

ABMM2-16.000MHZ-E2-T Datasheet

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DiGi Electronics Part Number	ABMM2-16.000MHZ-E2-T-DG
Manufacturer	Abracon LLC
Manufacturer Product Number	ABMM2-16.000MHZ-E2-T
Description	CRYSTAL 16.0000MHZ 18PF SMD
Detailed Description	16 MHz ±20ppm Crystal 18pF 50 Ohms 4-SMD, No Lead

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Purchase and inquiry

Manufacturer Product Number:

ABMM2-16.000MHZ-E2-T

Series:

ABMM2

Type:

MHz Crystal

Frequency Stability:

±20ppm

Load Capacitance:

18pF

Operating Mode:

Fundamental

Ratings:

-

Package / Case:

4-SMD, No Lead

Height - Seated (Max):

0.047" (1.20mm)

Manufacturer:

Abracon LLC

Product Status:

Active

Frequency:

16 MHz

Frequency Tolerance:

±20ppm

ESR (Equivalent Series Resistance):

50 Ohms

Operating Temperature:

-20°C ~ 70°C

Mounting Type:

Surface Mount

Size / Dimension:

0.240" L x 0.142" W (6.00mm x 3.60mm)

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.60.0050

Moisture Sensitivity Level (MSL):

Not Applicable

ECCN:

EAR99

CERAMIC SMD CRYSTAL

ABMM2

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6.0 x 3.5 x 1.2 mm
RoHS/RoHS II Compliant

MSL Level = N/A



Features

- Suitable for RoHS compliant reflow
- Seam sealed ceramic package assures high reliability
- Available tight tolerance and stability

Applications

- Computers, Modems, Microprocessors
- Communication, Test equipment

Key Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency Range	7.3728		100.000	MHz	
Operation Mode	7.3728– 30.000MHz	Fundamental			Standard
	30.001 – 100.000MHz	3 rd Overtone			Standard
	30.001 – 50.000MHz	Fundamental			See options
Operating Temperature	-10		+60	°C	See options
Storage Temperature	-40		+85	°C	
Frequency Tolerance @ +25°C	-20		+20	ppm	See options
Frequency Stability over the Operating Temperature (ref. to +25°C)	-20		+20	ppm	See options
Equivalent series resistance (ESR)	See table 1 below			Ω	
Shunt capacitance (C0)			7.0	pF	
Load capacitance (CL)		18.0		pF	Standard (See options if other than STD)
Drive Level		100	500	μW	
Aging	-2		+2	ppm	@25°C±3°C First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

Standard ESR

Frequency (MHz)	ESR(Ω) max
7.3728 – 7.999 (Fund)	140
8.000 – 10.000 (Fund)	72
10.001 – 20.000 (Fund)	50
20.001 – 50.000 (Fund)	40
30.001 – 47.999 (3 rd OT)	60
48.000 – 100.000 (3 rd OT)	80



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6.0 x 3.5 x 1.2 mm
RoHS/RoHS II Compliant
 MSL Level = N/A

Options and Part Identification (left blank if standard)

ABMM2- MHz - - - - -

Frequency in MHz

Please specify the Frequency in MHz
 e.g. 16.000MHz

Load Capacitance (pF)

Please specify CL in pF (8 to 33pF) or S for series
 Please contact Abracon for other values

Custom ESR if other than standard

R
: Specify a value in Ω (e.g.: R40)

Freq. Tolerance

1: ± 10 ppm
 7: ± 15 ppm

Packaging

Blank: Bulk
 T: 1000pcs / reel
 T2: 250pcs / reel

Oscillation Mode

Blank: Standard mode
 F: Fundamental AT for Frequencies > 30.000MHz

Frequency Stability (ppm)

Operating Temp.	±10	±15	±20	±30	±50	±100
0°C ~ +50°C	A3	-	A4	A6	-	-
-10°C ~ +50°C	B3	-	B4	B6	-	-
-10°C ~ +60°C	C1	C2	Std	C6	-	-
-20°C ~ +70°C	E1	-	E2	E6	-	-
-40°C ~ +85°C	-	-	D1	D6	D5	-
-40°C ~ +105°C	-	-	-	-	J5	J10
-40°C ~ +125°C	-	-	-	-	K5	K10



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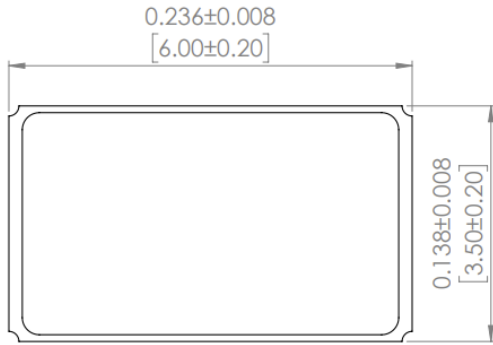
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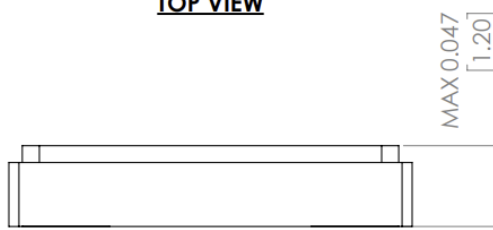
6.0 x 3.5 x 1.2 mm
RoHS/RoHS II Compliant
 MSL Level = N/A



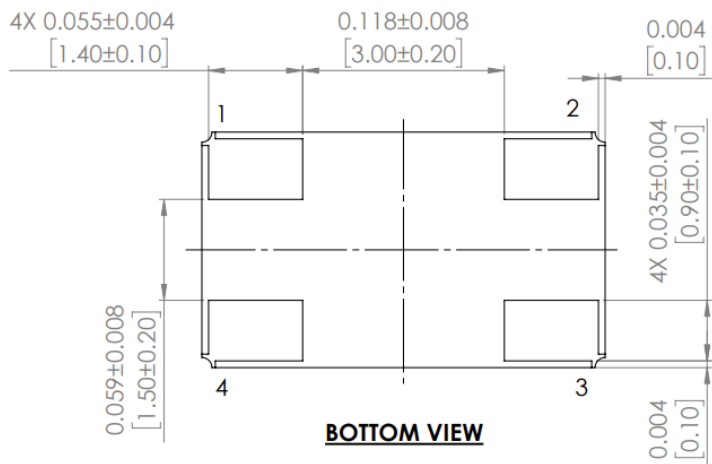
Mechanical Dimensions



TOP VIEW

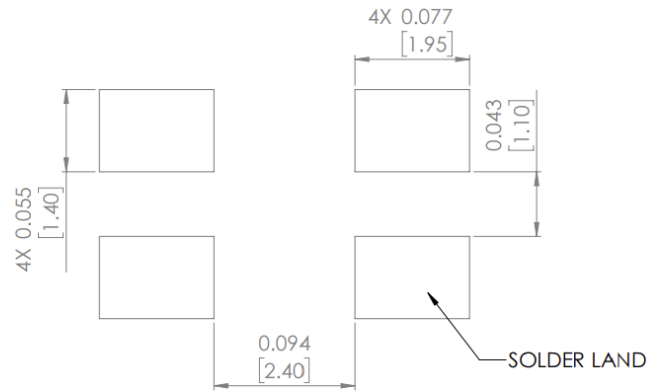


FRONT VIEW

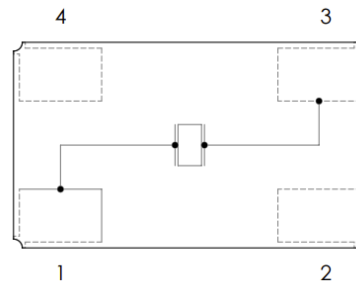


BOTTOM VIEW

RECOMMENDED LAND PATTERN



CIRCUIT



Note 1: Chamfer is not shown in illustration. A chamfer may appear on pad 1 or pad 4.

Note 2: A chamfer may be a rounded pad or diagonal corner.

Note 3: Pad 2 and pad 4 are connected to the metal lid. Please connect them to GND.

Dimensions: Inches [mm]



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Reflow Profile [JEDEC J-STD-020]

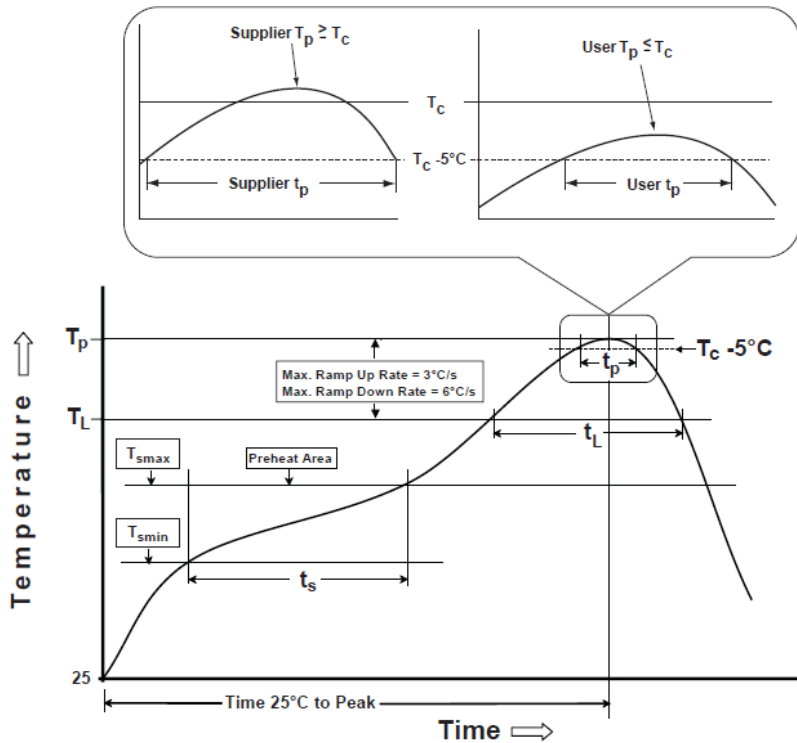


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥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 ³ <350	Volume mm ³ 350-2000	Volume mm ³ >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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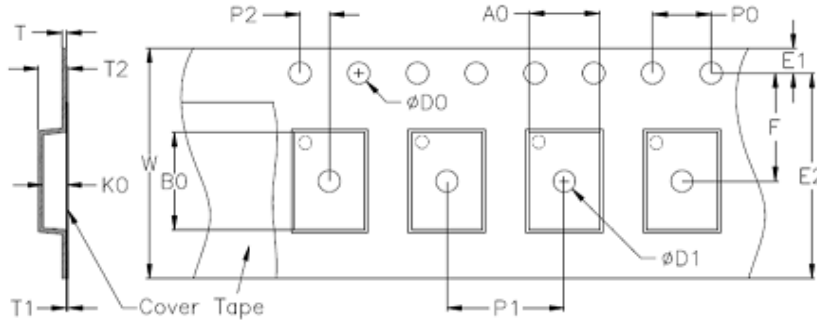
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RoHS/RoHS II Compliant
 MSL Level = N/A



Packing

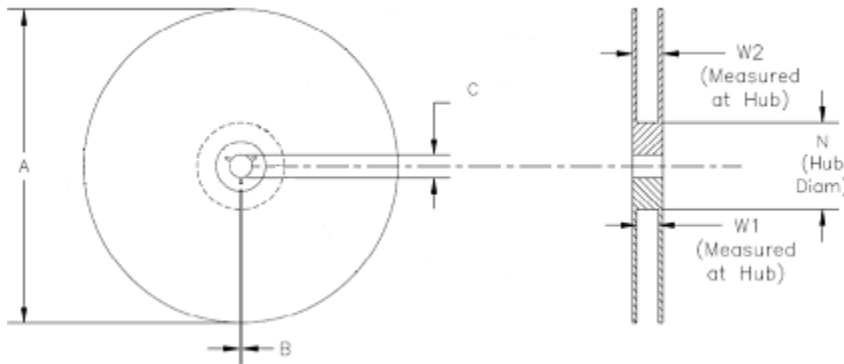
T: Tape and reel (1,000pcs/reel)

T2: Tape and reel (250pcs/reel)



Tape Size	W max.	D0	D1 min.	E1	F	P0	P1	P2
16mm	16.0±0.3	1.5	1.5	1.75±0.1	7.5±0.1	4.0±0.1	8.0±0.1	2.0±0.1
12mm	12.0±0.2				5.5±0.05			

Tape Size	T	T2 max.	B0	K0
16mm	0.3±0.05	1.5±0.1	6.4±0.1	1.5±0.1
12mm		1.8±0.1		1.8±0.1



Tape Size	A max.	B min.	C	N	W1	W2 max.
16mm	178±1	2.5±0.5	13.2±0.5	80.0	17.5±0.2	21.0±2.0
12mm				60.2±0.5	13.0±0.3	16±1.4

Dimensions: mm

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