

32.768kHz CMOS CERAMIC SMD CRYSTAL OSCILLATOR



3.2 x 2.5 x 0.9 mm

ASHEK SERIES

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable



RoHS Compliant

FEATURES:

- Ultra low uA current consumption with CMOS output
- Miniature ceramic package (3.2 x 2.5 x 0.9mm)
- Operating Temp -40°C to +85°C
- Start up time less than 1 sec with supply voltage 1.5 to 5.0V
- Tri-state function
- Pb-free reflow capable

APPLICATIONS:

- General purpose clock generator for digital systems
- Clock drivers for Real Time Clocks
- Timekeeping in network servers and computers
- Electricity, gas and water metering
- Portable field communication
- Mobile phone
- Clock & Data recovery
- CCD clock for VTR camera
- Computers and peripherals
- Portable MP3 players & games

STANDARD SPECIFICATIONS:

| Parameters                        |                 | Minimum  | Typical | Maximum | Units | Notes  |
|-----------------------------------|-----------------|--|---------|---------|-------|--|
| Frequency Range                   |                 | -----  | 32.768  | -----   | kHz   |  |
| Operating Temperature             |                 | -20  | -----   | +70     | °C    | See options  |
| Storage Temperature               |                 | -55  | -----   | +125    | °C    |  |
| Frequency Tolerance @ +25°C       |                 | -15  | +5      | +25     | ppm   |  |
| Frequency Stability               |                 | -90  | -----   | +10     | ppm   | - 20 to + 70 °C; referenced to frequency measured @ +25°C<br>See options |
| Supply Voltage (Vdd)              |                 | 3.135  | 3.3     | 3.465   | V     | Standard   |
|                                   |                 | 4.75   | 5.0     | 5.25    |       | Option 2   |
|                                   |                 | 2.66   | 2.8     | 2.94    |       | Option 3   |
|                                   |                 | 1.71   | 1.8     | 1.89    |       | Option 4   |
|                                   |                 | 1.425  | 1.5     | 1.575   |       | Option 5   |
| Supply Current (I <sub>dd</sub> ) |                 | -----  | 0.9     | 1.5     | uA    | no load, Vdd=+ 3.3V  |
|                                   |                 | -----  | 1.8     | 2.5     |       | no load, Vdd=+ 5.0V  |
|                                   |                 | -----  | 0.8     | 1.5     |       | no load, Vdd=+ 2.8V  |
|                                   |                 | -----  | 0.6     | 1.5     |       | no load, Vdd=+ 1.8V  |
|                                   |                 | -----  | 0.5     | 1.5     |       | no load, Vdd=+ 1.5V  |
| Output Load                       |                 | -----  | -----   | 15      | pF    | CMOS   |
| Output Voltage                    | V <sub>OH</sub> | Vdd-0.4  | -----   | -----   | V     |  |
|                                   | V <sub>OL</sub> | -----  | -----   | 0.4     |       |  |
| Tri-state function                |                 | "1" (VIH≥0.9*Vdd or open) : Oscillation<br>"0" (VIH<0.8V) : Hi Z |         |         |       |  |
| Aging                             |                 | -5.0   | -----   | +5.0    | ppm   | @+25°C First year  |
| Symmetry @1/2Vdd                  |                 | 40   | 50      | 60      | %     | Standard   |
| Start-up Time                     |                 | -----  | -----   | 1       | s     | 0.9*Vdd @ +25°C  |
| Rise/Fall Time (Tr/Tf)            |                 | -----  | -----   | 200     | ns    |  |

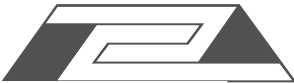
STANDARD SPECIFICATIONS:

ASHEK □ -32.768kHz - □ - □

| Supply Voltage |
|----------------|
| Blank: 3.3V    |
| 2: 5.0V        |
| 3: 2.8V        |
| 4: 1.8V        |
| 5: 1.5V        |

| Frequency Temp Characteristics         |
|--|
| Blank: -20°C to +70°C / -90 to +10 ppm |
| L: -40°C to +85°C / -140 to +10 ppm    |

| Packaging                 |
|---------------------------|
| Blank: Bulk               |
| T: Tape and Reel (1kpcs)  |
| T3: Tape and Reel (3kpcs) |



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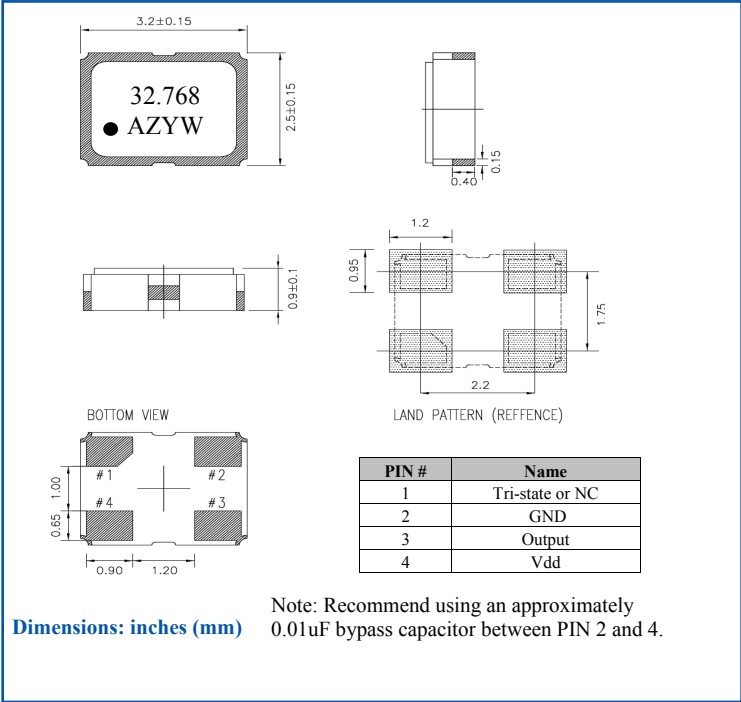
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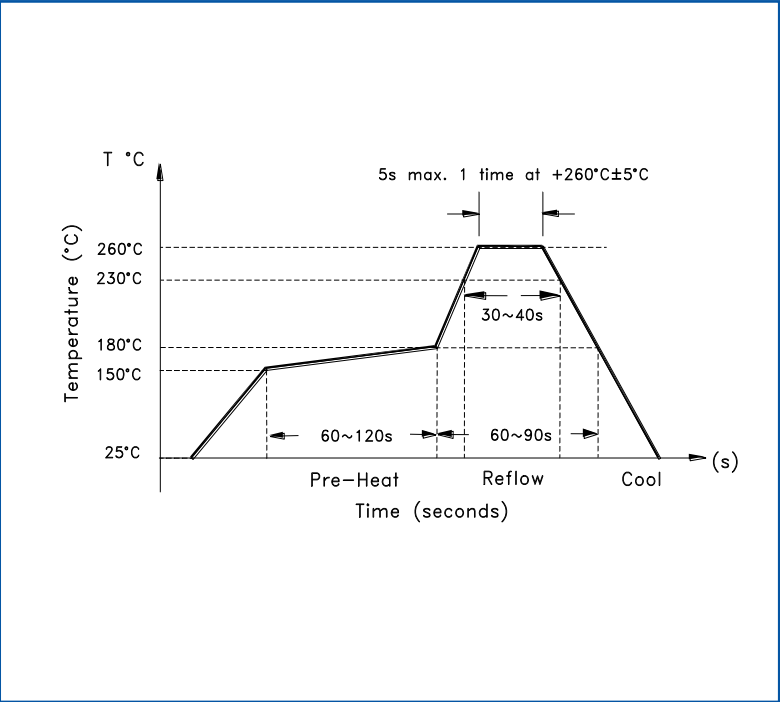


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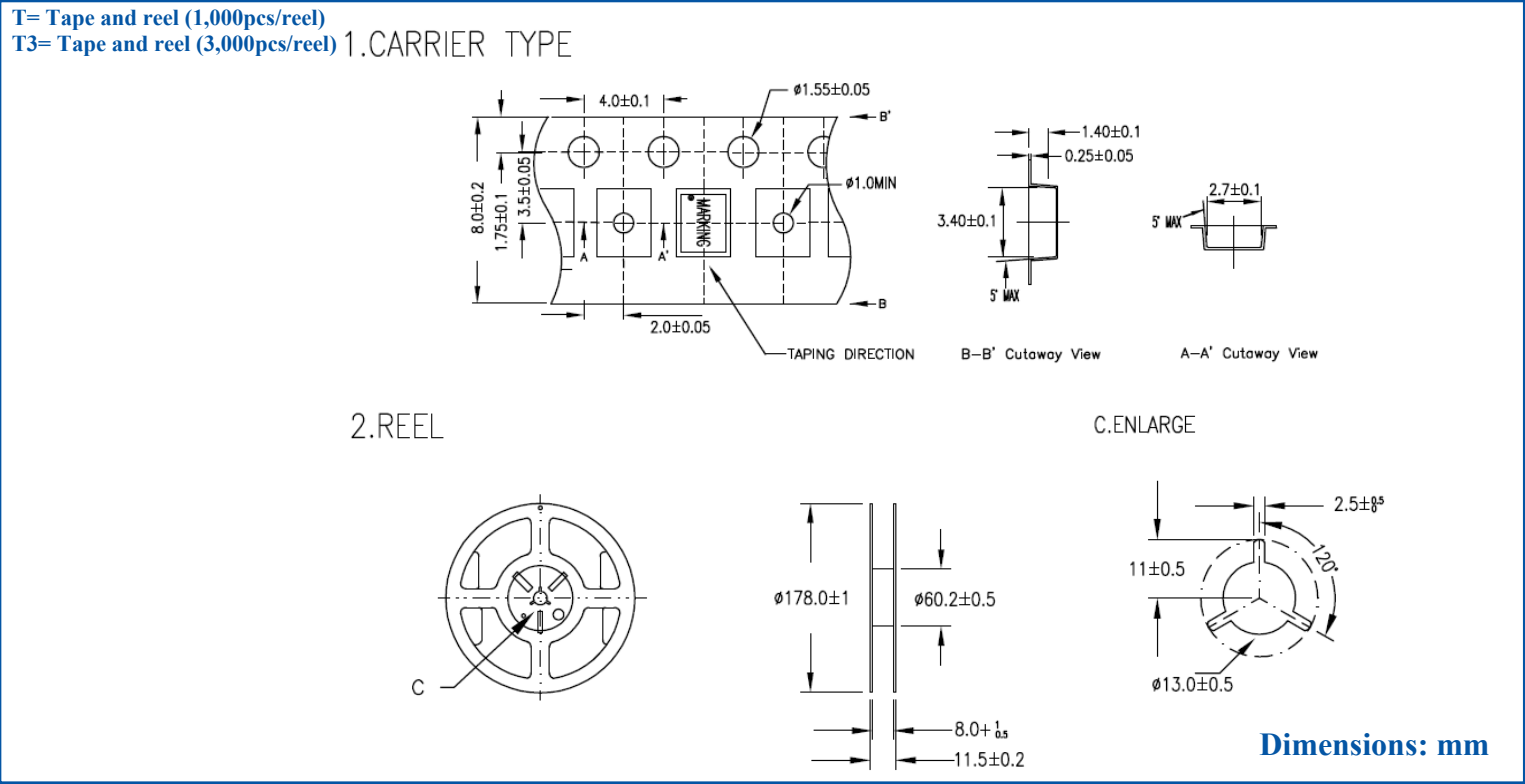
OUTLINE DRAWING:



REFLOW PROFILE:



TAPE & REEL:



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