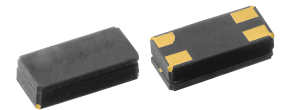


# 32.768kHz LOW POWER SMD CRYSTAL OSCILLATOR



3.2 x 1.5 x 1.0mm

## ASH7KW



ESD Sensitive



RoHS/RoHS II Compliant

Moisture Sensitivity Level (MSL) – Level 1

### FEATURES:

- Ultra-miniature size 3.2x1.5x1.0mm [max.]
- Low Voltage Operation (Min:1.2V)
- Low Current Consumption
- Operating temperature : -40 to +85 °C; -40 to +125 °C
- VDD controls the output amplitude

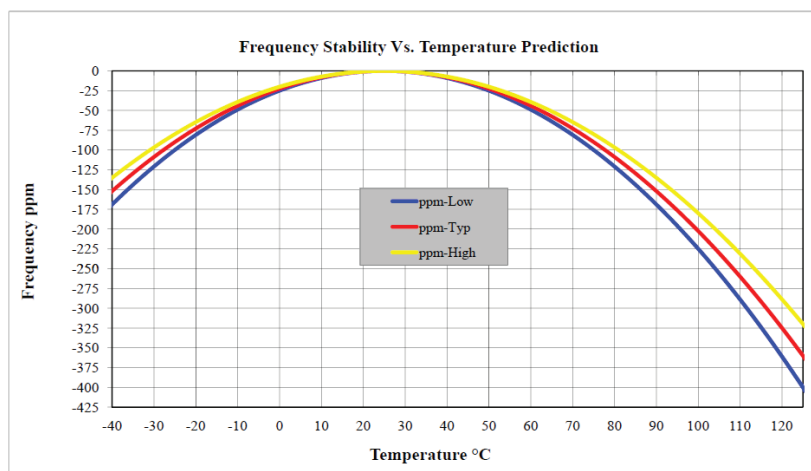
### APPLICATIONS:

- Factory Automation
- PC Server
- W-LAN/GPS Chipset
- 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  |
|---|---|----------------------|---------|--------------------|--|
| Output Frequency                        | 32.768  |                      |         | kHz                |  |
| Operating Temperature                   | -40   |                      | +85     | °C                 | Option "L"   |
|   | -40   |                      | +125    |                    | Option "H"   |
| Storage Temperature                     | -55   |                      | +125    | °C                 |  |
| Turnover Temperature                    | +20   | +25                  | +30     | °C                 |  |
| Frequency Tolerance                     | -20   |                      | +20     | ppm                |  |
| Temperature Coefficient                 | -0.035±10%  |                      |         | ppm/C <sup>2</sup> |  |
| Supply Voltage Range (V <sub>dd</sub> ) | 1.2   |                      | 5.5     | V                  |  |
| Current Consumption                     |   | 0.3                  | 0.5     | µA                 | V <sub>dd</sub> =3.0V, $\overline{OE}$ (output disabled) |
| Current Consumption                     |   | 1.8                  |         | µA                 | Load=15pF, V <sub>dd</sub> =3.0V, OE                     |
| Output Load (CMOS)                      |   |                      | 15      | pF                 |  |
| Output Voltage                          | V <sub>OH</sub>   | V <sub>dd</sub> -0.4 |         | V                  | I <sub>OH</sub> = -1mA                                   |
|   | V <sub>OL</sub>   |                      | GND+0.4 |                    | I <sub>OL</sub> = 1mA                                    |
| CLKOE Pin Function                      | "1" (VIH≥0.8*Vdd) or Open: Oscillation<br>"0" (VIL<0.2*Vdd) : Output disabled |                      |         |                    |  |
| Aging@+25                               | -3.0  |                      | +3.0    | ppm                | First year   |
| Duty Cycle                              | 40  |                      | 60      | %                  |  |
| Voltage Coefficient                     | -1.5  |                      | +1.5    | ppm/V              |  |
| Start-up Time                           |   |                      | 0.5     | s                  |  |
| Output Rise Time                        |   |                      | 70.0    | ns                 | Load=10pF, 10% to 90%                                    |
| Output Fall Time                        |   |                      | 70.0    | ns                 | Load=10pF, 10% to 90%                                    |

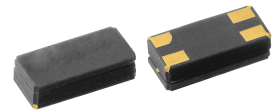
### TYPICAL FREQUENCY TEMPERATURE CHARACTERISTICS:



# 32.768kHz LOW POWER SMD CRYTAL OSCILLATOR

**ASH7KW**

 **RoHS/RoHS II Compliant**



3.2 x 1.5 x 1.0mm

## PART IDENTIFICATIONS:

ASH7KW-32.768kHz-□-□

### Operating Temp.

L: -40°C ~ +85°C

H: -40°C ~ +125°C

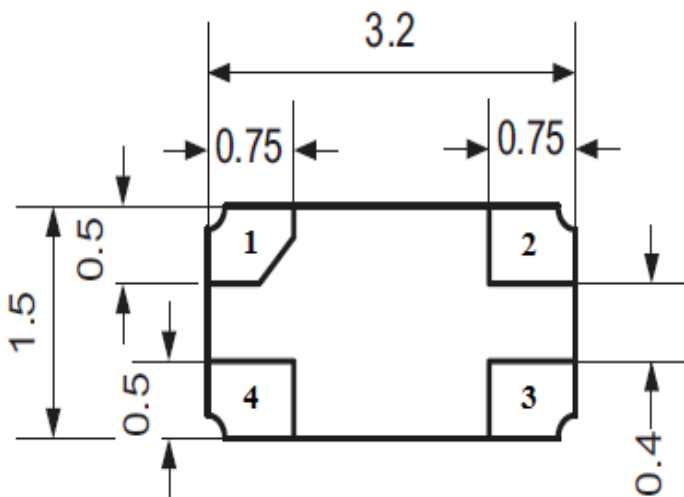
### Packaging

Blank: Bulk

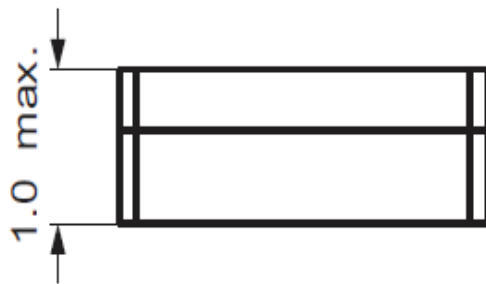
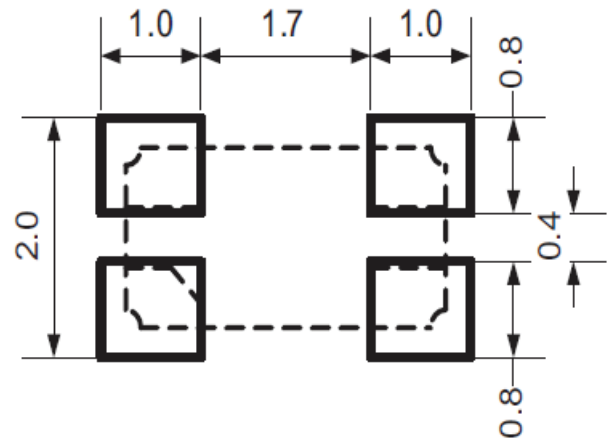
T: 1000pcs/Reel

T3: 3000pcs/Reel

## OUTLINE DIMENSIONS:



### Recommended Land Pattern



| Pin No. | Function |
|---------|----------|
| 1       | Output   |
| 2       | GND      |
| 3       | OE       |
| 4       | Vdd      |

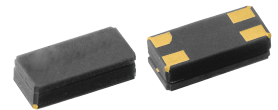
Dimensions: mm

All Dimensions are typical values.

# 32.768kHz LOW POWER SMD CRYTAL OSCILLATOR

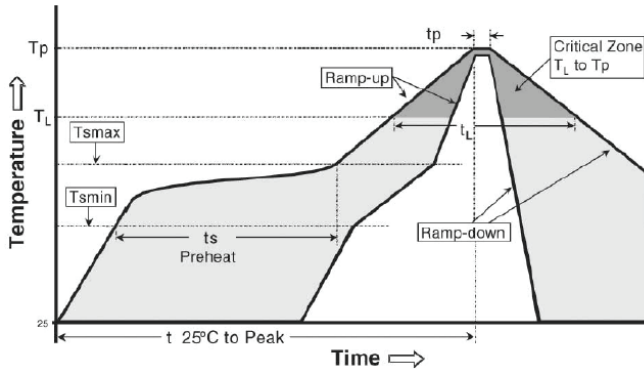
ASH7KW

 RoHS/RoHS II Compliant



3.2 x 1.5 x 1.0mm

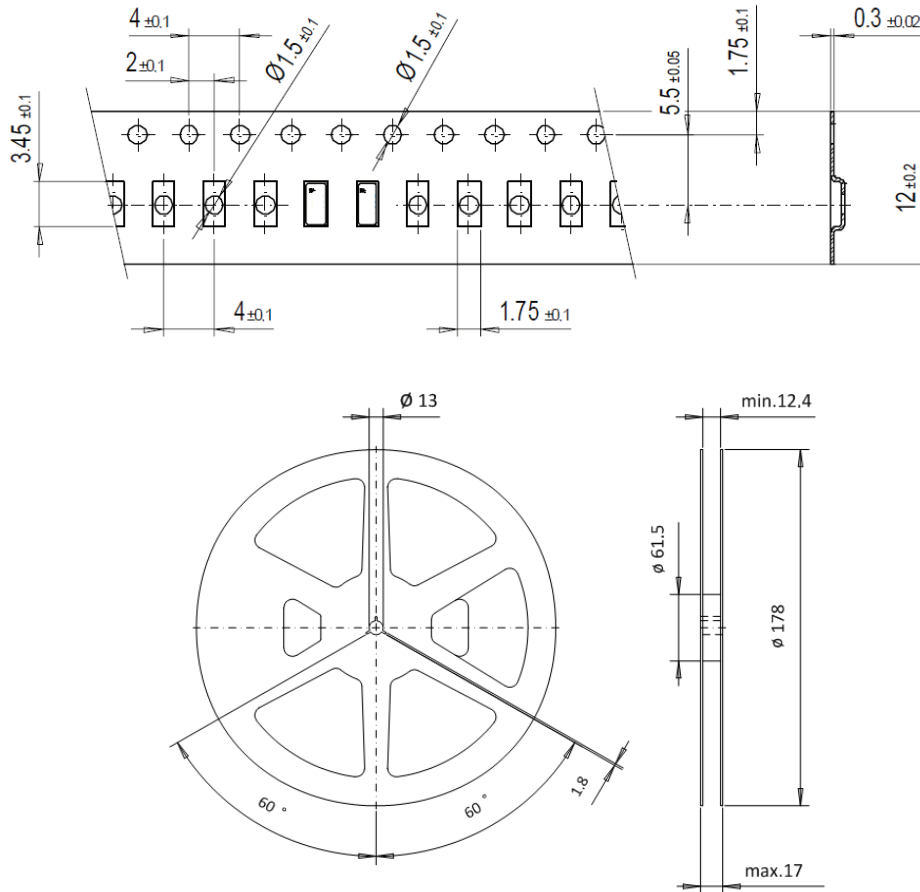
## REFLOW PROFILE:



| Temperature Range                           | Symbol                                 | Condition      | Unit |
|---|--|----------------|------|
| Average Ramp up Rate                        | (T <sub>Smax</sub> to T <sub>p</sub> ) | 3°C/second max | °C/s |
| Ramp Down Rate                              | T <sub>cool</sub>                      | 6°C/second max | °C/s |
| Time 25°C at Peak Temperature               | T <sub>to-peak</sub>                   | 8 minutes max  | m    |
| <b>Preheat</b>                              |  |                |      |
| Temperature Min                             | T <sub>Smin</sub>                      | 150            | °C   |
| Temperature Max.                            | T <sub>Smax</sub>                      | 200            | °C   |
| Time T <sub>Smin</sub> to T <sub>Smax</sub> | T <sub>s</sub>                         | 60-180         | Sec  |
| <b>Soldering above Liquidus</b>             |  |                |      |
| Temperature Liquidus                        | T <sub>L</sub>                         | 217            | °C   |
| Time above Liquidus                         | t <sub>L</sub>                         | 60-150         | Sec  |
| <b>Peak Temperature</b>                     |  |                |      |
| Peak Temperature                            | T <sub>p</sub>                         | 260            | °C   |
| Time within 5°C of Peak Temperature         | t <sub>p</sub>                         | 20-40          | Sec  |

## TAPE & REEL:

T= Tape and reel (1,000pcs/reel)  
T3= Tape and reel (3,000pcs/reel)



Dimensions: mm

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