

Automotive and Industrial Grade SMD Crystal Oscillator



ASDAIG



2.50 x 2.00 x 0.95mm
RoHS/RoHS II Compliant
MSL = N/A: Not Applicable

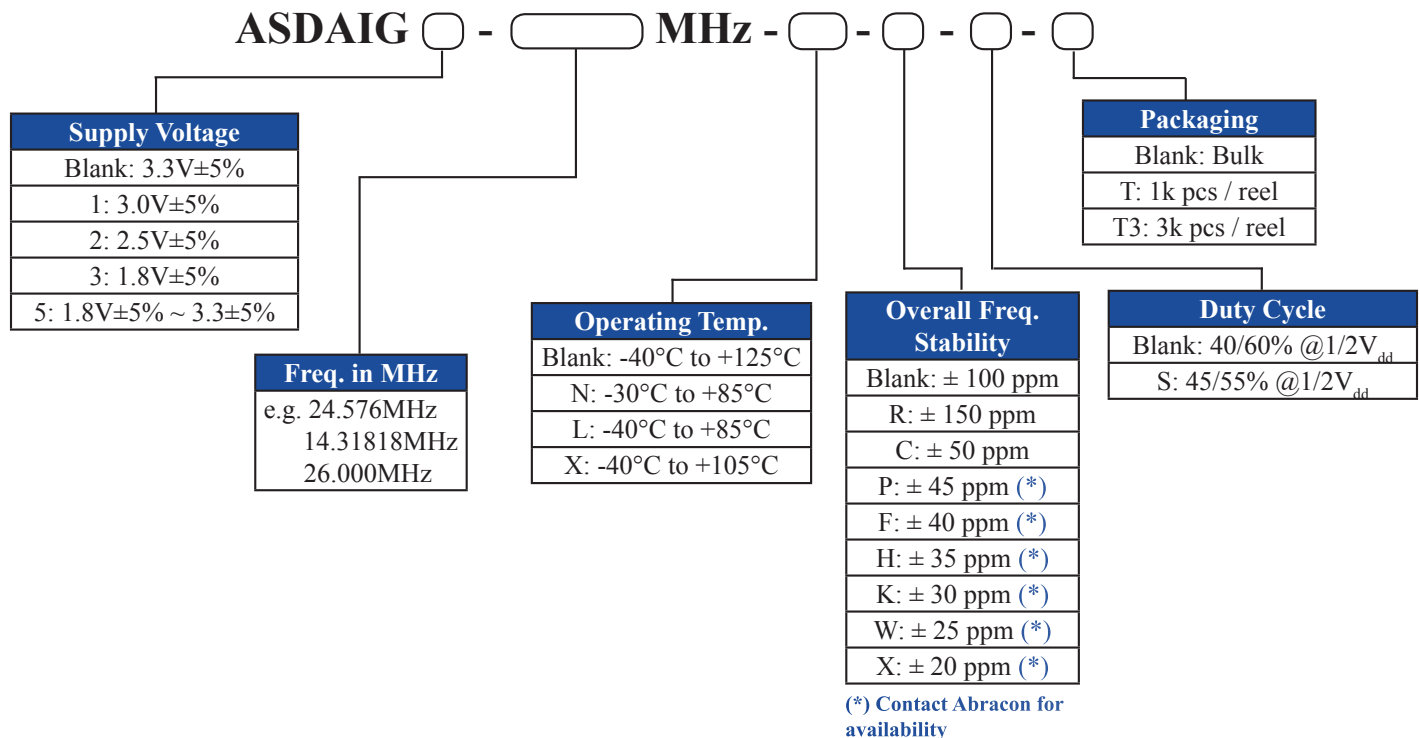
Features

- 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		4.0	mA	1.250~39.999 MHz
				9.0		40.000~48.999 MHz
				15.0		49.000~156.000 MHz
		$V_{dd} = 3.0$ V		3.5		1.250~39.999 MHz
				8.0		40.000~48.999 MHz
				15.0		49.000~156.000 MHz
		$V_{dd} = 2.5$ V		3.0		1.250~39.999 MHz
				7.0		40.000~48.999 MHz
				15.0		49.000~156.000 MHz
		$V_{dd} = 1.8$ V		2.0		1.250~39.999 MHz
				4.0		40.000~48.999 MHz
				10.0		49.000~156.000 MHz
Disable Current				10.0	μA	
Output Load				15	pF	CMOS
Output Voltage	V_{OH}	$0.9 \cdot V_{dd}$			V	
	V_{OL}			$0.1 \cdot V_{dd}$		
Tri-state function		"1" ($V_{IH} \geq 0.7 \cdot V_{dd}$) or Open: Oscillation; "0" ($V_{IH} < 0.3 \cdot V_{dd}$): 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	6	ns	1.250~39.999 MHz
			2	4		40.000~156.000 MHz
		$V_{dd} = 3.0$ V	2.5	6	ns	1.250~39.999 MHz
			2	4		40.000~156.000 MHz
		$V_{dd} = 2.5$ V	3	7	ns	1.250~39.999 MHz
			2.5	5		40.000~156.000 MHz
		$V_{dd} = 1.8$ V	3.5	8	ns	1.250~39.999 MHz
			3	6		40.000~156.000 MHz

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



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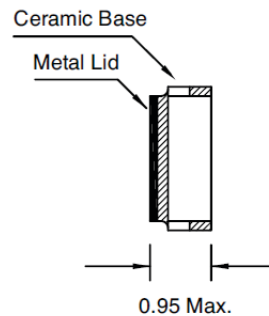
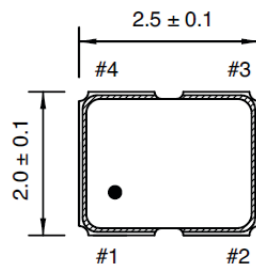


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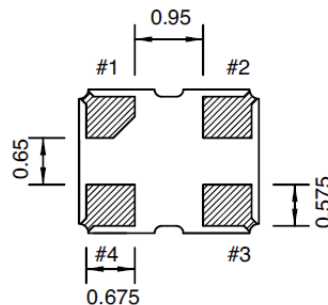
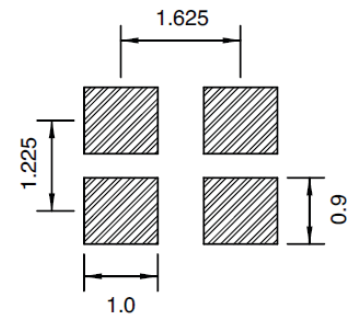
Electrical Specifications Cont.

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



Recommended 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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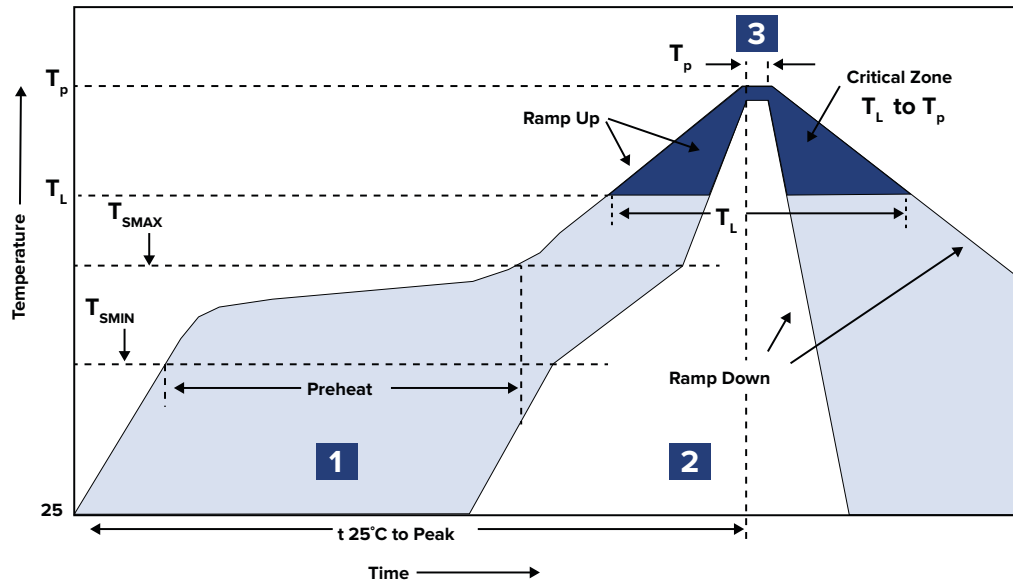


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Reflow Profile



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



Packaging

FEEDING (PULL) DIRECTION →

0.25±0.05 $\varnothing 1.50+1.0/-0$ 2.0±0.05 4.0±0.1

1.75±0.1 5° MAX 2.7±0.05 PIN1 3.5±0.1 8.0±0.2

0.85 max. $\varnothing 1.2$ max. 2.25±0.05

9.0±1 $\varnothing 60\pm 1$ $\varnothing 179\pm 2$

Dimensions: mm

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