

SOURCE CONTROL DRAWING
OFFICIAL SPECIFICATION

Item :	5.0X3.2X1.1mm CERAMIC MINIATURE CERAMIC SMD CRYSTAL
EMBER CORP P/N	565-2400-000
ABRACON P/N :	ABM3B-24.000MHZ-D-R60-1-W-T

<p>Customer's Approval Please return this copy as a certification of your approval.</p> <p>Approved by:</p> <p>Date :</p>
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Internal Use Only	
500050	500250
500620	500155
500015	500710

WARNING: ESD SENSITIVE PRODUCT

REVISION HISTORY				
REV.	ECO	DESCRIPTION	DATE	APP'D
-	-	New release	1/22/2007	HU

				TITLE ABM3B-24.000MHZ-D-R60-1-W-T 5.0X3.2X1.1mm CERAMIC MINIATURE CERAMIC SMD CRYSTAL		
PREP. HU	DATE 1/22/2007	ENGR. HU	DATE 1/22/2007	SCALE None	DRAWING NO. 452491	REV. -
CKD CB	DATE 1/22/2007	APP'D JE	DATE 1/22/2007	PAGE OF 1 7		

1.0 SCOPE

This specification describes a 5.0x3.2x1.1mm MINIATURE CERAMIC SMD CRYSTAL.

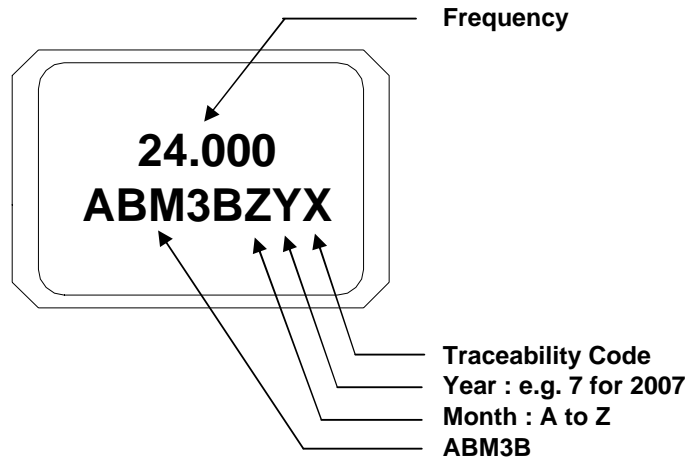
2.0 ELECTRICAL SPECIFICATIONS

Abracon P/N:	ABM3B-24.000MHZ-D-R60-1-W-T
Frequency range:	24.000MHz
Operation mode:	Fundamental, AT-strip
Operating temperature:	- 40°C to + 85°C
Storage temperature:	- 55°C to + 125° C
Frequency Tolerance at +25° C:	± 10 ppm max.
Frequency stability over the operating temperature (Ref to +25° C):	± 25 ppm max.
Equivalent series resistance:	60ohms max.
Shunt capacitance C0:	7.0pF max
Load capacitance CL:	18.0+/-1.0pF
Drive level:	100uW max, 10uW Typical
Aging (first year) 25°C ± 3°C:	±5ppm max
Insulation Resistance:	500Mohms min at 100Vdc ± 15V

3.0 SPECIAL REQUIREMENT

This product is RoHS compliant and Pb free.

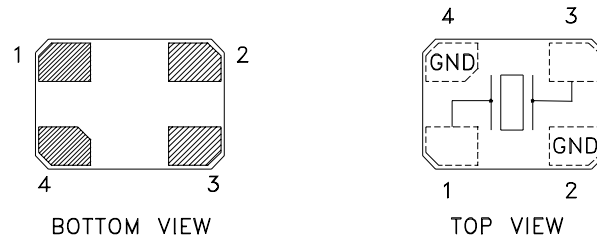
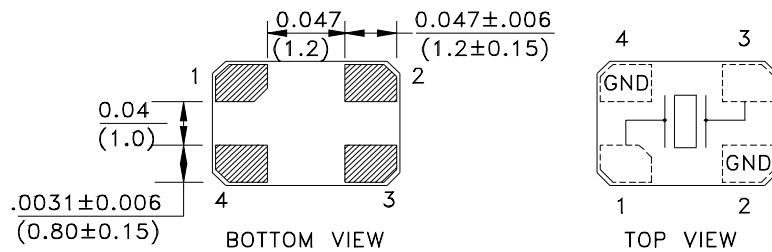
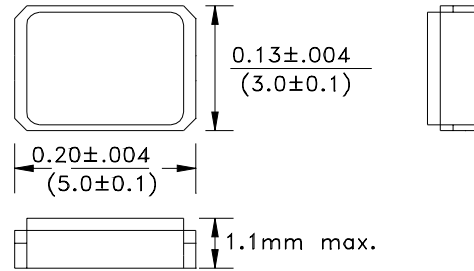
4.0 Marking



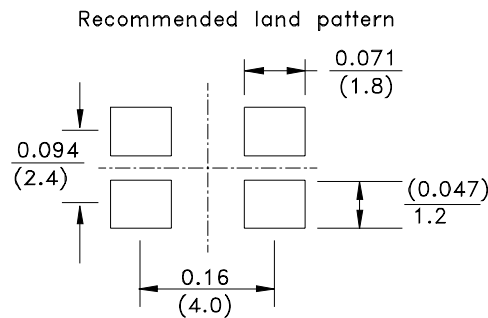
Month	Code
January	A
February	B
March	C
April	D
May	E
June	F
July	G
August	H
September	I
October	J
November	K
December	L

4.1 Marking Method : Laser Marking

5.0 Outline dimensions



Note: Due to the availability of raw materials, this part may be manufactured with the chamfer on pin 4. Be advised that this does not affect the electrical characteristics of the crystal in any way.



Dimension : Inches (mm)

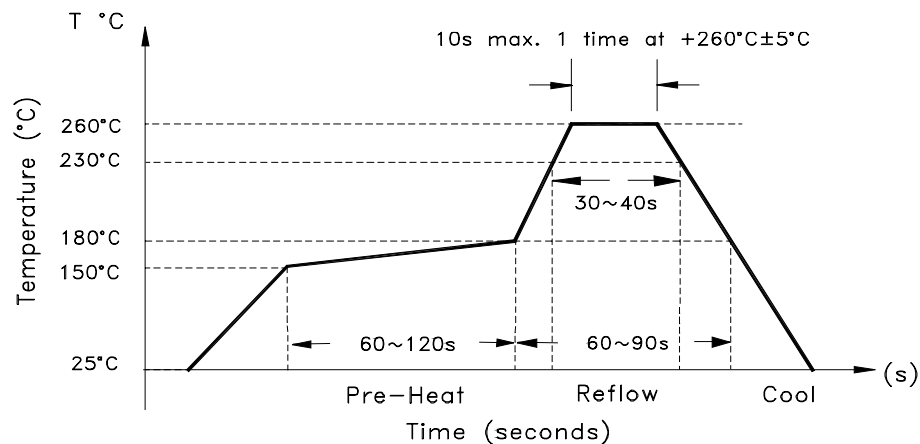
TOLERANCES:

UNLESS OTHERWISE SPECIFIED: .X: ± 0.1 (0.25) .XX: ± 0.01 (0.025) .XXX: ± 0.005 (0.013)

6.0 Reliability Test

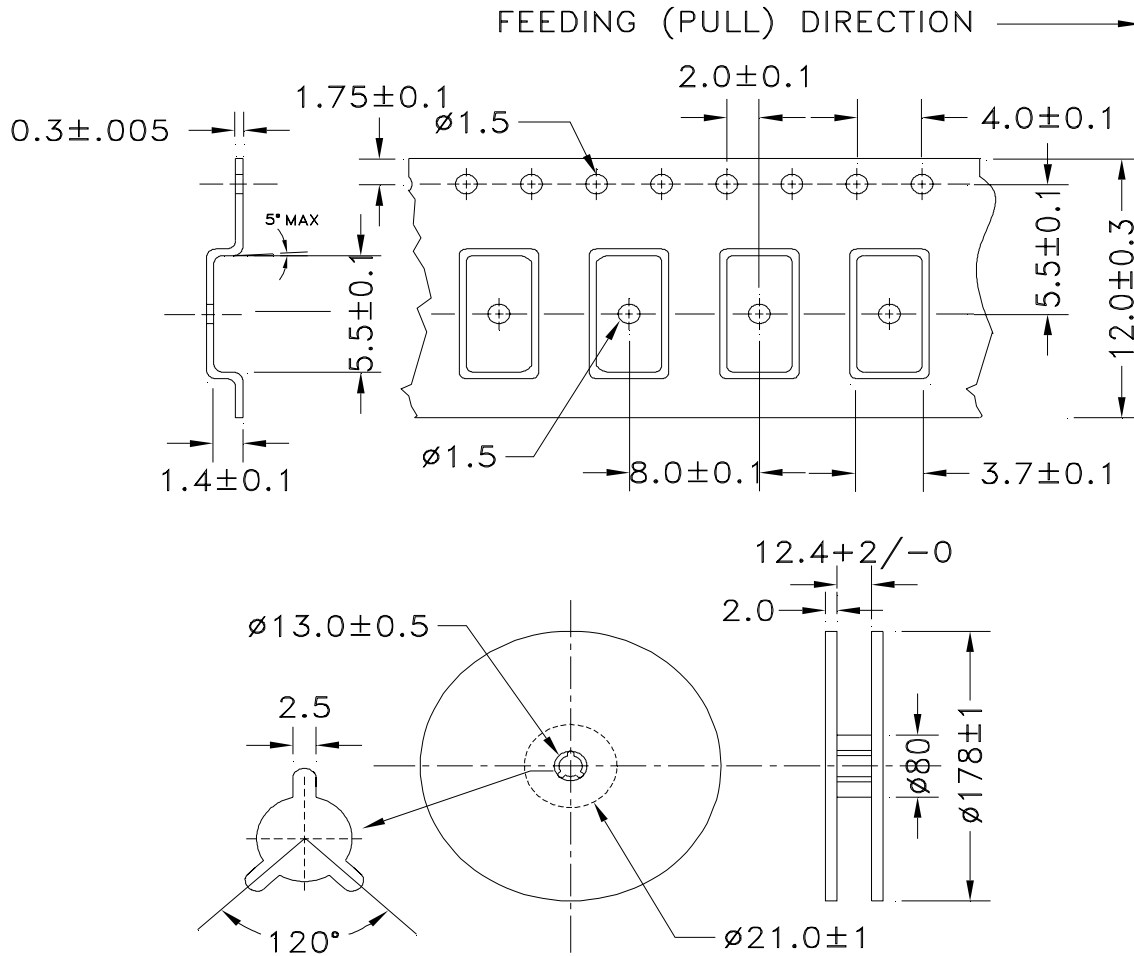
No.	Test Items	Test Conditions
1	Temperature Cycling:	The component shall remain within the electrical specification (± 5 ppm max) after 3 cycles of high and low temperature testing (-40°C to $+85^{\circ}\text{C}$) for 2 hours max.
2	Thermal Shock:	The component shall remain within the electrical specification after exposure at extreme temperature -40°C to $+85^{\circ}\text{C}$ for 5 minutes for 3 cycles.
3	Vibration:	The component shall remain within the electrical specification after loaded vibration at 10Hz to 55Hz, amplitude 1.5mm, within 1 minute for 2 hours minimum on each axis (X,Y,Z).
4	Drop Test:	The component shall remain within the electrical specifications after a natural drop (3X) on a hard wooden board at 75 cm.
5	Humidity:	The component shall remain within the electrical specifications after being kept at a condition of ambient temperature $+85^{\circ}\text{C}$, 85% RH for 96 hours minimum.
6	Fine Leak Test:	Expose samples to 60PSIG Helium gas for 2 hours. Max leak rate 2×10^{-8} atmcc/s.
7	Gross Leak Test:	Submerge samples in 100% De-ionized water or Perfluorocarbon at 85°C for at least 1 minute. Check for bubbles.
8	Solderability:	Solderability of terminals shall be kept at more than 95% after dipped in solder flux at $230^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 5 seconds.

6.1 Reflow Profile



7.0 PACKING

Tape and reel (1,000pcs/reel)



Dimension : Inches (mm)

TOLERANCES:

UNLESS OTHERWISE SPECIFIED: .X: ± 0.1 (0.25) .XX: ± 0.01 (0.025) .XXX: ± 0.005 (0.013)

8.0 Note

- (1) The parts are manufactured in accordance with this specification. If other conditions and specifications which are required for this specification, please contact ABRACON for more information.
- (2) ABRACON will supply the parts in accordance with this specification unless we receive a written request to modify prior to an order placement.
- (3) In no case shall ABRACON be liable for any product failure from in appropriate handling or operation of the item beyond the scope of this specification.
- (4) When changing your production process, please notify ABRACON immediately.
- (5) If you intend to use the product for listed application which may possibly cause to loss of life or assets, please notify ABRACON in advance.
(For example, Medical, Aerospace, Aeronautic equipment, Safety control equipment as well as safety related.)
- (6) All specifications and Marking will be subject to change without notice.
- (7) See ABRACON website (www.abracon.com) for additional Terms and Conditions.