

# Automotive & Industrial Grade Ceramic SMD Crystal

## ABM8AAIG Series

Request Samples



Check Inventory



3.2 x 2.5 x 1.0 mm  
RoHS/RoHS II Compliant  
Pb in ceramic, exemption (7c-I)  
MSL Level = N/A

### Features

- AEC-Q200 Qualified
- Automotive Grade 1: -40°C to +125°C
- Automotive Grade 0: -40°C to +150°C
- TS16949 Production Line Certified
- PPAP Available Upon Request
- Hermetically seam-sealed Ceramic Package
- RoHS/RoHS II Exemption

### 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	Minimum	Typical	Maximum	Units	Notes
Frequency Range	8.000		54.000	MHz	
Operation Mode	Fundamental				
Operating Temperature <sup>[Note 1]</sup>	-40		+125	°C	Option “blank”; See options
	-40		+150		Option “V”; See options
Storage Temperature	-40		+125	°C	Options “blank, J, D”
	-40		+150		Option “V”
Frequency Tolerance @+25°C	-50		+50	ppm	Option “blank”; See options
Frequency Stability over the Operating Temperature (ref. to +25°C)	-100		+100	ppm	Option “blank”; See options
	-150		+150		Option “R”; See options
Equivalent series resistance (R1)			500	Ω	8.000 – 9.899MHz
			120		9.900 – 11.999MHz
			50		12.000 – 54.000MHz
Shunt capacitance (C0)			2.0	pF	
Load capacitance (CL)	8			pF	Option “blank”; See options
Drive Level		10	200	μW	
Aging	-3		+3	ppm	@25°C±3°C First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

**Note 1: Operating temperature range option -40°C ~ +150°C only available in select frequencies and electrical performance options. Please contact Abracon for availability.**



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### Options and Part Identification (left blank if standard)

ABM8AAIG -  MHz -  -  -  -  -

#### Frequency in MHz

Please specify the frequency in MHz.  
e.g. 16.384MHz

#### Load Capacitance (pF)

Blank: 8pF

If not standard, please specify CL  
in pF or S for series

#### Packaging

Blank: Bulk

T: 1k pcs / reel

T3: 3k pcs / reel

#### Freq. Stability

Blank:  $\pm 100$  ppm

R:  $\pm 150$  ppm

Z:  $\pm 50$  ppm

Y:  $\pm 30$  ppm

Contact Abracon  
for Availability

#### Custom ESR if other than standard

Blank = Standard  
Custom = Rxx or Rxxx  
Specify an xx or xxx  
value in  $\Omega$   
(e.g.: R40 or R100)

#### Operating Temp.

Blank:  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (\*\*)

D:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

J:  $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$  (\*\*\*)

V:  $-40^{\circ}\text{C} \sim +150^{\circ}\text{C}$  (\*)

(\*) Only offered @ Freq. Stability  
Option R

(\*\*) Only offered @ Freq. Stability  
Option Blank and R.

(\*\*\*) Only offered @ Freq.  
Stability Option Z, Blank, and R.

(\*) Contact Abracon  
for Availability

#### Freq. Tolerance

Blank:  $\pm 50$  ppm

1:  $\pm 30$  ppm

2:  $\pm 15$  ppm



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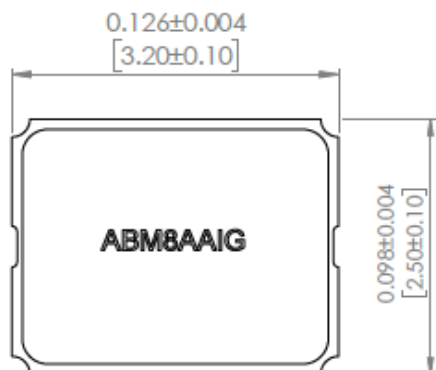
3.2 x 2.5 x 1.0 mm

RoHS/RoHS II Compliant

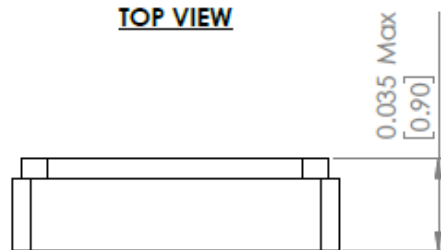
Pb in ceramic, exemption (7c-I)

MSL Level = N/A

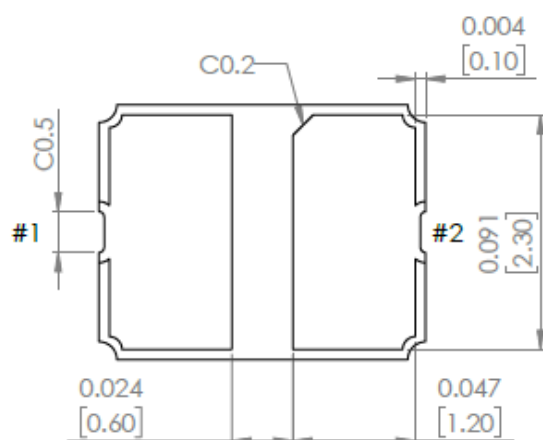
## Mechanical Dimensions



**TOP VIEW**

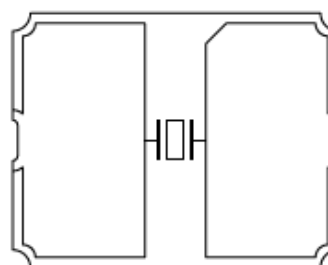


**FRONT VIEW**



**BOTTOM VIEW**

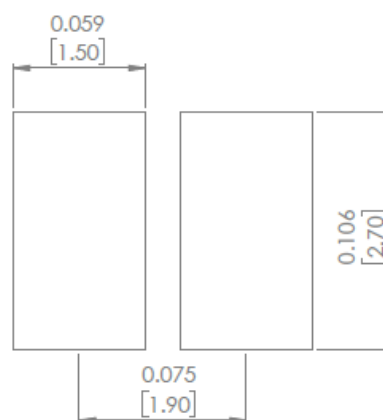
## CONNECTION



Pin#1: Crystal

Pin#2: Crystal

## Recommended Land Pattern



Dimensions: mm

Sealing Method = Seam Sealed



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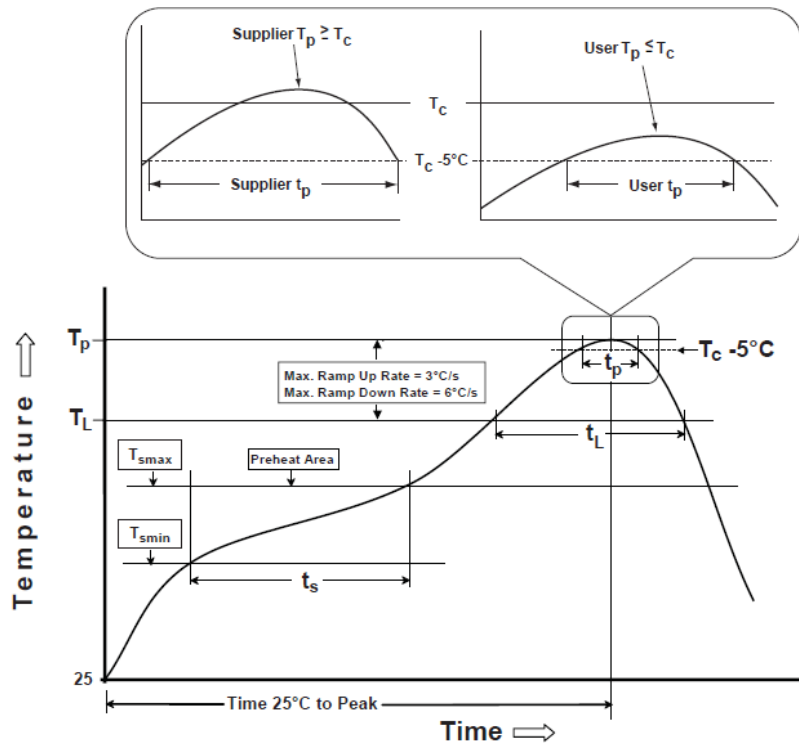


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## Reflow Profile [JEDEC J-STD-020]



**Table 1**

### SnPb Eutectic Process

#### Classification Temperatures ( $T_C$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥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 mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >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 ( $T_p$ )*	<b>see Table 1</b>	<b>see Table 2</b>
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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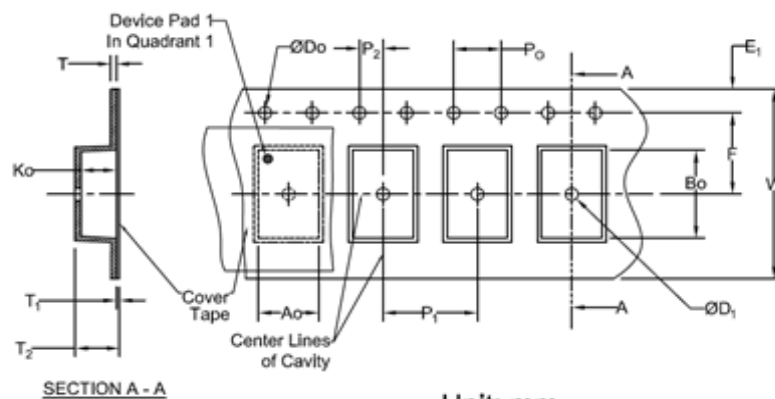
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**MSL Level = N/A**

## Packaging

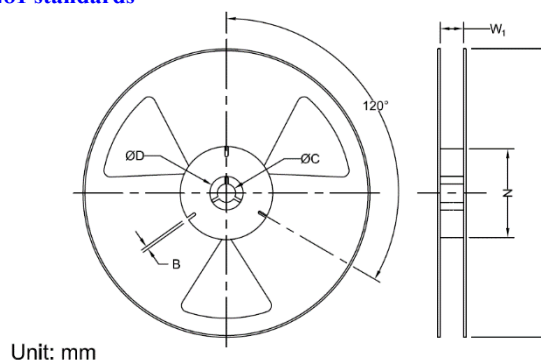
**T: 1,000pcs/reel**

**T3: 3,000pcs/reel**



Tape Specifications (mm)						
Ao	Bo	Do	D1 (Min)	E1	F	Ko
*	*	1.55±0.05	1.0	1.75±0.1	3.5±0.01	*
P1	P2	Po	T (Max)	T1 (Max)	T2 (Max)	W
4.0±0.1	2.0±0.05	4.0±0.1	0.6	0.1	2.5	8 ± 0.3

\* Compliant to EIA-481 standards



Reel Specifications (mm)					
A	B (Min)	C	D (Min)	N	W1
178	1.5	13.2±0.01	20.2	60.2±0.01	8±0.01

**Dimensions: mm**

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