Automotive & Industrial Grade 32.768kHz Continuous Voltage SMD Crystal XC

ASDKDVAIG

Request Samples | Check Inventory | ESD Sensitive | Pb

2.5 x 2.0 x 1.0 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Features

- Continuous V_{DD} operation from 1.62 V ~ 3.63 V
- Optimized for low current consumption
- Output Enable/Start & Disable/Stop function
- Output waveform CMOS/LVCMOS compatible
- Hermetically seam-sealed ceramic package
- AEC-Q200 Qualified
- Automotive Grade 1: -40°C to +125°C
- TS16949 Production Line Certified
- PPAP Available Upon Request

Applications

- Infotainment Systems
- Keyless Entry & Startup
- GPS & Navigation
- Comfort control
- ADAS (Advanced Driver Assistance Systems)
- Vehicle to Vehicle Communication
- LiDAR (Light Detection and Ranging)
- In-vehicle Networking
- Powertrain & Drive Control
- Power Control & Conversion
- Industrial Control & Automation

Electrical Specifications

Parameters		Min.	Typ.	Max.	Units	Notes
Frequency			32.768		kHz	
Operating Temperature Range		-40.0		+85	°C	See options
Storage Temperature Range		-55.0		+125	°C	
Overall Frequency Stability [Note 1]		-100		+100	ppm	See options
Supply Voltage (Vdd)		+1.62		+3.63	V	
Tri-state function [Note 2]		"1" (VIH≥0.7*Vdd) or Open: Oscillation; "0" (VIL<0.3*Vdd): No Oscillation/Hi Z			V	
Output Load				15	pF	CMOS
Output Voltage	V_{OH}	0.9*Vdd			V	
	V_{OL}			0.1*Vdd		
Aging 1 year @25°C± 3°C		-3.0		+3.0	ppm	
Aging 5 years @25°C± 3°C		-5.0		+5.0	ppm	
Symmetry @ ½ Vdd		45	50	55	%	
Start-up Time				30	ms	
Rise and Fall Time (Tr/Tf) @10%Vdd-90%Vdd, 15pF load				30	ns	
Disable Current				5	µA	
Supply Current (Idd) @25°C± 3°C	Vdd = 3.3V		10	15	µA	No Load
	Vdd = 2.5V		9	14	µA	No Load
	Vdd = 1.8V		8	13	µA	No Load

Note 1: Overall frequency stability includes initial frequency tolerance @25°C± 3°C and stability over the operating temperature range.
Note 2: Do not leave pin 1 ($\overline{INH}$) floating. If pin 1 ($\overline{INH}$) is not utilized for toggling, it must be tied to Vdd (logic 1).

Part Identification

ASDKDVAIG-32.768kHz- [ ] [ ] - [ ]

Operating Temp.
L: -40°C ~ +85°C
M: -40°C ~ +105°C
K: -40°C ~ +125°C

Overall Freq. Stability
C: ± 50 ppm
Q: ± 100 ppm

Packaging
Blank: Bulk
T3: 3k pcs / reel

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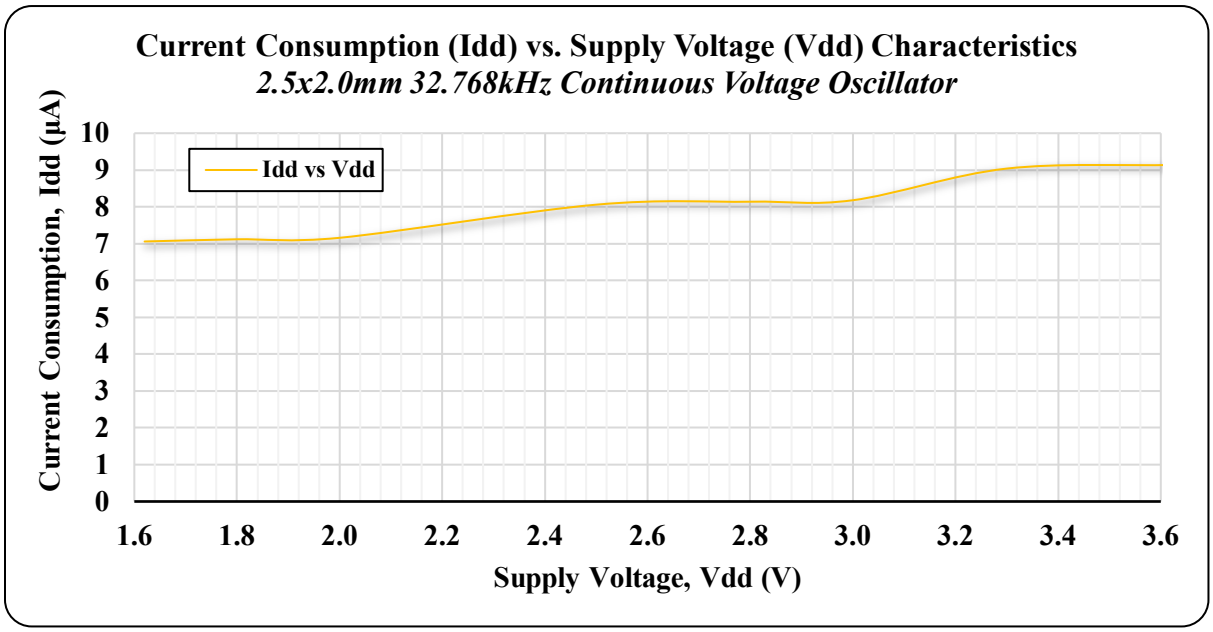
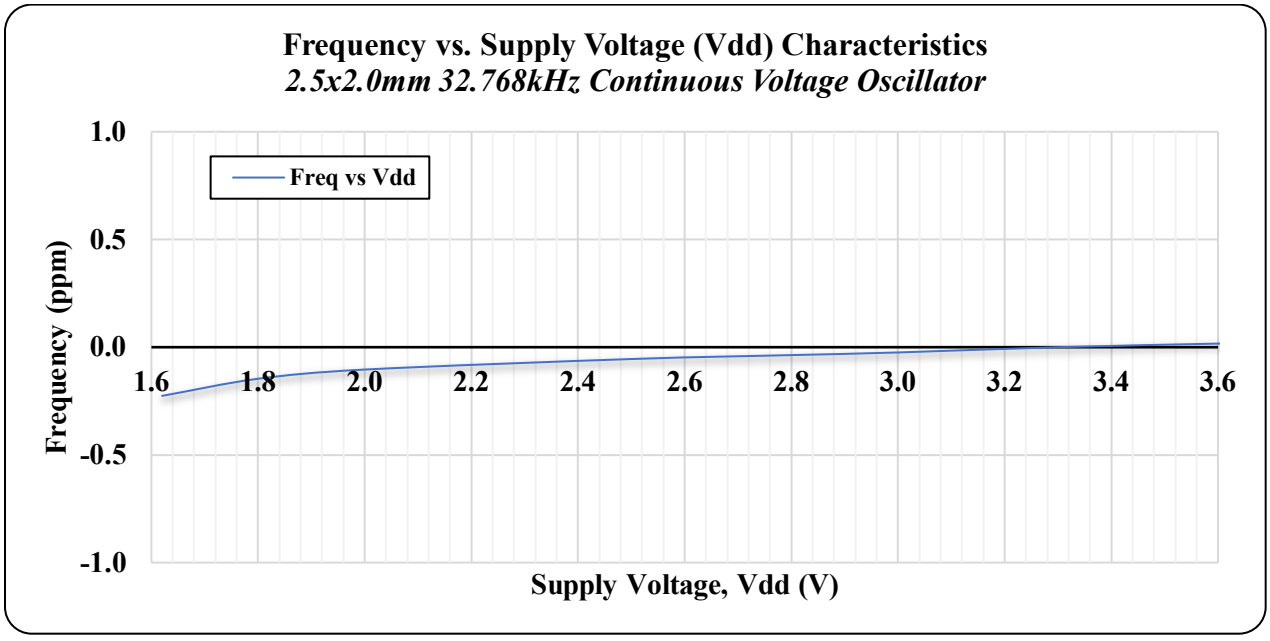
Typical Current Consumption (Idd) vs. Supply Voltage (Vdd) Characteristics [@ 25°C± 3°C, No Load]



Typical Frequency vs. Supply Voltage (Vdd) Characteristics [@ 25°C± 3°C, Normalized to Vdd=3.3Vdc]



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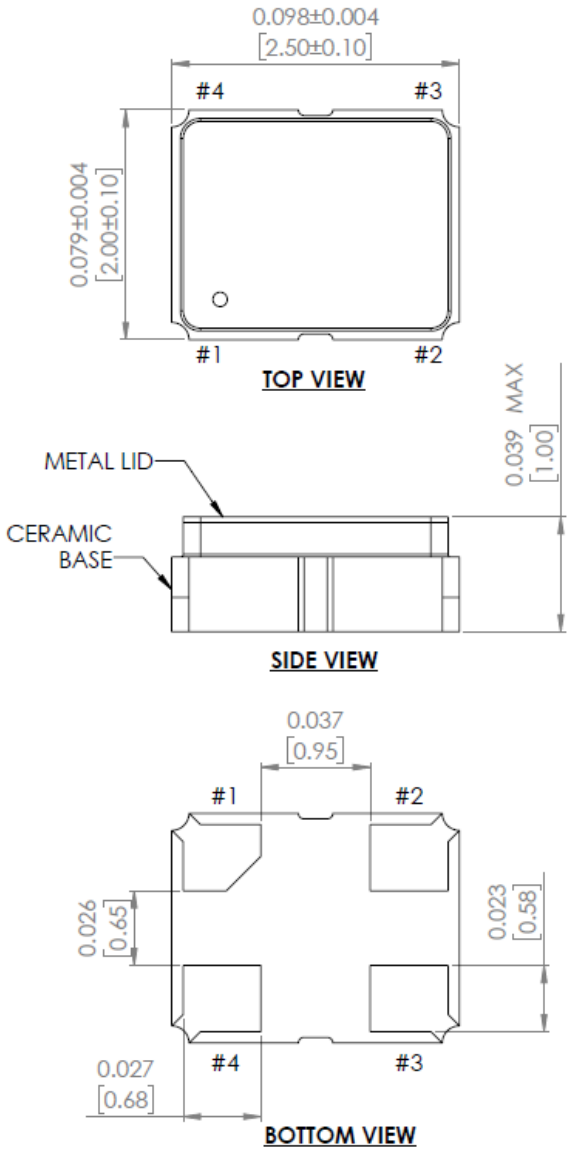
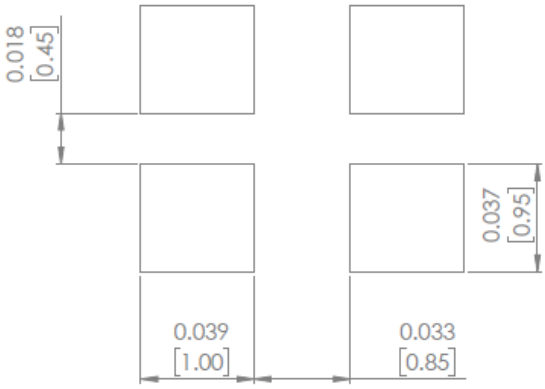
Mechanical Dimensions



Recommended Land Pattern



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

$\overline{INH}$ Function	
#1	#3 (Output)
Open	Active
"H" Level	Active
"L" Level	High Z (No Oscillation)

Note 3:
-Do not leave Pin 1 ($\overline{INH}$) floating
-If Pin 1 ($\overline{INH}$) is not utilized for toggling, it must be tied to Vdd (logic 1)

Note 4:
Recommended to use approximately 0.01µF bypass capacitor between PIN 2 and PIN 4

Dimensions: inches (mm)

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Reflow Profile [JDEC J-STD-020]

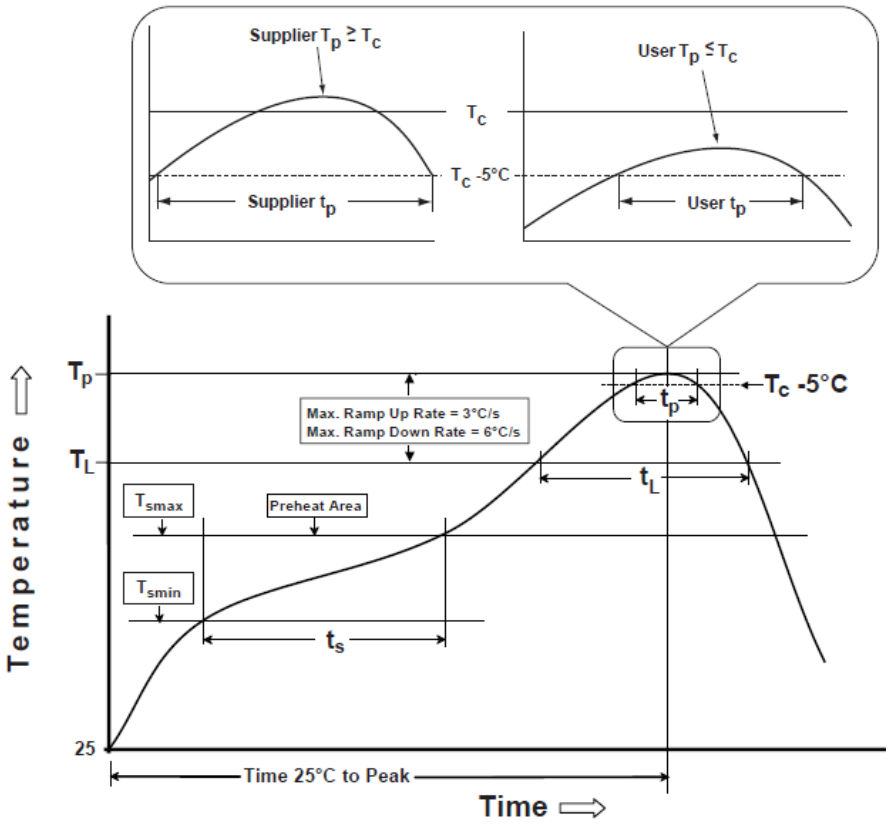

Table 1

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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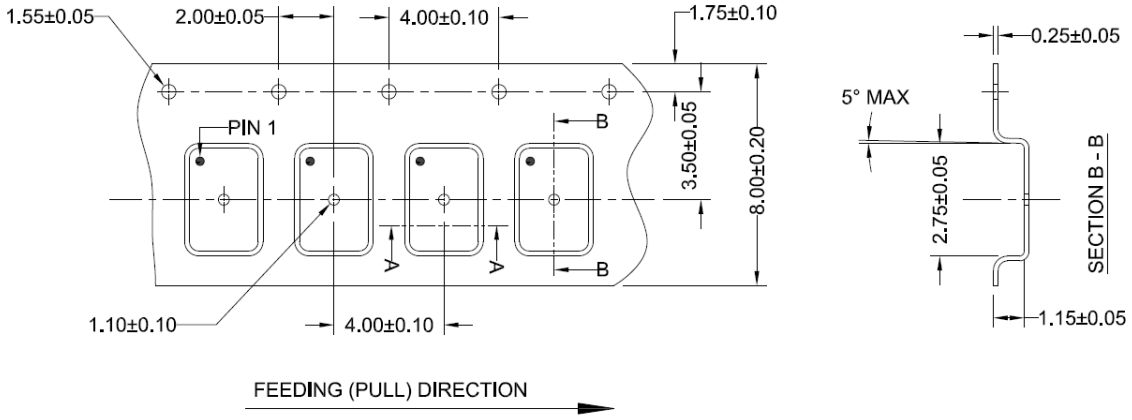
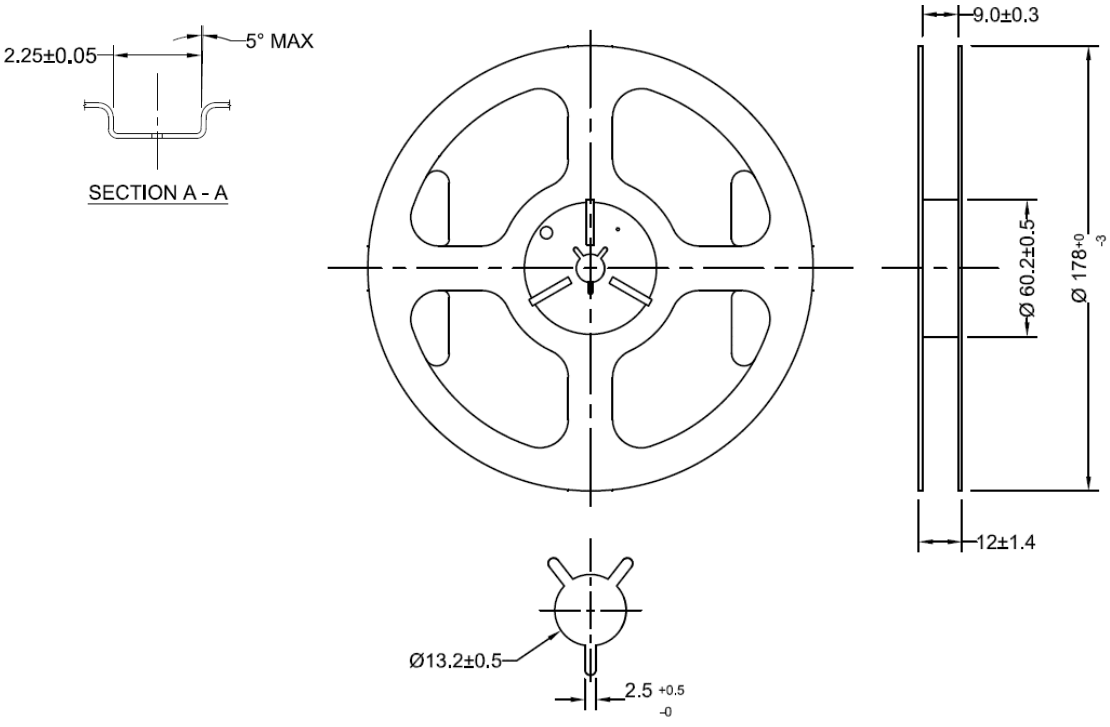
Packaging

T3: 3,000pcs/reel





Dimensions: mm

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