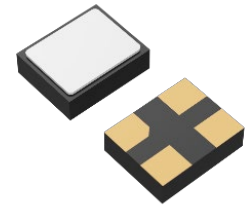


## Description

The ABM14 series is an ultra-miniature AT-Cut MHz quartz crystal offered in a 1.0mm x 0.8mm x 0.33mm four-pad SMD package. Tight frequency accuracy of  $\pm 10\text{ppm}$ , low plating load (CL) value of 8pF, and low Equivalent Series Resistance (ESR) is still achieved in this ultra-compact and thin package size. The ABM14 series offers industry standard frequencies (40MHz, 59.97MHz, and 76.8MHz), common for wearables, IoT, Bluetooth / Bluetooth Low Energy (BLE), and Ultra-Low Power MCU's/SoC's/Transceivers end applications.



## Features

- Ultra-miniature At-Cut MHz Crystal (1.00 x 0.8 x 0.33mm package)
- Ideally suited for space constraint IoT, Wearables & Wireless applications
- Simultaneously optimized for low plating load & ESR over extended temperature range
- Enhanced performance for start-up time and power savings with Low Energy SoC's
- Low profile ideal for height constraint designs feature
- [REACH/RoHS II Compliant](#) | [MSL Level N/A](#)

## Typical Applications

- Wearables
- Wireless Modules
- Internet of Things (IoT)
- Bluetooth / Bluetooth Low Energy (BLE)
- Machine-to-Machine (M2M) Connectivity
- Ultra-Low Power MCU's, SoC's, Transceivers
- Near Field Communication
- ISM Band Applications

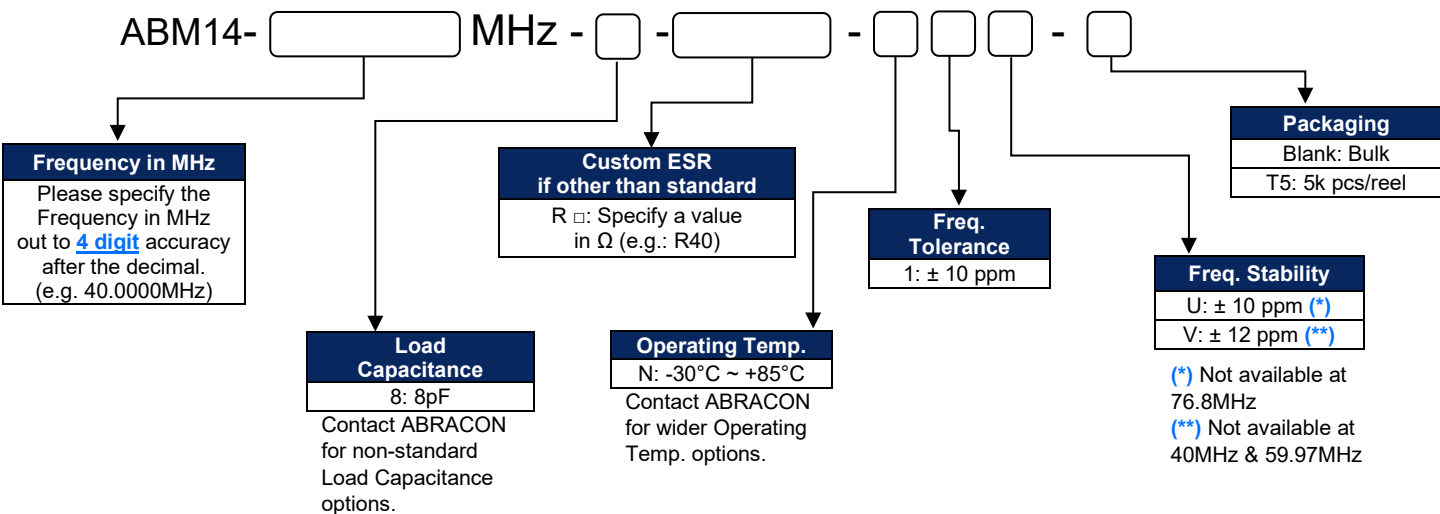
## Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Notes
Standard Available Frequencies	40.0000, 59.9700, 76.8000			MHz	Contact Abracon for Nonstandard Frequencies
Operation Mode	Fundamental				
Operating Temperature Range	-30		+85	°C	
Storage Temperature Range	-40		+85	°C	
Frequency Tolerance @ +25°C	-10		+10	ppm	
Frequency Stability over the Operating Temperature Range (ref. to +25°C) <a href="#">[Note 1]</a> , <a href="#">[Note 2]</a>	-10		+10	ppm	<a href="#">See Note 1</a>
	-12		+12	ppm	<a href="#">See Note 2</a>
Equivalent Series Resistance (R1)			60	$\Omega$	40MHz
			60	$\Omega$	59.97MHz
			30	$\Omega$	76.8MHz
Load Capacitance (CL)		8.0		pF	
Drive Level		10		$\mu\text{W}$	
Aging (1 year) @ +25°C	-1		+1	ppm	40MHz & 59.97MHz
	-3		+3	ppm	76.8MHz
Insulation Resistance	500			M $\Omega$	@ 100Vdc $\pm$ 15V

Note 1: Frequency stability option  $\pm 10\text{ppm}$  over operating temperature range -30°C ~ +85°C *only* available at standard carrier frequencies 40MHz and 59.97MHz; it is not available at 76.8MHz.

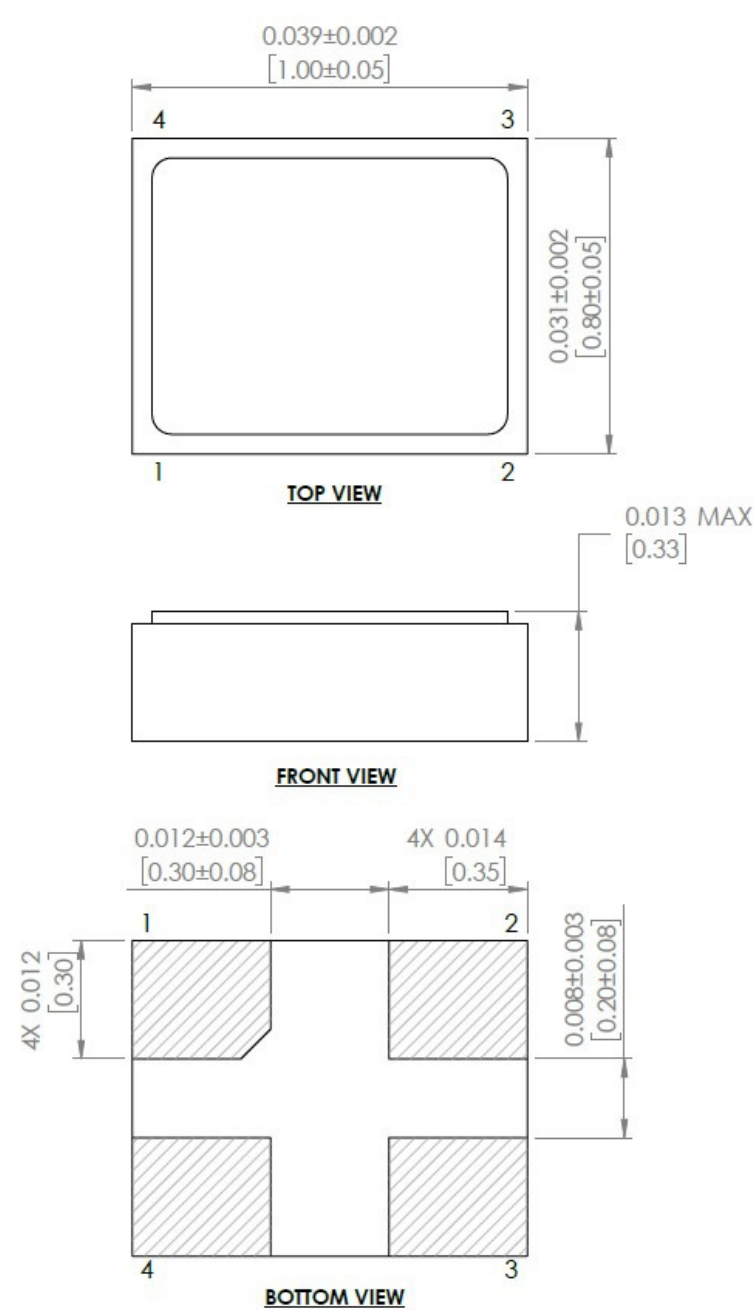
Note 2: Frequency stability option  $\pm 12\text{ppm}$  over operating temperature range -30°C ~ +85°C *only* available at standard carrier frequency 76.8MHz; it is not available at 40MHz and 59.97MHz.

Part Identification [\[Note 3\]](#)

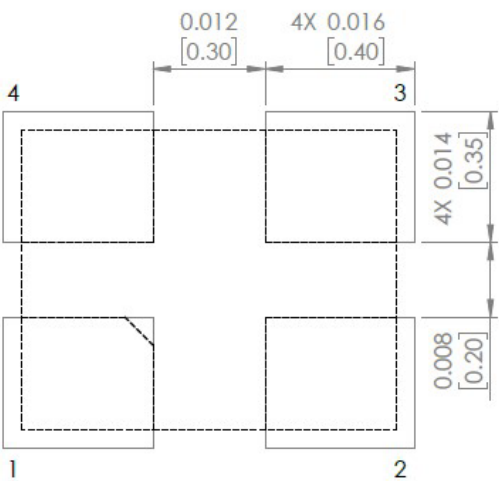


Note 3:     Contact Abracon for part number requests with carrier frequency callouts up to 5 & 6 digit accuracy after the decimal.

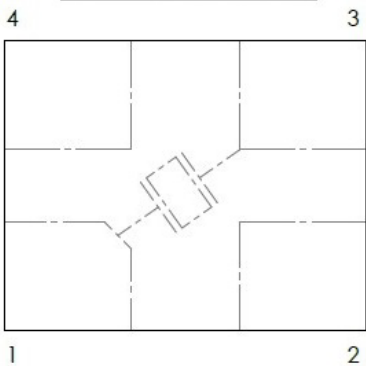
Mechanical Dimensions



**RECOMMENDED LAND PATTERN**



**INTERNAL CONNECTION**



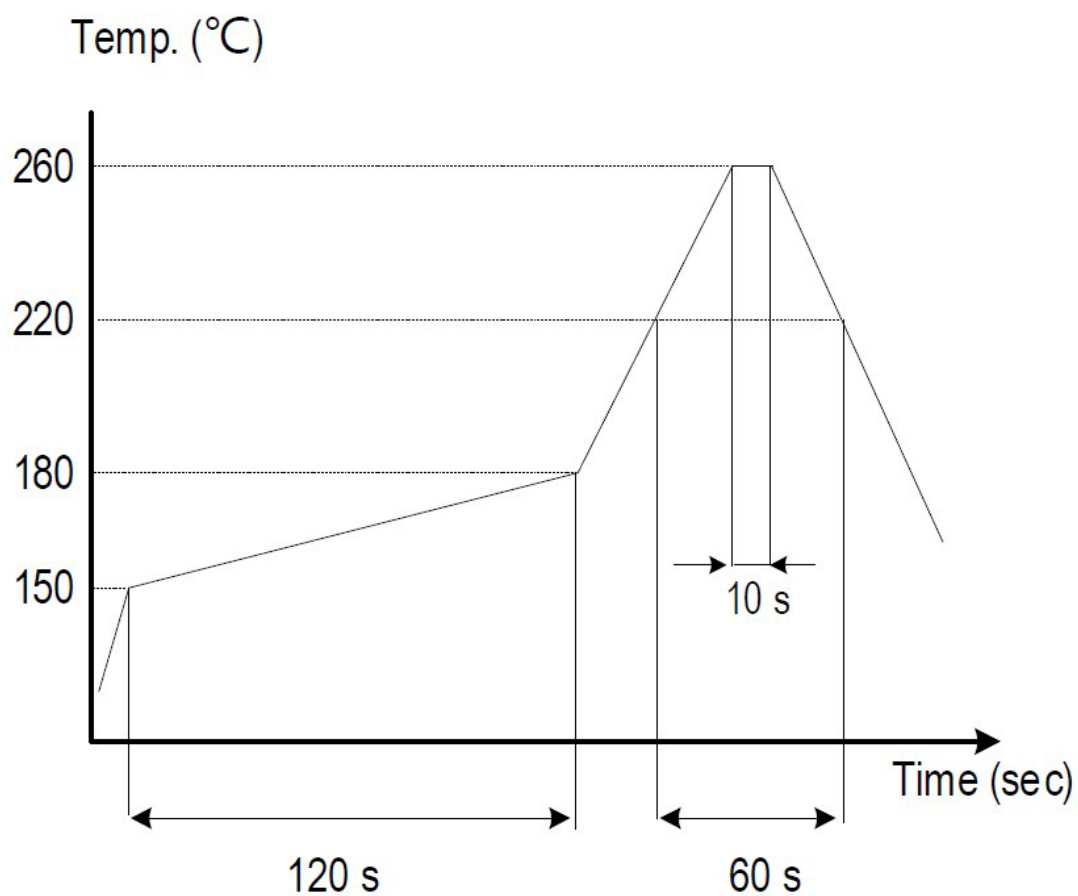
Pin #	Function
1	XTAL
2	GND (Connection with cover)
3	XTAL
4	NC (No internal connection, leave floating or connect to GND)

Dimensions: inches [mm]

### Recommended Reflow Profile

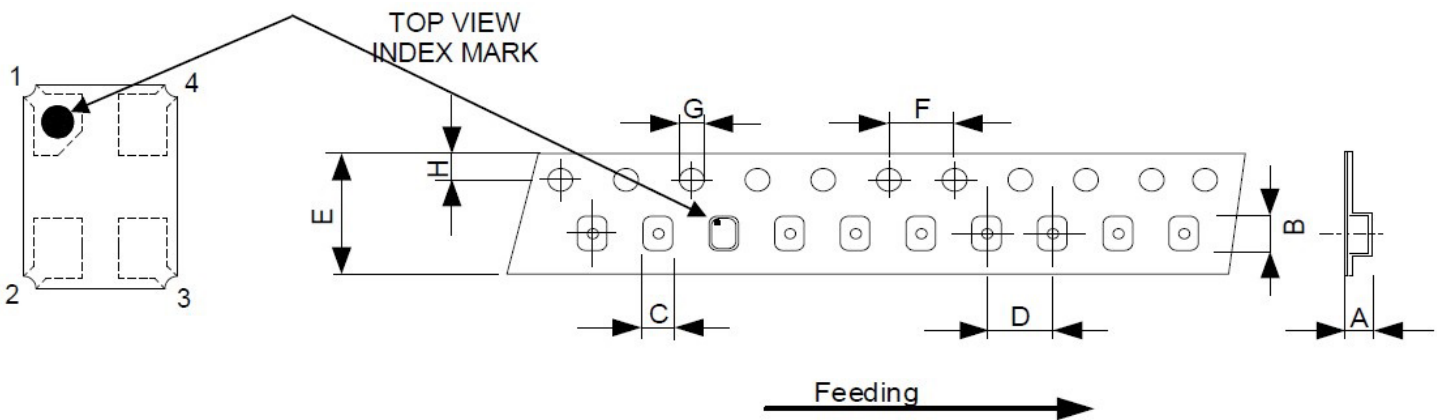
**Total time: 200 sec. Max.**

**Solder melting point: 220 °C**

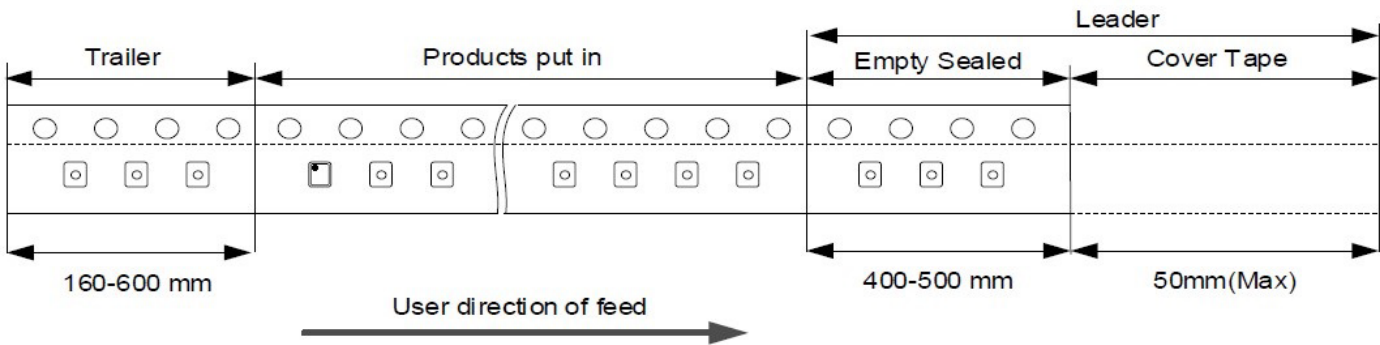


Packaging

T5: Tape and reel (5,000pcs/reel)

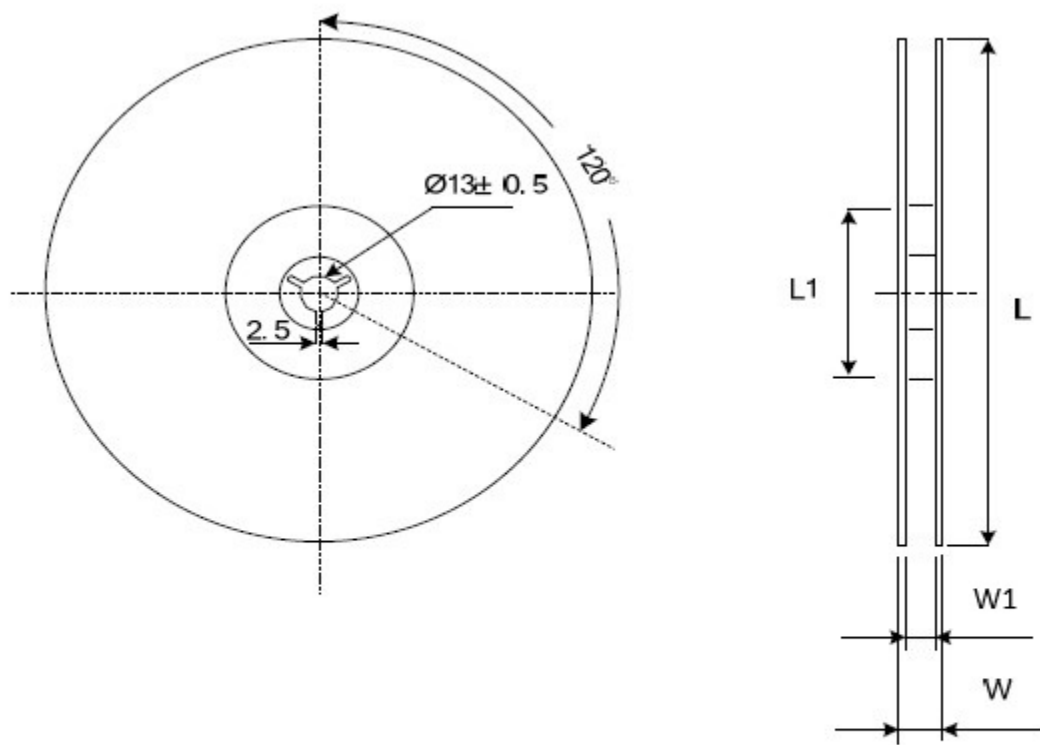


A	B	C	D	E	F	G	H
0.45	1.15	0.95	4.00	8.00	4.00	1.55	1.75
±0.05	±0.05	±0.05	±0.10	±0.20	±0.10	±0.05	±0.10



Dimensions: mm

Packaging continued



L	L1	W	W1
178	60.2	11.5	8
±1.00	±0.50	±0.2	+1/-0

Dimensions: mm