

Features

Frequency range : 32.768 kHz
SMD : Ceramic package
External dimensions (mm)
L : 1.2 x W : 1.0 x H : 0.35
RoHS compliant & Pb free

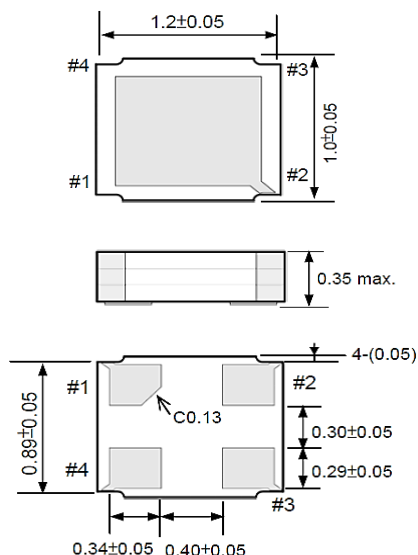
Applications

- Smart phone
- Wearable devices
- Compact portable devices
- Internet of Things (IoT)
- Ultra-low power MCU's, SoC's
- Wireless modules

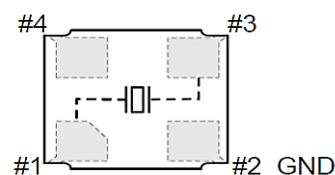
Electrical Characteristics

Item	Symbol	9HT13	Conditions
Nominal Frequency	f_0	32.768 kHz	
Frequency Tolerance	$\Delta f/f_0$	± 20 ppm	at 25°C $\pm$ 3°C
Load Capacitance	C_L	6pF, 7pF, 12.5pF	
Operating Temperature Range	T_{OTR}	-40°C ~ +85°C	
Storage Temperature Range	T_{STR}	-55°C ~ +125°C	
Turnover Temperature	T_M	25°C $\pm$ 5°C	
Temperature Coefficient	β	-0.039 ppm/°C ² Max.	
Motional Capacitance	C_1	7.0 fF Typ.	
Motional Resistance (ESR)	R_1	90 k Ω Max.	at 25°C $\pm$ 3°C
Drive Level	D_L	0.1 μ W Typ. / 0.5 μ W Max.	
Aging	$\Delta f/f_0$	± 3 ppm Max.	at 25°C $\pm$ 3°C, first year
Shunt Capacitance	C_0	1.5 pF Typ.	

Dimensions



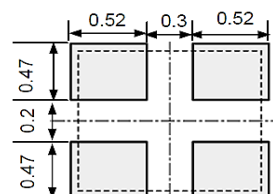
Top View Crystal Connection



2 : Connect to the lid (GND)

4 : No connect

Recommended pad layout



Ordering Information

9HT13 - 32.768K D Z F - T

Frequency Tolerance (at 25°C)

D ± 20 ppm

Packaging Method

T Tape & Reel

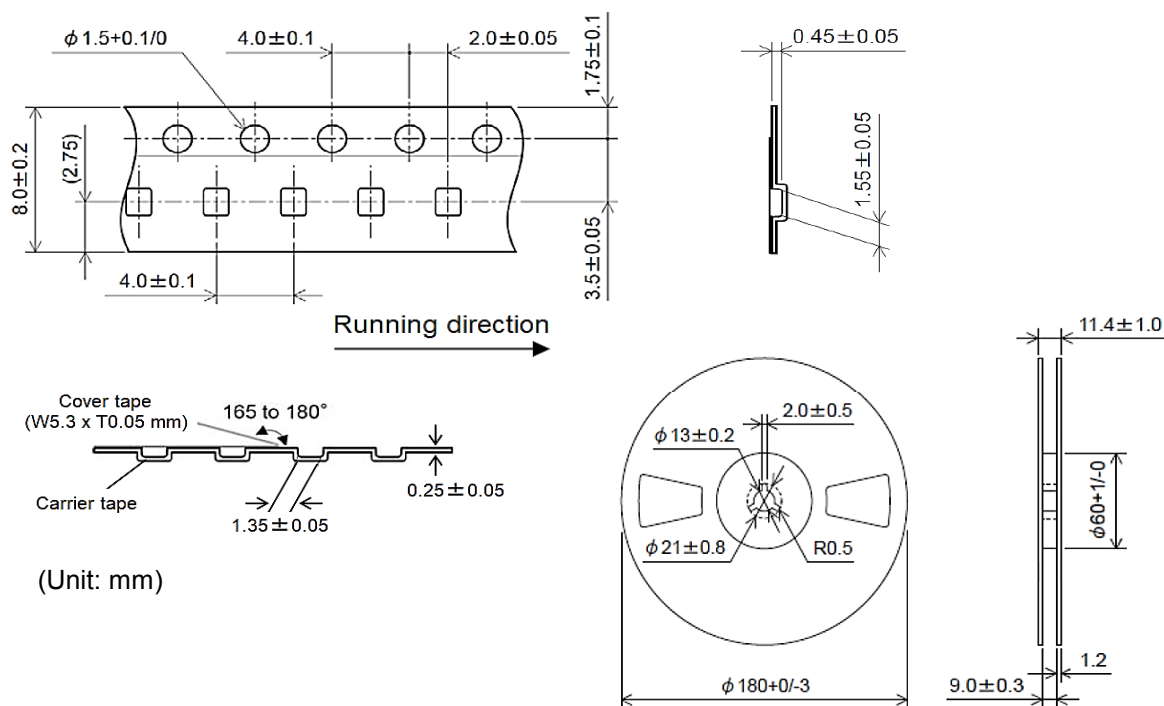
Frequency Stability (over Temp.)

Z Standard for kHz

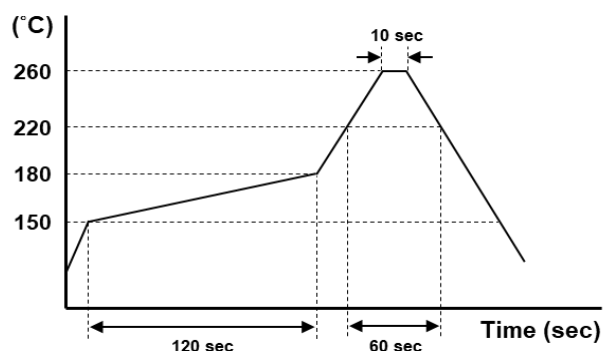
Load Capacitance

B 6 pF
Y 7 pF
F 12.5 pF

Packing



Reflow Profile



Total time : Max. 200 sec.
Solder melting point : 220°C