

# 32.768kHz SMD Low Profile Crystal

**ABS05**

Request Samples



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**1.6 x 1.0 x 0.5mm**  
**RoHS/RoHS II Compliant**  
**MSL Level = N/A**

## Features

- Small form factor Tuning Fork Crystal (1.60 x 1.00 x 0.50 mm package)
- Low profile - ideal for height constraint designs
- Available with standard  $\pm 20$  ppm set-tolerance
- Extended temperature -40°C to +85°C for industrial applications

## Applications

- Wireless Modules
- Internet of Things (IoT)
- Bluetooth / Bluetooth Low Energy (BLE)
- Commercial & Industrial Applications
- Low Power MCU's, SoC's, Transceivers
- Communication & Measuring Equipment

## Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency	32.768			kHz	
Operation Mode	Flexural Mode (Tuning Fork)				
Operating Temperature	-40		+85	°C	
Storage Temperature	-55		+125	°C	
Frequency Tolerance @+25°C	-20		+20	ppm	<b>Standard</b> (See options if other than STD)
Temperature Coefficient:	-0.04	-0.03	-0.02	ppm/T <sup>2</sup>	
Turn-over temperature:	+20	+25	+30	°C	
Equivalent series resistance (ESR)			90	kΩ	
Shunt capacitance (C0)		1.3		pF	
Load capacitance (CL)	12.5			pF	<b>Standard</b> (See options if other than STD)
Drive Level			0.5	μW	
Aging @ +25°C±3°C	-3		+3	ppm	First Year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

## Part Identification

ABS05 – 32.768 kHz - [ ] - [ ] - [ ]

Load Capacitance
<b>Blank:</b> 12.5pF
9: 9pF
7: 7pF
6: 6pF
X: 4pF (*)

Frequency Tolerance
<b>Blank:</b> ±20ppm
1: ±10ppm (*)
3: ±25ppm
4: ±30ppm

(\*) Contact Abracon for availability

Packaging
<b>Blank:</b> Bulk
T: Tape & Reel (3000pcs/reel)
T5: Tape & Reel (5000pcs/reel)

(\*) "X: 4pF" option with ±20 ppm set tolerance is only available in 5k units per tape and reel; part #: ABS05-32.768kHz-X-T5  
 "X: 4pF" option with ±25 ppm set tolerance is only available in 3k units per tape and reel; part #: ABS05-32.768kHz-X-3-T3



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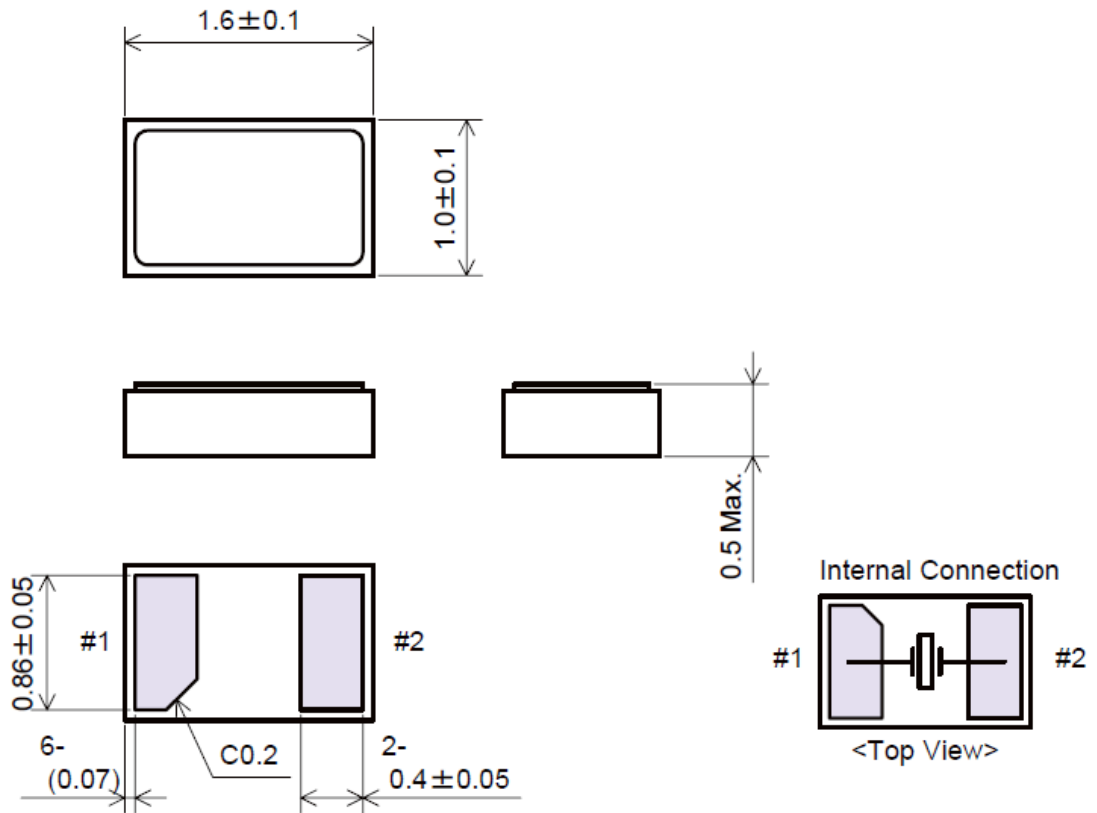


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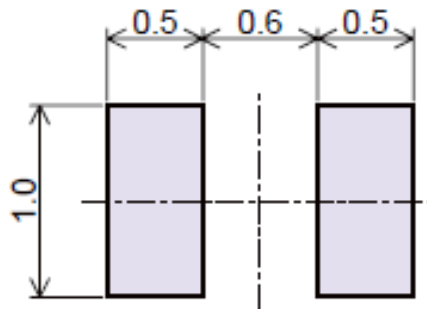


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## Mechanical Dimensions



### Recommended land pattern



Dimensions: mm



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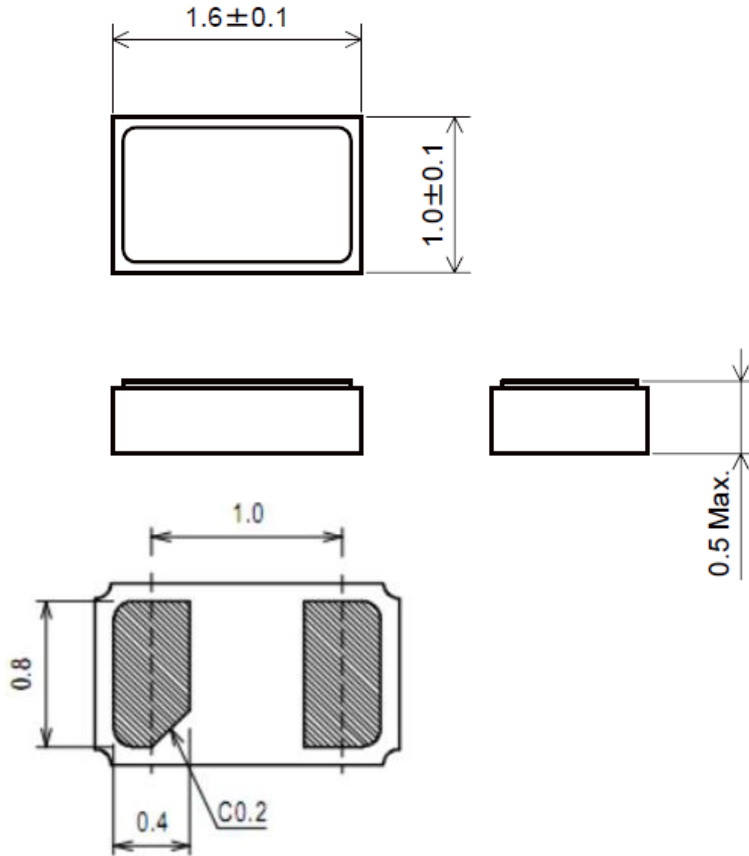


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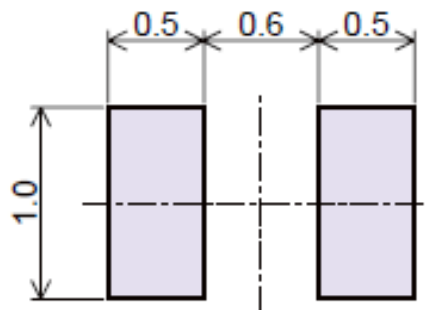


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## Alternative Mechanical Dimensions #1



## Recommended land pattern



Dimensions: mm



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## Reflow Profile [JEDEC J-STD-020]

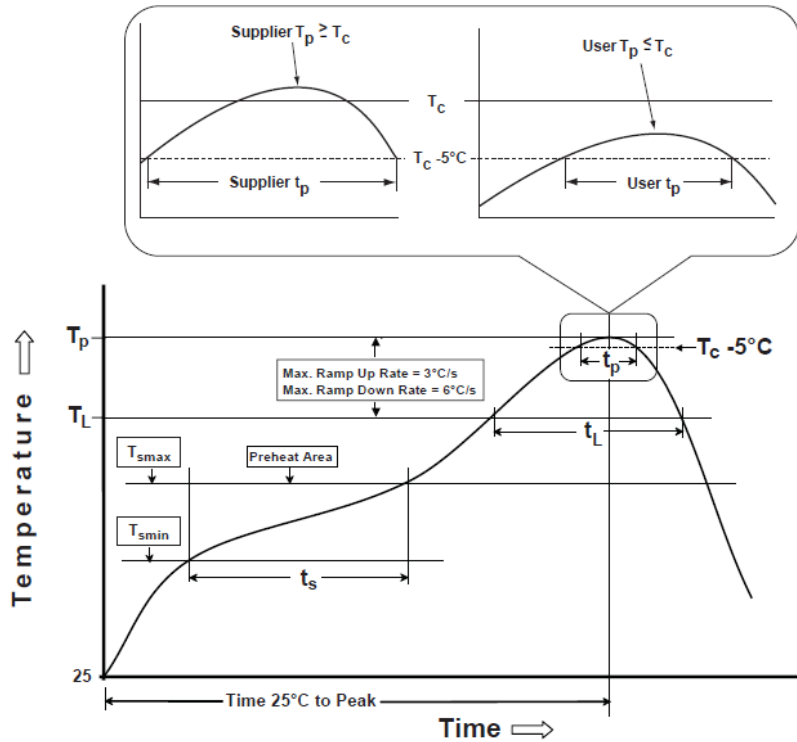


Table 1

SnPb Eutectic Process  
Classification Temperatures ( $T_c$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process  
Classification Temperatures ( $T_c$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum ( $T_{smin}$ )	100°C	150°C
Temperature maximum ( $T_{smax}$ )	150°C	200°C
Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	3°C/sec. max	3°C/sec. max
Liquidous temperature ( $T_L$ )	183°C	217°C
Time at liquidous ( $t_L$ )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature ( $T_p$ )*	see Table 1	see Table 2
Time ( $t_p$ )** within 5°C of the specified classification temperature ( $T_c$ )	20 sec.	30 sec.
Ramp-down rate ( $T_p$ to $T_{smax}$ )	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature ( $t_p$ ) is defined as supplier minimum and a user maximum.



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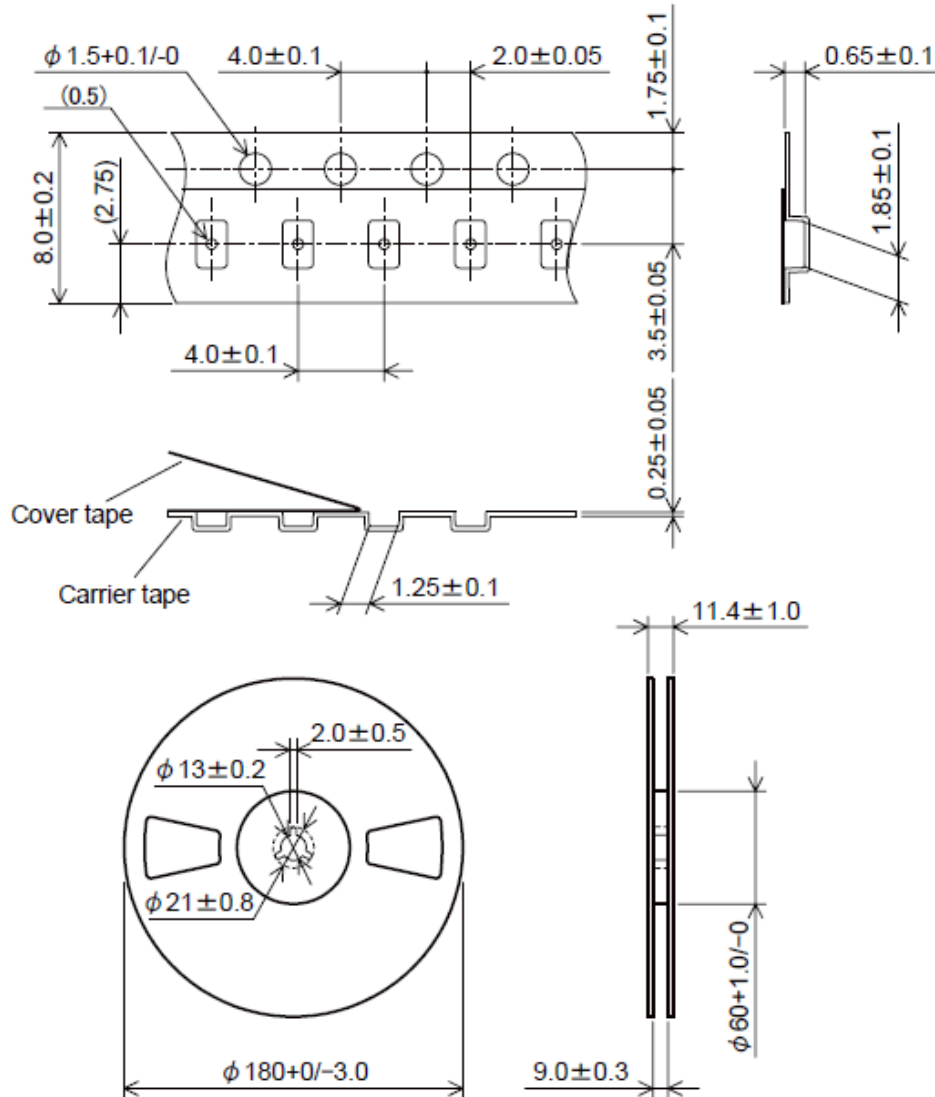


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## Packaging

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

T5=Tape and reel (5,000pcs/reel)



Dimensions: mm

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