

# CERAMIC SMD CRYSTAL

**ABMM2**

Request Samples



Check Inventory



6.0 x 3.6 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 <sup>rd</sup> 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 <sup>rd</sup> OT)  | 60         |
| 48.000 – 100.000 (3 <sup>rd</sup> OT) | 80         |



5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
www.abracon.com


REVISED: 07-11-22

ABRACON IS  
ISO9001-2015  
CERTIFIED

# CERAMIC SMD CRYSTAL

**ABMM2**

Request Samples 

Check Inventory 



6.0 x 3.6 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  $\Omega$  (e.g.: R40)

### Freq. Tolerance

1:  $\pm 10$  ppm  
 7:  $\pm 15$  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. | $\pm 10$ | $\pm 15$ | $\pm 20$ | $\pm 30$ | $\pm 50$ | $\pm 100$ |
|-----------------|----------|----------|----------|----------|----------|-----------|
| 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       |

# CERAMIC SMD CRYSTAL

ABMM2

Request Samples



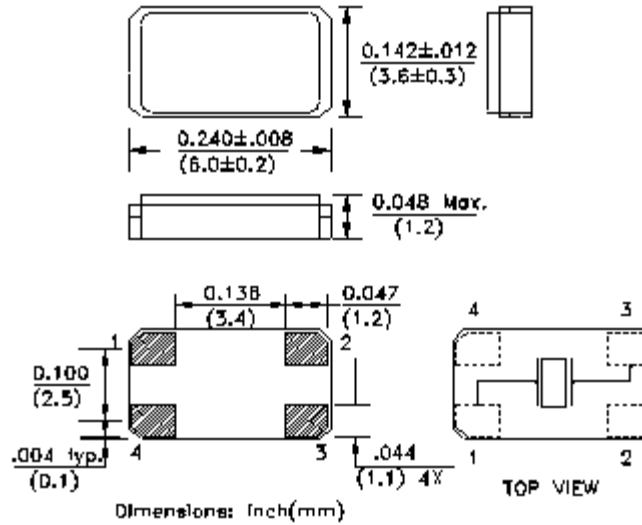
Check Inventory



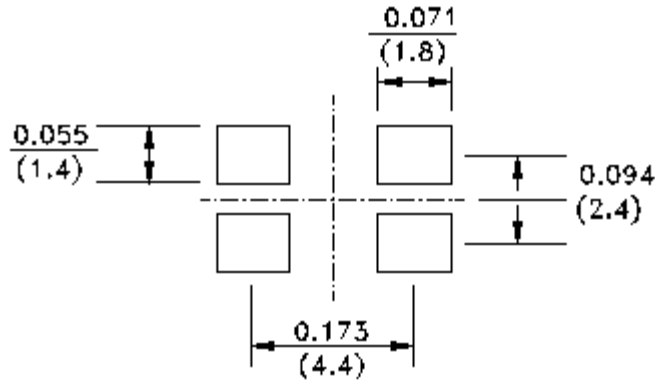
6.0 x 3.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A



## Mechanical Dimensions



### Recommended land pattern



Note 1: A chamfer of 0.3mm may appear on pad 1 or 4

Note 2: A rounded pad may appear on pad 1

Note 3: Pin 2 and 4 are connected to the metal lid.

Please connect to GND.

Dimensions: inches (mm)

# CERAMIC SMD CRYSTAL

ABMM2

Request Samples



Check Inventory



6.0 x 3.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A



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

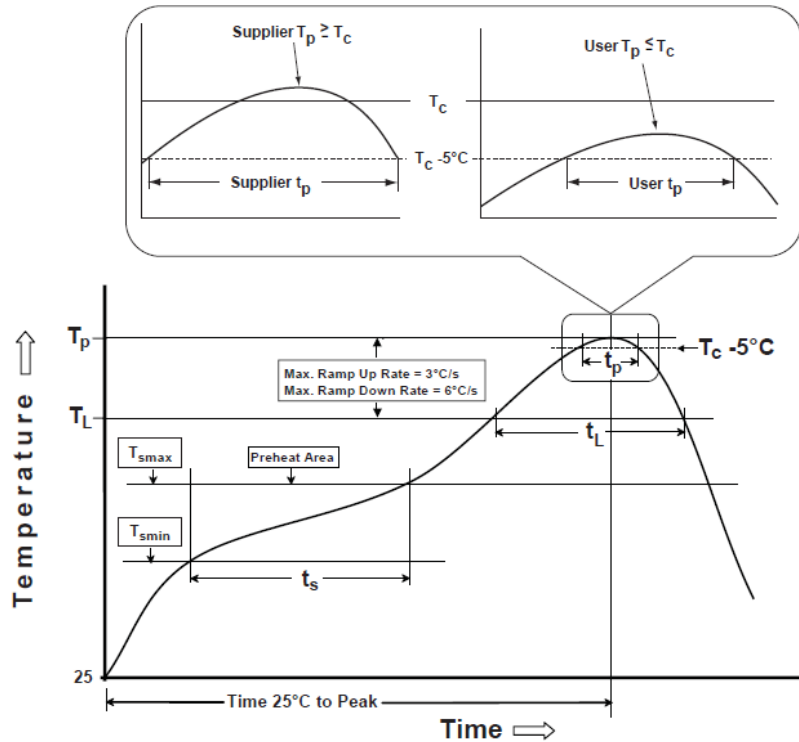


Table 1

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 ( $T_p$ )*  | 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.

# CERAMIC SMD CRYSTAL

**ABMM2**

Request Samples



Check Inventory



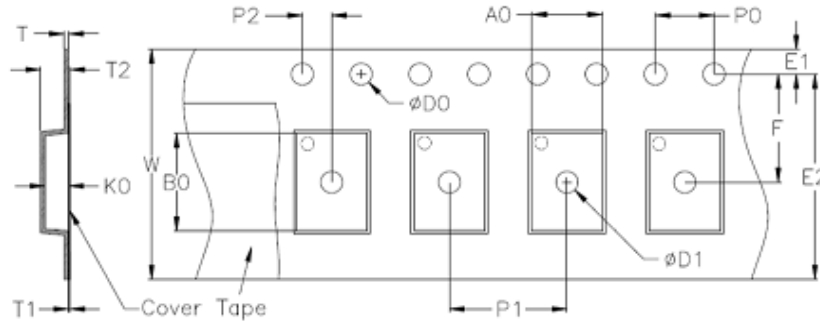
6.0 x 3.6 x 1.2 mm  
**RoHS/RoHS II Compliant**  
 MSL Level = N/A



## Packing

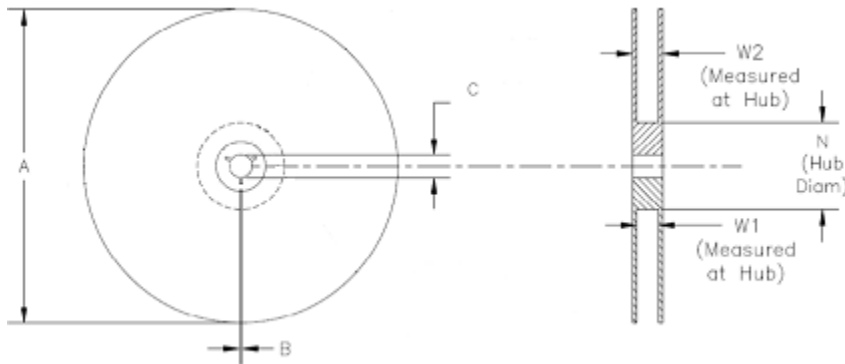
T: Tape and reel (1,000pcs/reel)

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

**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.



5101 Hidden Creek Ln Spicewood TX 78669  
 Phone: 512-371-6159 | Fax: 512-351-8858  
 For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISED: 07-11-22

ABRACON IS  
 ISO9001-2015  
 CERTIFIED