

32.768kHz CMOS CERAMIC SMD CRYSTAL OSCILLATOR

ASHEK Series

Request Samples



Check Inventory



ESD Sensitive



3.2 x 2.5 x 0.9 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Features

- Ultra low uA current consumption with CMOS output
- Miniature ceramic package (3.2 x 2.5 x 0.9mm)
- Start up time less than 1 sec
- 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

Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency	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	-120		+10	ppm	- 20 to + 70 °C; referenced to frequency measured @ +25°C 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 _{dd})		0.9	1.5	uA	no load, V _{dd} =+ 3.3V
		1.8	2.5		no load, V _{dd} =+ 5.0V
		0.8	1.5		no load, V _{dd} =+ 2.8V
		0.6	1.5		no load, V _{dd} =+ 1.8V
		0.5	1.5		no load, V _{dd} =+ 1.5V
Output Load			15	pF	CMOS
Output Voltage	V _{OH}	V _{dd} -0.4		V	
	V _{OL}		0.4		
Tri-state function	"1" (V _{IH} ≥0.8*V _{dd}) : Oscillation [Note 1] "0" (V _{IH} <0.2*V _{dd}) : Hi Z				
Aging	-5.0		+5.0	ppm	@+25°C First year
Symmetry @1/2V _{dd}	40	50	60	%	Standard
Start-up Time			1	s	0.9*V _{dd} @ +25°C
Rise/Fall Time (Tr/Tf)			200	ns	

Note 1: Do not leave pad 1 (Tri-state function) floating (no connect). Pad 1 must be tied to V_{dd} (logic 1) for proper oscillation on pad 3.



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Options and Part Identification (left blank if standard)

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 / -120 to +10 ppm
L: -40°C to +85°C / -200 to +10 ppm

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

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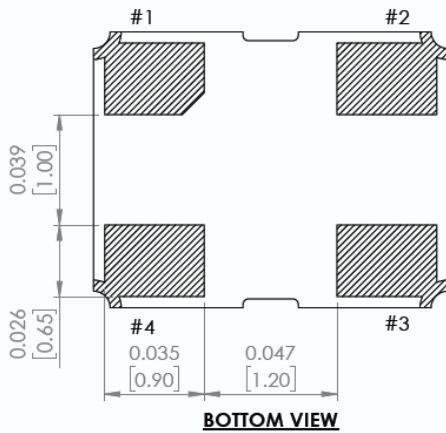
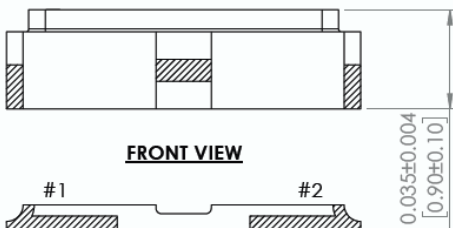
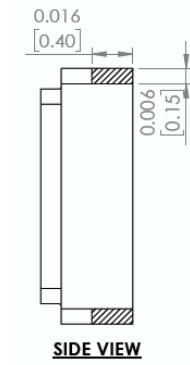
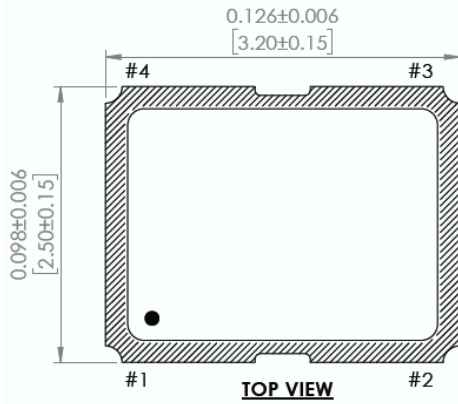


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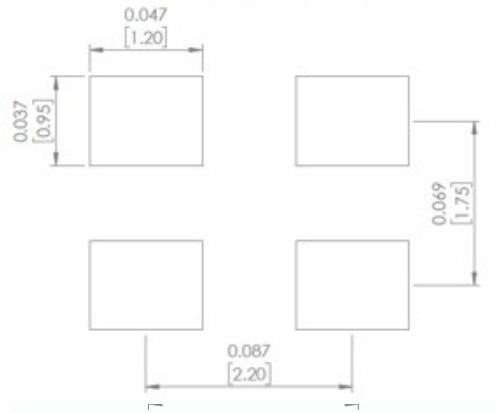


3.2 x 2.5 x 0.9 mm
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Mechanical Dimensions



Recommended Land Pattern



Note: Recommend using an approximately 0.01uF bypass Capacitor between PIN 2 and 4.

PIN #	Name
1	OE
2	GND
3	Output
4	Vdd

Dimensions: Inch [mm]

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Reflow Profile [JEDEC J-STD-020]

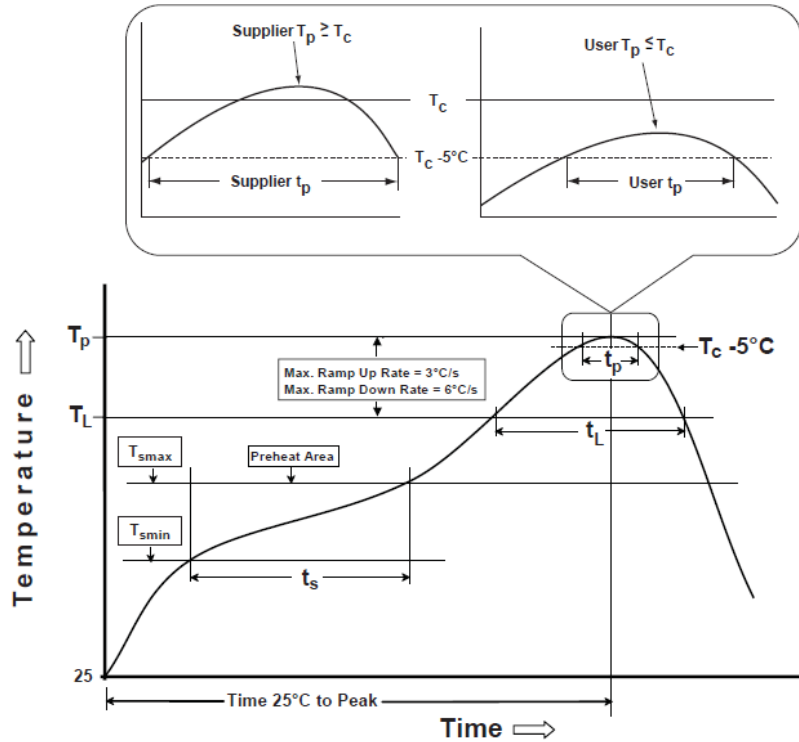


Table 1

SnPb Eutectic Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥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 ³ <350	Volume mm ³ 350-2000	Volume mm ³ >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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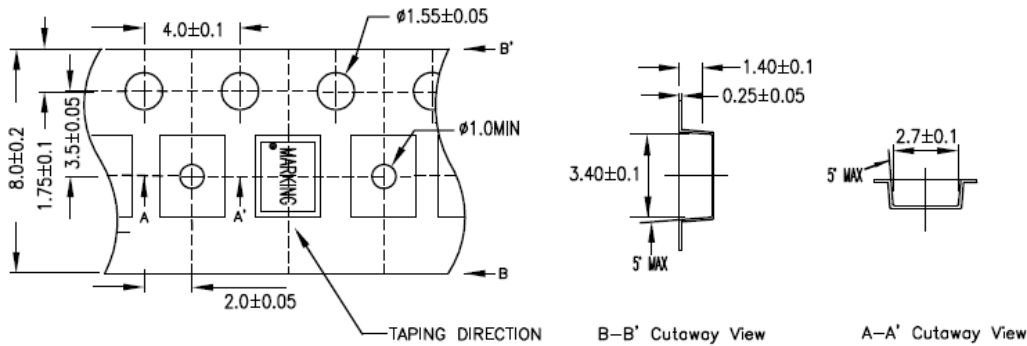
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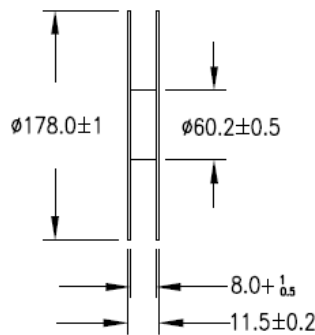
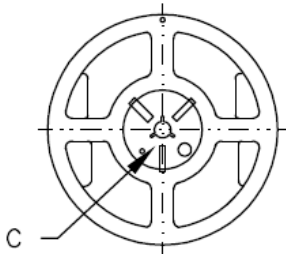
T= Tape and reel (1,000pcs/reel)

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

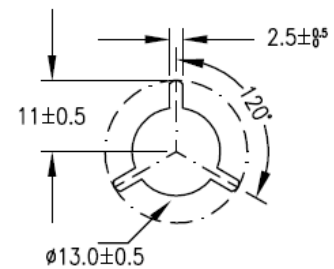
1. CARRIER TYPE



2. REEL



C. ENLARGE



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