SMD Low ESR Crystal

ABS06-107-32.768kHz-T

RoHS/RoHS II Compliant

2.0 x 1.2 x 0.6mm

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable

FEATURES:

- 0.6mm max. height ideal for high density circuit boards
- Ceramic package offers excellent environmental & heat resistance
- Extended temperature -40°C to +85°C for industrial applications

APPLICATIONS:

- Wide range in communication & measuring equipment
- Commercial & Industrial applications
- Wireless communications

Overview

ABRACON's ***ABS06-107-32.768kHz-T*** Tuning Fork Crystal is optimized for Power Sensitive Designs, requiring minimal plating load (4pF) and Ultra-Low ESR. With guaranteed maximum ESR of 80kΩ, this device is ideally suited for ***Ultra-Low Power - Real Time Clocking*** solutions, requiring exceptionally low power consumption (***Reference***; ST Micro STM32**L1**, **F2** & **F4** µcontrollers).

Key Attributes

- 4pF plating load facilitates sustained oscillations with very low oscillator loop transconductance (g_m) ≤ 3µA/V
- Guaranteed maximum ESR of 80kΩ ensures lower overall power consumption & higher Gain Margin
- Tight Frequency Set Tolerance ≤ ±20 ppm into a 4pF Effective Oscillator Loop Load
- Wide Operating Temperature Range (-40ºC to +85ºC)
- ≤ ±175 ppm typical stability over -40ºC to +85ºC; ±250 ppm guaranteed; referenced to measured frequency at 25ºC±3ºC
- Developed in close-cooperation with ST Micro for STM32**L1**, **F2** & **F4** Reference Designs
- Space saving **2.0x1.2x0.6 mm**, RoHS Compliant SMT package
- Low cost, available through Abracon's Global Distributors

Reference Design Information

ABS06-107-32.768kHz-T device is Qualified on the following ST Micro's Reference Designs:

STM32F2 Series: http://www.st.com/web/en/catalog/mmc/FM141/SC1169/SS1575
STM32F4 Series: http://www.st.com/web/en/catalog/mmc/FM141/SC1169/SS1577
STM32L1 Series: http://www.st.com/web/en/catalog/mmc/FM141/SC1169/SS1295

30332 Esperanza, Rancho Santa Margarita, California 92688
tel 949-546-8000 | fax 949-546-8001 | www.abracon.com

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STANDARD SPECIFICATIONS:

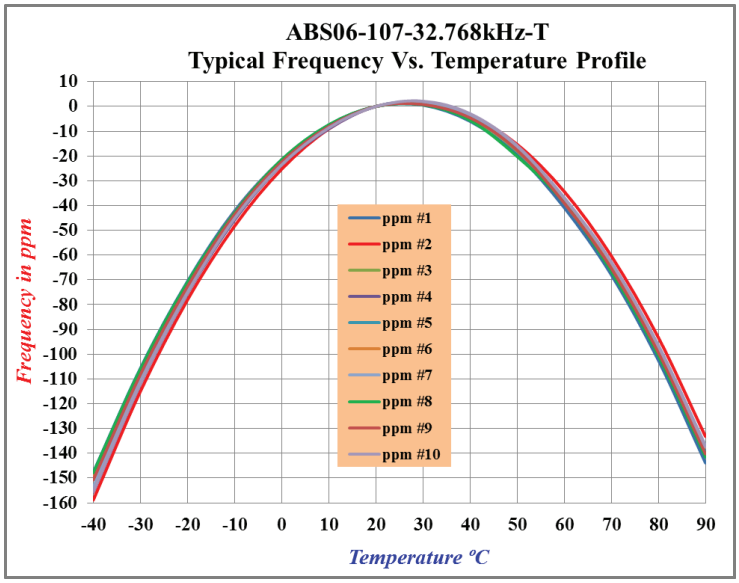
Parameters	Minimum	Typical	Maximum	Units	otes
Frequency		32.768		kHz	
Operation Mode		Flexural Mode (Tuning Fork)			
Operating Temperature	-40		+85	ºC	
Storage Temperature	-55		+125	ºC	
Temperature Coefficient:	-0.039	-0.034	-0.029	ppm/T²	
Turn-over temperature:	+20	+25	+30	ºC	
Frequency Stability over temperature	-250	< ±175	+250	ppm	Relative to the measured frequency at 25ºC ± 3ºC
Equivalent series resistance (R1)		< 60	80	kΩ	
Shunt Capacitance (C0)		< 1.50	1.70	pF	
Load capacitance (CL)	3.90	4.00	4.10	pF	**See Note#1**
Frequency Tolerance @+25ºC	-20		+20	ppm	**See Note#2** Tested at 0.5µW
Drive Level		0.1	0.5	µW	
Q value	9000	20,000			
Aging@25ºC±3ºC	-3		3	ppm	First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

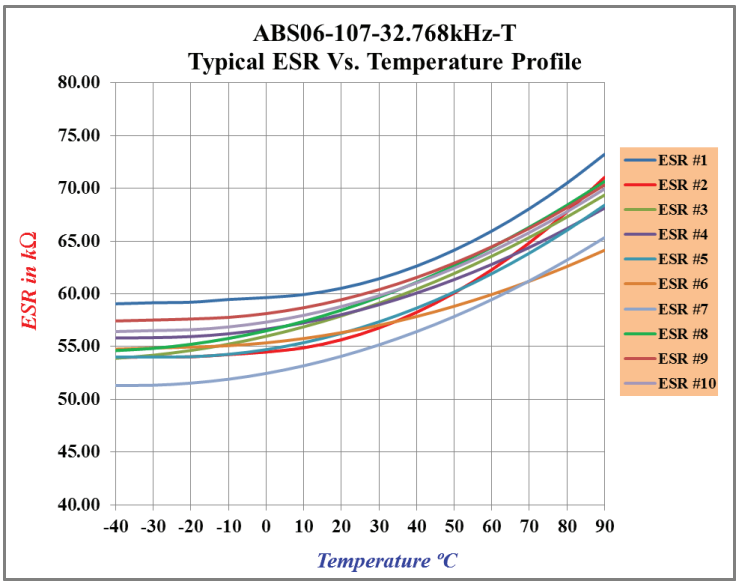
Note #1: The oscillator loop needs to present an effective loop capacitance of 4.0 pF, not to exceed 4.50 pF. This loop capacitance is required to ensure Safety Factor of > 5.0 for the entire population of crystals.

Note #2: With an effective loop capacitance of 4.0 pF, the oscillator circuit will be with-in (32.768 kHz) ±20 ppm.

Depending on production equipment capability, these parts might be tested at a different load, with guaranteed projected performance at 4.0 pF.

FREQUENCY VS. TEMPERATURE CHARACTERISTICS





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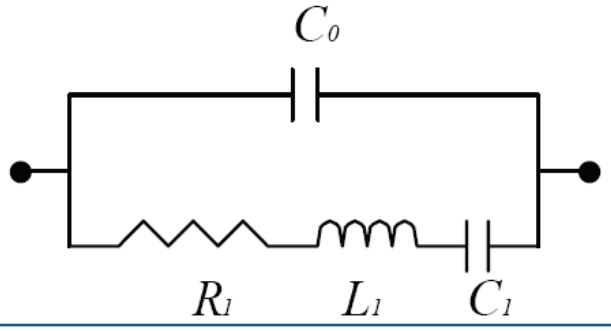
SPICE MODEL:

SPICE Model (based on typical values at 25ºC ± 3ºC):

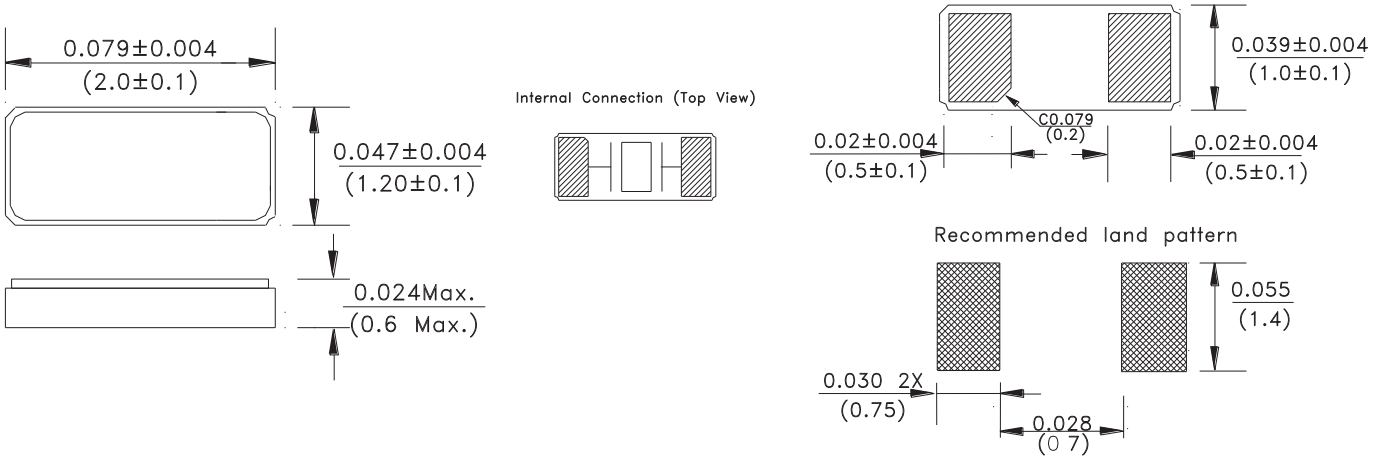


C0	=	**1.47 pF**
R1	=	**56,974 Ω**
L1	=	**6,304 H**
C1	=	**3.869 fF**

PART IDENTIFICATION

ABS06-107-32.768 kHz-T

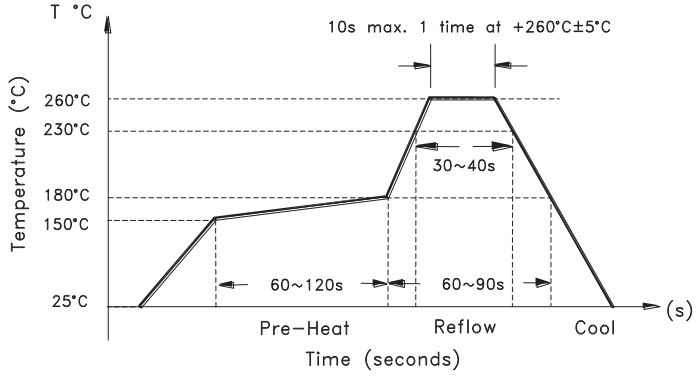
OUTLINE DIMENSIONS:



Note: Due to material availability, the outline and finish color of the component may vary. This variation in no way affects the electrical performance of the product.

Dimensions: inches (mm)

REFLOW PROFILE:



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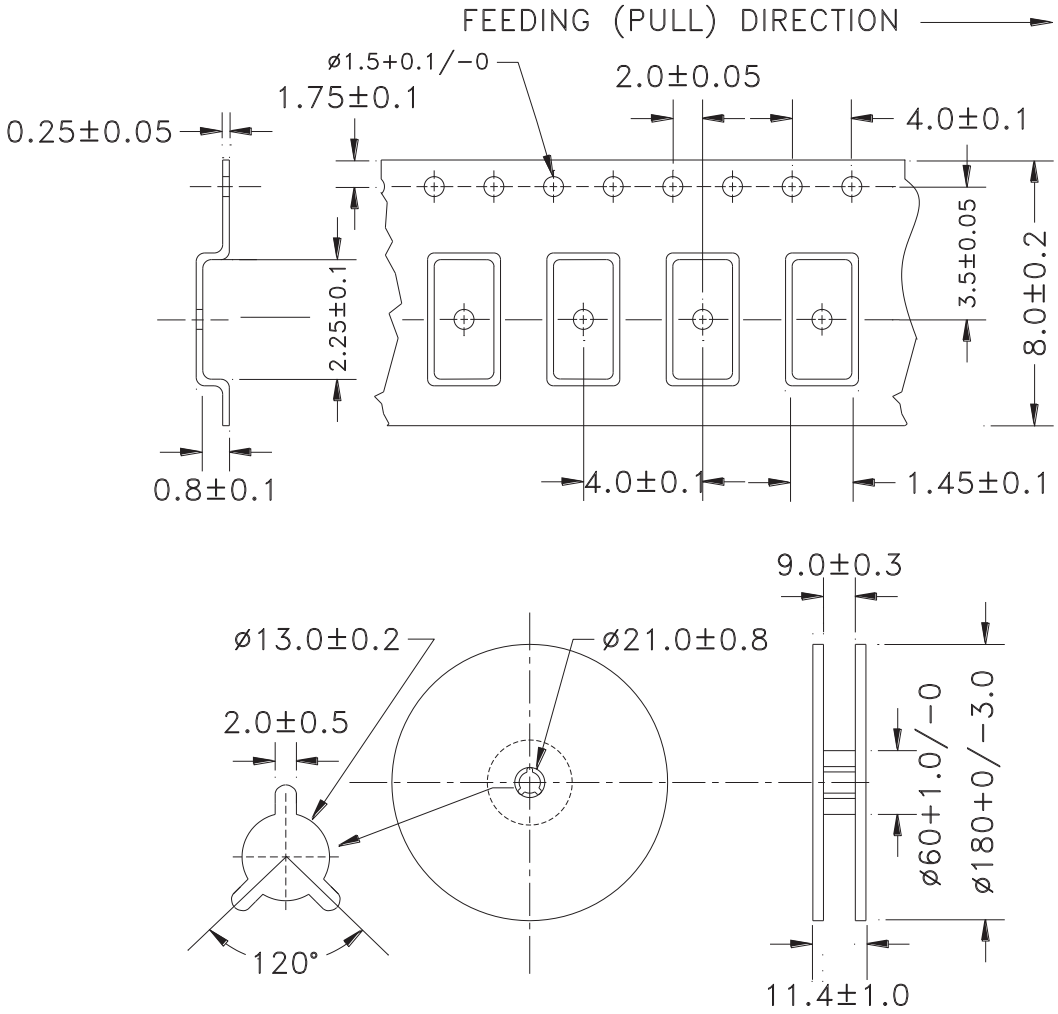
TAPE & REEL:

T=Tape and reel (3,000pcs/reel)



Dimensions: mm

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Mouser Electronics

Authorized Distributor

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