32.768kHz TCXO

ATXK-H11

Request Samples | Check Inventory

ESD Sensitive

3.28 x 2.58 x 1.36 mm
RoHS/RoHS II Compliant
MSL Level = 1

Features

- Frequency Stability options: ±3.8ppm over -10 to +60°C, ±5.0ppm over -40 to +85°C, & ±8.0ppm over -40 to +105°C
- Output waveform CMOS
- Low power consumption
- Supply Voltage options: 3.3V and 2.5V

Applications

- Frequency reference for real time clocks (RTCs)
- Portable & wearable electronics
- Internet of Things (IoT)
- Consumer electronics
- Timing synchronization for networks, servers, hubs, routers & switches

Electrical Specifications [Note 1]

Parameters		Min.	Typ.	Max.	Units	Notes
Frequency (fc)			32.768		kHz	
Operating Temperature Range		-40		+105	°C	*See Options*
Storage Temperature Range		-55		+105	°C	
Frequency Stability Δf/f₀ vs:						
Tolerance		-2.5		+2.5	ppm	Reference to fc (at 25°C±2°C), Pre-reflow
Tolerance		-3.0		+3.0		Reference to fc (at 25°C ±2°C), 24 hours after reflow, one time
Temperature		-5.0		+5.0		*See Options* Reference to frequency tolerance reading (fo) at 25°C ±2°C
Load Change		-0.2		+0.2		Load ± 10%
Supply Voltage Change		-1.0		+1.0	ppm/V	
Aging		-3.0		+3.0	ppm	First year at +25°C±2°C
Timing error over time (±5 ppm over -40°C to +85°C)		±0.432 sec/day; ±12.960 sec/month; ±2.628 minutes/year				Reference to frequency tolerance reading (fo) at 25°C ±2°C
Supply Voltage (V_{DD})		+3.135	+3.3	+3.465	V	Option E
		+2.375	+2.5	+2.625		Option C
Supply Current (I_{DD})			1.0	2.0	µA	Without load
Disable Current				1.0	µA	Pad 1 logic low
Start-up Time				0.5	sec	
Rise and Fall Time (Tr/Tf)				100	ns	20% to 80% of waveform,15pF Load
Symmetry @ ½ V_{DD}		40		60	%	
Output Voltage	V_{OH}	90%V_{DD}			V	
	V_{OL}			10%V_{DD}		
Output Load				15	pF	CMOS
Output Waveform		CMOS				
Tri-state function [Note 2]		"1" (VIH≥0.8*VDD): Oscillation; "0" (VIL<0.2*VDD): No Oscillation/Hi Z			V	

Note 1: All measurements made over specified operating temperature range, at nominal V_{DD}, and 15pf load, unless otherwise specified.
Note 2: Do not leave pad 1 (tri-state) floating (no connect). Pad 1 must be tied to Vdd (logic 1) for proper oscillation on pad 3.

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Absolute Maximum Ratings

Parameters	Symbol	Conditions	Rating	Unit
Supply voltage range (3)	V_{DD}	Between V_{DD} and V_{SS}	-0.3 to +4.5	V
Input voltage range (3)	VIN	Between INH and V_{SS}	-0.3 to V_{DD}+0.3 (4)	V
Output voltage range (3)	VOUT	Output pad	-0.3 to V_{DD}+0.3 (4)	V
Junction temperature (3)	Tj	-	150	°C
Storage temperature range	TSTG	-	-55 to +105	°C

Note 3: **Absolute maximum ratings are the values that must not be exceeded. This product may suffer damage if any one of these parameter ratings is exceeded. Operation and characteristics are guaranteed only when the product is operated per the specification datasheet.**

Note 4: **V_{DD} is a V_{DD} value of recommended operating conditions.**

Part Identification

ATXK-H11-☐- 32.768kHz -☐ -☐

Vdd (V)
C: 2.5V±5%
E: 3.3V±5%

Packaging
Blank: Bulk
T3: 3000pcs/reel

Stability over OTR
B38: ±3.8ppm over -10°C to +60°C
E50: ±5.0ppm over -40°C to +85°C
J80: ±8.0ppm over -40°C to +105°C

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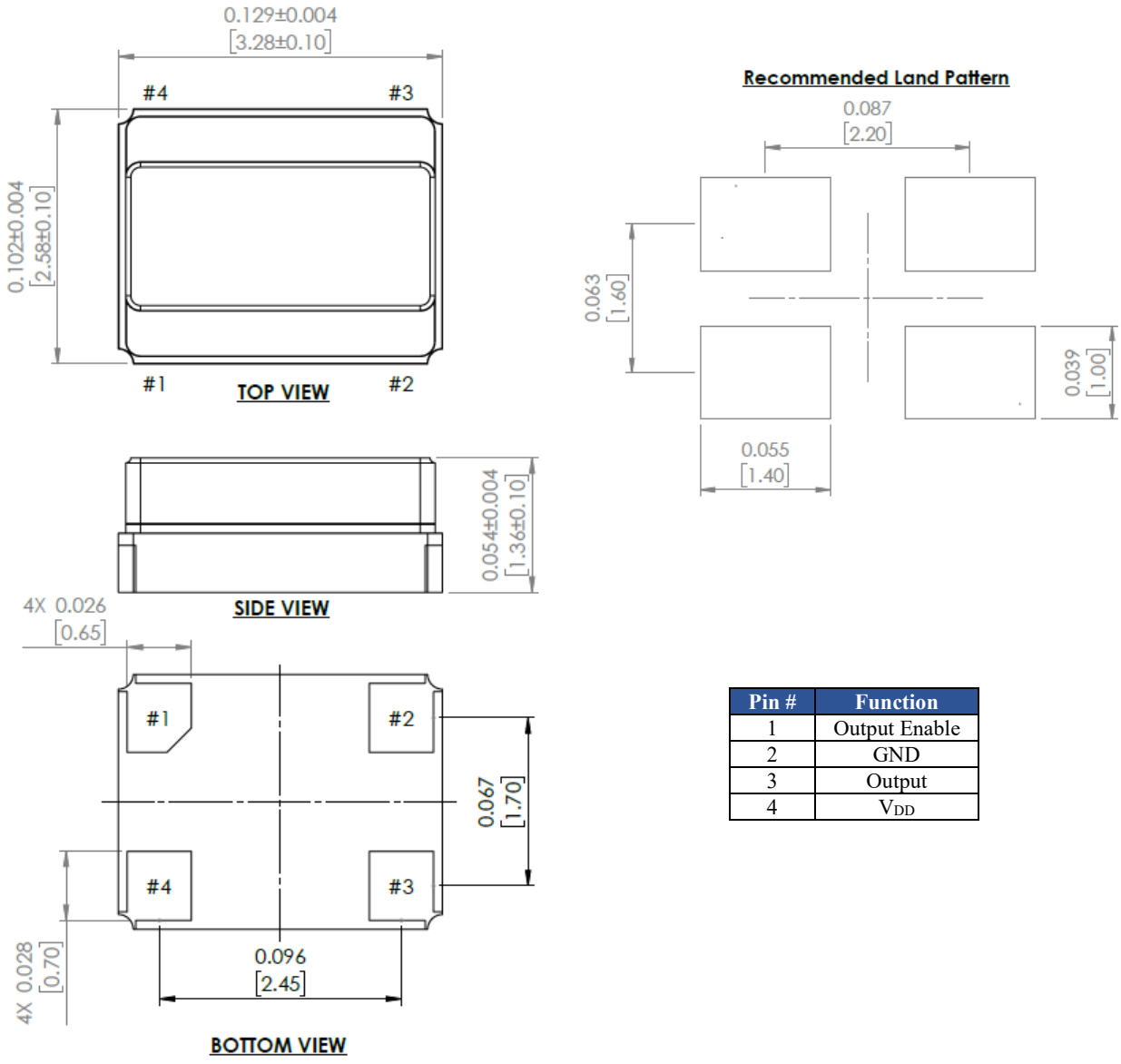
Mechanical Dimensions



Pin #	Function
1	Output Enable
2	GND
3	Output
4	V_{DD}

Dimensions: inches (mm)

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Reflow Profile [JDEC J-STD-020]

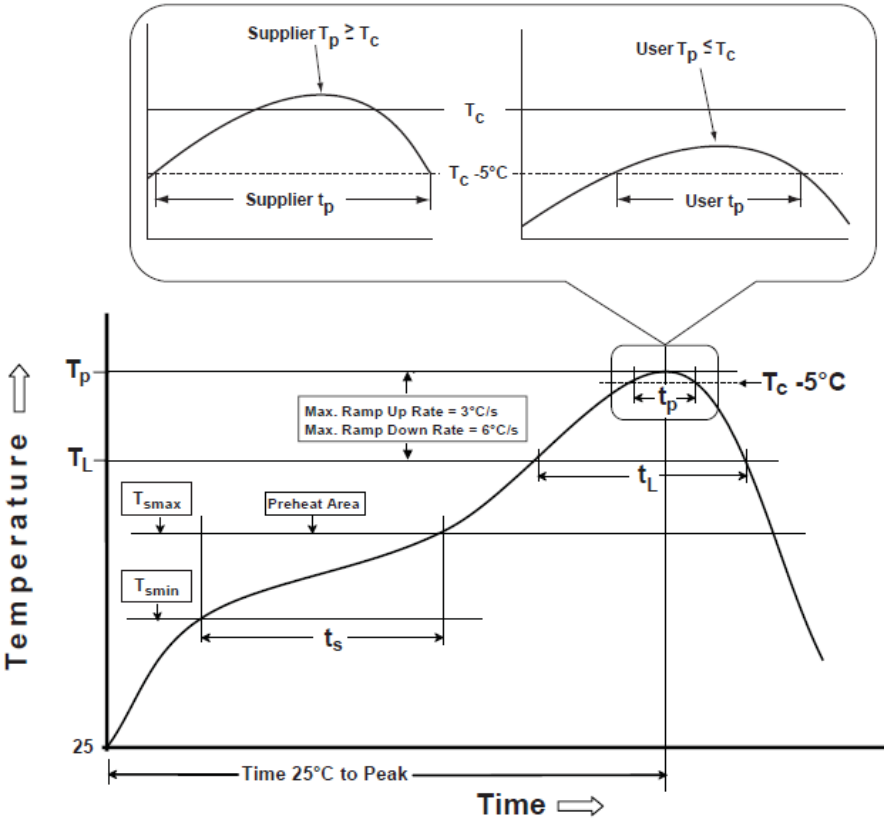

Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	**Volume mm³ <350**	**Volume mm³ ≥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 mm³ <350**	**Volume mm³ 350-2000**	**Volume mm³ >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

*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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Packaging

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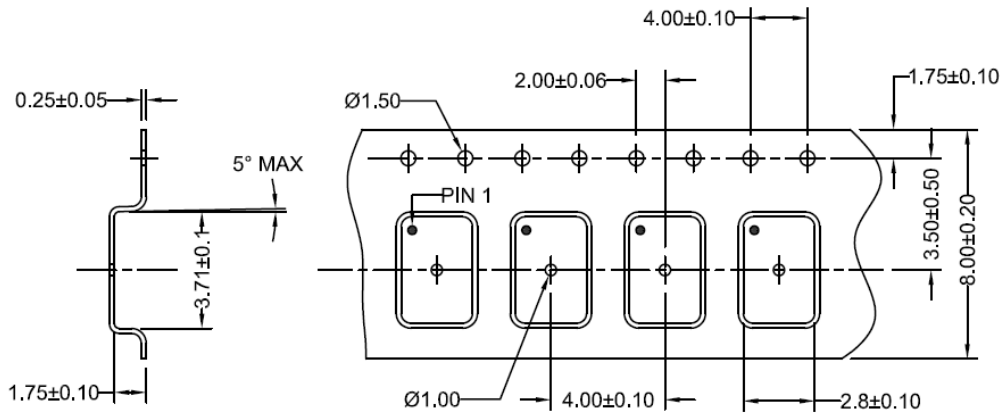

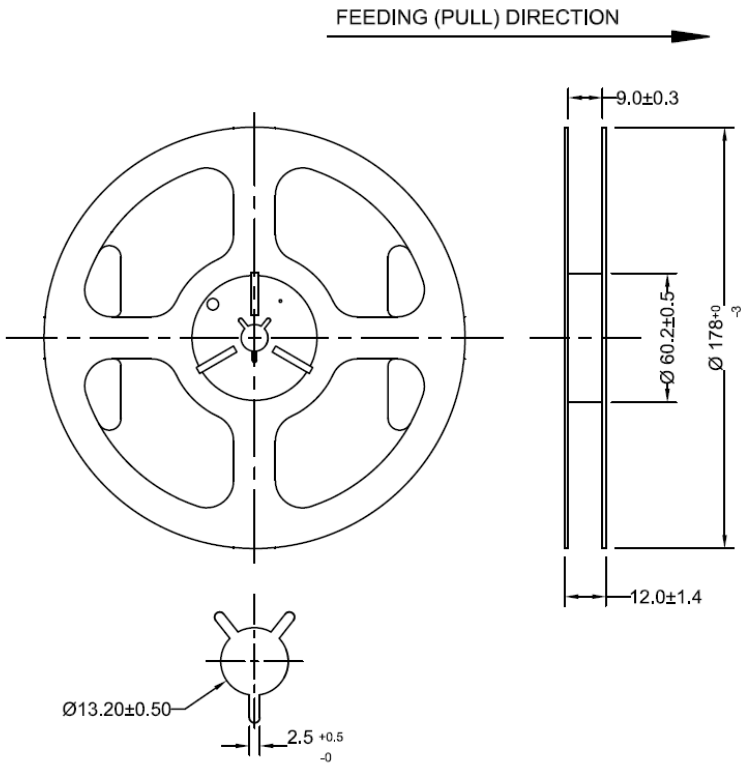

Dimensions: mm

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