Automotive & Industrial Grade CMOS-compatible SMD Crystal Oscillator

ASEAIG

Request Samples | Check Inventory | ESD Sensitive | Pb

3.2 x 2.5 x 1.2 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Features

- AEC-Q200 Qualified
- Automotive Grade 1: -40°C to +125°C
- TS16949 Production Line Certified
- PPAP Available Upon Request
- Hermetically Seam-sealed Ceramic Package
- RoHS/RoHS II Compliant and Pb free

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

Key Electrical Specifications

Parameters		Min.	Typ.	Max.	Units	Notes
Frequency Range		1.25		156.25	MHz	
Operating Temperature		-40		+125	ºC	Option “blank”; See options
Storage Temperature		-55		+125	ºC	Option "X, blank, L, N"
Overall Frequency Stability [Note 1]		-50		+50	ppm	Option “C”; See options
		-100		+100		Option “blank”; See options
		-150		+150		Option “R”; See options
Supply Voltage (Vdd)		+1.71	+1.8 ~ +3.3	+3.465	V	Option “5”
		+3.135	+3.3	+3.465		Option “blank”
		+2.85	+3.0	+3.15		Option “1”
		+2.375	+2.5	+2.625		Option “2”
		+1.71	+1.8	+1.89		Option “3”
Supply Current (Idd) into 15pF Load	Vdd = 3.3 V		2.5	7.0	mA	1.250~20.000 MHz
			4.4	13.0		20.999~40.000 MHz
			6.5	19.0		40.999~60.000 MHz
			20.0	40.0		60.999~156.0000 MHz
	Vdd = 3.0 V		2.5	7.0		1.250~20.000 MHz
			4.4	13.0		20.999~40.000 MHz
			6.5	19.0		40.999~60.000 MHz
			20.0	40.0		60.999~156.0000 MHz
	Vdd = 2.5 V		2.0	8.0		1.250~20.000 MHz
			3.0	8.0		20.999~40.000 MHz
			5.0	15.0		40.999~60.000 MHz
			20.0	40.0		60.999~156.0000 MHz
	Vdd = 1.8 V		1.0	4.0		1.250~20.000 MHz
			2.0	4.0		20.999~40.000 MHz
			3.0	6.0		40.999~60.000 MHz
			15.0	20.0		60.999~156.0000 MHz

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Parameters		Min.	Typ.	Max.	Units	Notes
Disable Current				10.0	µA	
Output Load				15	pF	CMOS
Output Voltage	V_{OH}	0.9*Vdd			V	
	V_{OL}			0.1*Vdd		
Tri-state function		"1" (VIH≥0.7*Vdd) or Open: Oscillation; "0" (VIH<0.3*Vdd): No oscillation/Hi Z				
Aging		-2.0		+2.0	ppm	@25°C± 3°C First year
Symmetry @1/2Vdd		40	50	60	%	Option "blank"
		45	50	55		Option "S"
Start-up Time			2.0	5.0	ms	
Rise and Fall Time (Tr/Tf)	Vdd = 3.3 V		2.5	4.0	ns	
	Vdd = 3.0 V		2.5	4.0		
	Vdd = 2.5 V		3.0	5.0		
	Vdd = 1.8 V		3.0	6.0		
RMS Phase Jitter @ +25°C (10 - 39MHz: 12kHz to 5MHz) (>39MHz: 12kHz to 20MHz)	Vdd = 3.3 V		0.5	< 1.0	ps	
	Vdd = 3.0 V		0.5	< 1.0		
	Vdd = 2.5 V		0.5	< 1.0		
	Vdd = 1.8 V		0.5	< 1.0		
Period Jitter RMS	Vdd = 3.3 V		3.0	5.0	ps	
	Vdd = 3.0 V		3.0	5.0		
	Vdd = 2.5 V		3.0	5.0		
	Vdd = 1.8 V		3.0	5.0		

Note 1: Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and 1st year

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Options and Part Identification (left blank if standard)

ASEAIG ☐- ☐ MHz - ☐ - ☐ - ☐ - ☐

Supply Voltage
Blank: 3.3V±5%
1: 3.0V±5%
2: 2.5V±5%
3: 1.8V±5%
5: 1.8V±5% ~ 3.3±5%

Freq. in MHz
e.g. 24.576MHz 14.31818MHz 26.000MHz

Operating Temp.
Blank: -40°Cto+125°C
N: -30°C to +85°C
L: -40°C to +85°C
X: -40°C to +105°C

Overall Freq. Stability
Blank: ±100ppm
R: ± 150 ppm
C: ±50ppm
P: ± 45 ppm (*)
F: ± 40 ppm (*)
H: ± 35 ppm (*)
K: ± 30 ppm (*)
W: ± 25 ppm (*)
J: ± 20 ppm (*)

Duty Cycle
Blank: 40/60% @ 1/2Vdd
S: 45/55% @ 1/2Vdd

Packaging
Blank: Bulk
T: 1k pcs / reel
T3: 3k pcs / reel

(*) Contact Abracon for Availability

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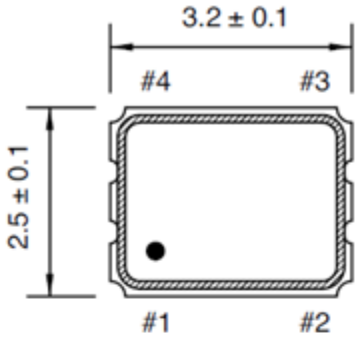
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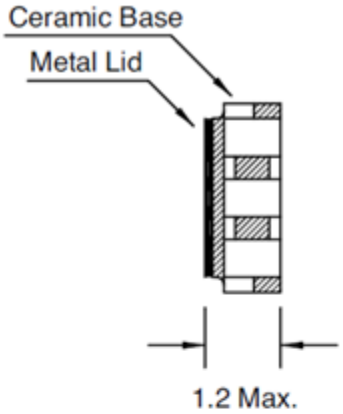
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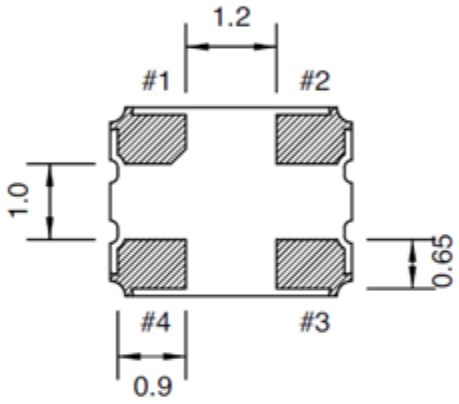
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MSL Level = N/A

Mechanical Dimensions

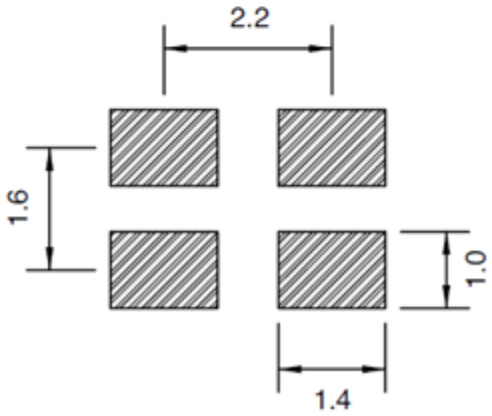




Pin #	Function
1	Tri-State
2	GND/Case
3	Output
4	Vdd



Recommended Land Pattern



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

Dimensions: mm

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Reflow Profile [JEDEC J-STD-020]

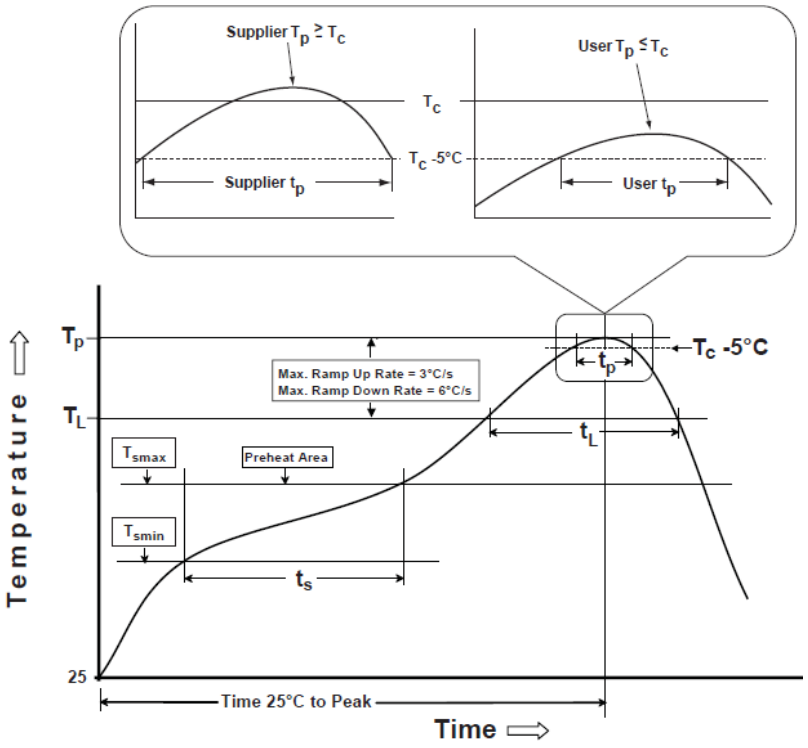


Table 1

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
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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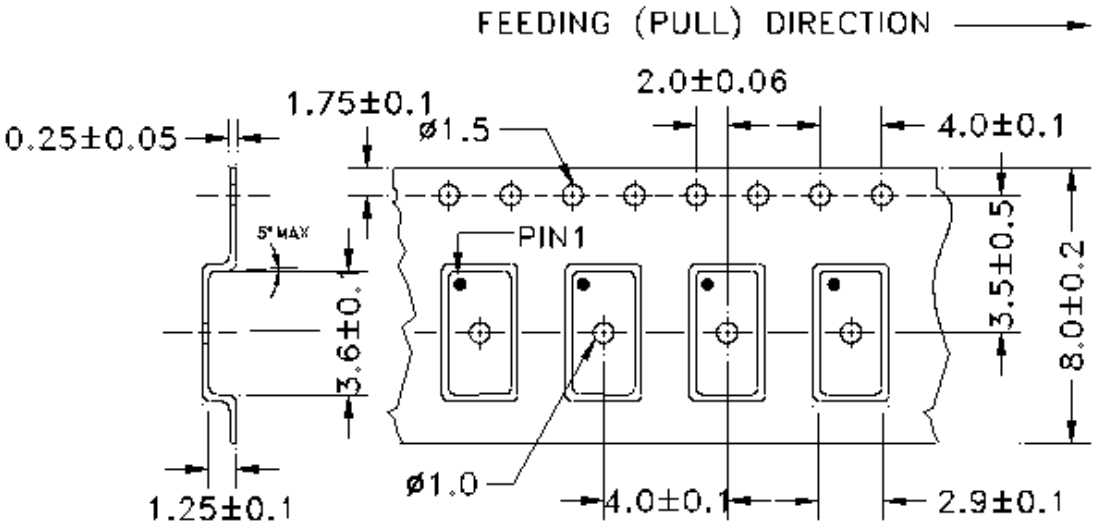
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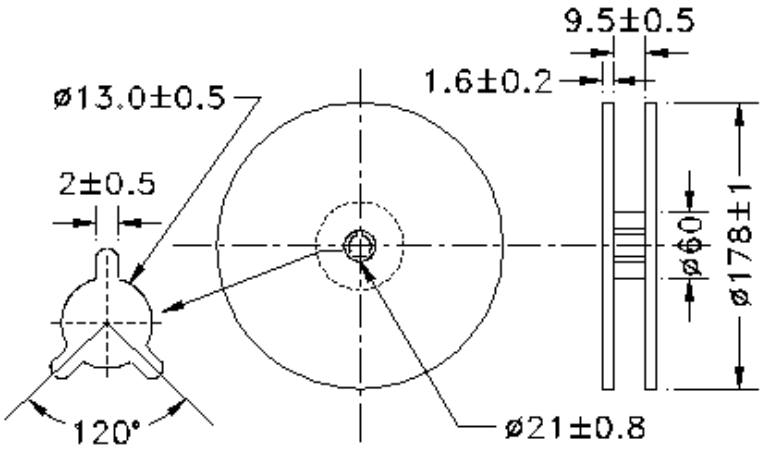
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MSL Level = N/A

Packaging:

Tape and Reel:
T: 1,000pcs/reel
T3: 3,000pcs/reel





Dimensions: mm

ATTENTION: Abracon LLC's products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependent Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon LLC is required. Please contact Abracon LLC for more information.

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