ 1.50 | 1.75 | 3000 |
| (V)MQ_326 | 12.0 | 3.6 | 2.9 | 4.0 | 1.7 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 3000 |
| (V)M_53 | 12.0 | 5.3 | 3.6 | 8.0 | 1.4 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 1000 |
| (V)M_57 | 16.0 | 7.4 | 5.5 | 8.0 | 2.8 | 0.4 | 4.0 | ∅ 1.50 | 1.75 | 500 |
| (V)M_42 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| (V)M_43 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| (V)M_62 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |
| (V)M_63 | 24.0 | 12.4 | 10.3 | 16.0 | 5.0 | 0.3 | 4.0 | ∅ 1.55 | 1.75 | 500 |

Reel Dimensions (unit : mm)

| | J | K | L | P | Q | R | pcs / reel |
|-------------|-------|------|------|------|-----|------|------------|
| G_324 (6) | 180.0 | 9.0 | 12.0 | 13.2 | 2.1 | - | 3000 |
| G_534 | 180.0 | 13.0 | 16.0 | 13.2 | 2.5 | - | 1000 |
| G_576 | 180.0 | 17.2 | 19.3 | 13.3 | 2.2 | 22.0 | 1000 |
| G_42 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| G_43 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| G_62 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| G_63 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| (V)M_22 | 180.0 | 9.0 | 12.0 | 13.2 | 2.1 | - | 3000 |
| (V)M_32 | 180.0 | 9.0 | 12.0 | 13.2 | 2.1 | - | 3000 |
| (V)MQ_326 | 180.0 | 9.0 | 12.0 | 13.2 | 2.1 | - | 3000 |
| (V)M_53 | 180.0 | 13.0 | 16.0 | 13.2 | 2.5 | 19.5 | 1000 |
| (V)M_57 | 180.0 | 17.2 | 19.3 | 13.3 | 2.2 | 22.0 | 500 |
| (V)M_42 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| (V)M_43 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| (V)M_62 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |
| (V)M_63 | 330.0 | 30.0 | 25.0 | 13.4 | 2.5 | 19.5 | 500 |