



**THE DATASHEET OF
ASEAIG-16.000MHZ-X-K-S-T**



Automotive & Industrial Grade SMD Crystal Oscillator



ASEAIG



3.20 x 2.50 x 1.20mm
 RoHS/RoHS II Compliant
 MSL = N/A: Not Applicable

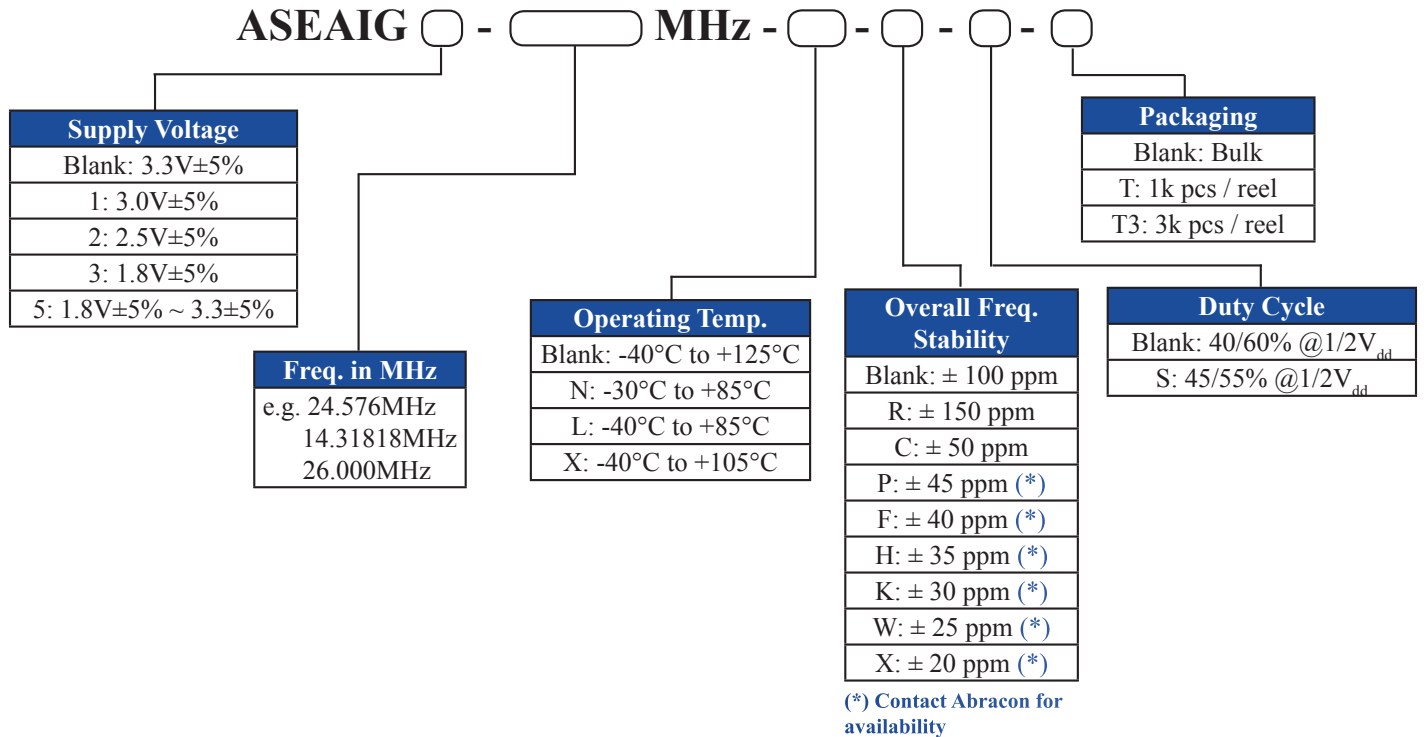
Features

- 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

Part Identification (left blank if standard)



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Electrical Specifications

Parameters		Min.	Typ.	Max.	Unit	Notes
Frequency Range		1.25		156.25	MHz	
Operating Temperature Range		-40		+125	°C	Option "blank"; See options
Storage Temperature		-55		+125	°C	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 (V_{dd})		+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 (I_{dd}) into 15pF Load		$V_{dd} = 3.3$ 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	60.999~156.000 MHz
		$V_{dd} = 3.0$ 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	60.999~156.000 MHz
		$V_{dd} = 2.5$ 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	60.999~156.000 MHz
		$V_{dd} = 1.8$ 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	60.999~156.000 MHz
Disable Current				10.0	μA	
Output Load				15	pF	CMOS
Output Voltage		V_{OH}		0.9* V_{dd}	V	
		V_{OL}		0.1* V_{dd}		
Tri-state function		"1" ($V_{IH} \geq 0.7 * V_{dd}$) or Open: Oscillation; "0" ($V_{IH} < 0.3 * V_{dd}$): No oscillation/Hi Z				
Aging		-2.0		+2.0	ppm	@25°C ± 3°C First year
Symmetry @1/2 V_{dd}		40	50	60	%	Option "blank"
		45	50	55		Option "S"
Start-up Time			2.0	5.0	ms	
Rise/Fall Time (T_r/T_f)		$V_{dd} = 3.3$ V		2.5	4.0	ns
		$V_{dd} = 3.0$ V		2.5	4.0	
		$V_{dd} = 2.5$ V		3.0	5.0	
		$V_{dd} = 1.8$ V		3.0	6.0	

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

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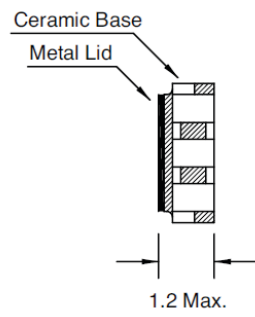
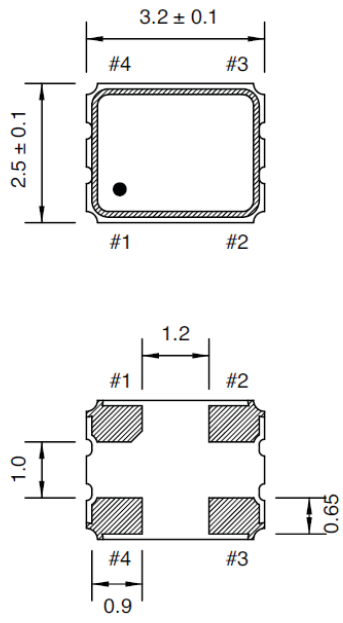


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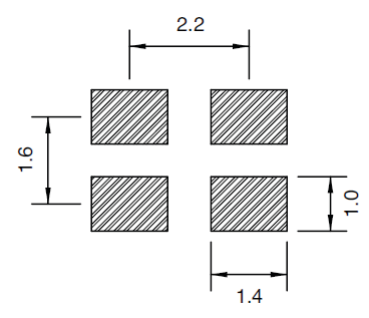
Electrical Specifications Cont.

Parameters		Min.	Typ.	Max.	Unit	Notes
RMS Phase Jitter @ +25°C (10-39MHz: 12kHz to 5MHz) (>39MHz: 12kHz to 20MHz)	$V_{dd} = 3.3\text{ V}$		0.5	< 1.0	ps	
	$V_{dd} = 3.0\text{ V}$		0.5	< 1.0		
	$V_{dd} = 2.5\text{ V}$		0.5	< 1.0		
	$V_{dd} = 1.8\text{ V}$		0.5	< 1.0		
Period Jitter RMS	$V_{dd} = 3.3\text{ V}$		3.0	5.0	ps	
	$V_{dd} = 3.0\text{ V}$		3.0	5.0		
	$V_{dd} = 2.5\text{ V}$		3.0	5.0		
	$V_{dd} = 1.8\text{ V}$		3.0	5.0		

Mechanical Dimensions



Recommend Land Pattern



Pin #	Function
1	Tri-state
2	GND/Case
3	Output
4	V_{dd}

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

Dimensions: mm



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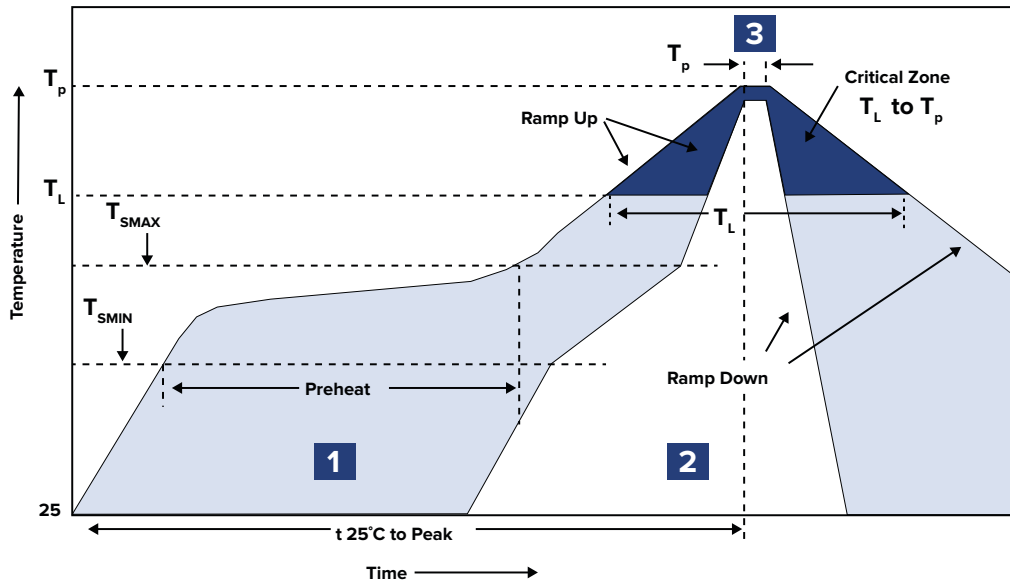


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Reflow Profile



Zone	Description	Temperature	Time
1	Preheat / Soak	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 180°C	60 ~ 120 sec.
2	Reflow	T_L 230°C	30 ~ 40 sec.
3	Peak heat	T_P 260°C ± 5°C	5 sec. MAX

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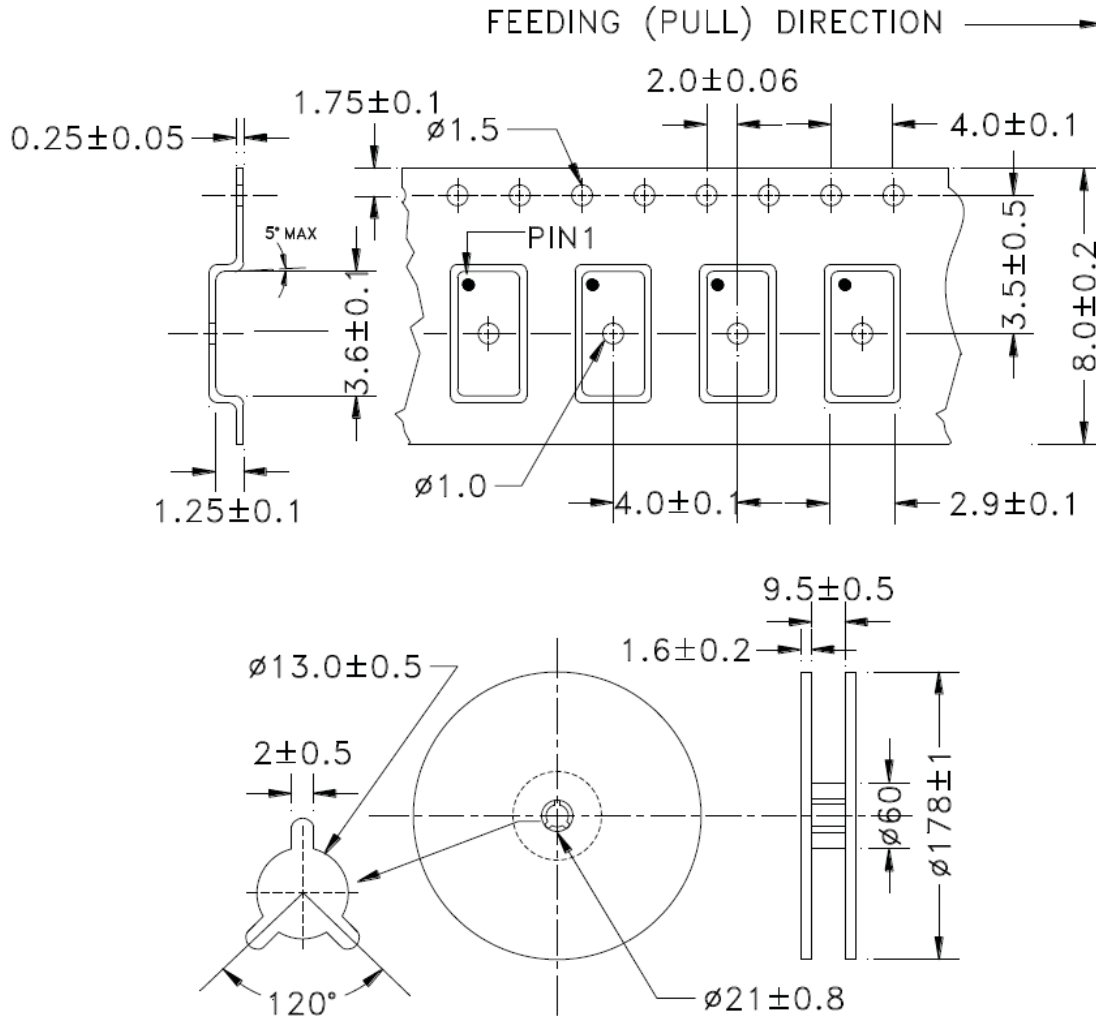
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Packaging

T: 1000pcs/reel
T3: 3000pcs/reel



Dimensions: mm

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