

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

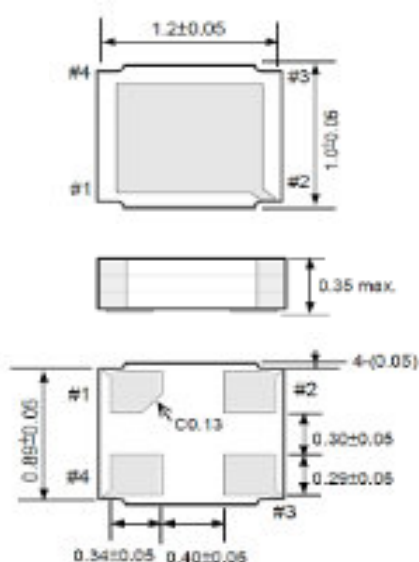
Applications

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

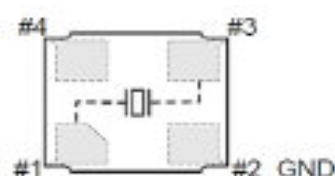
Electrical Characteristics

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

Dimensions



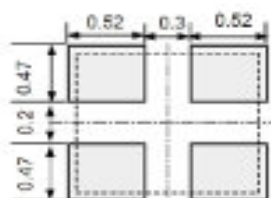
Top View Crystal Connection



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**

Load Capacitance

B **6 pF**

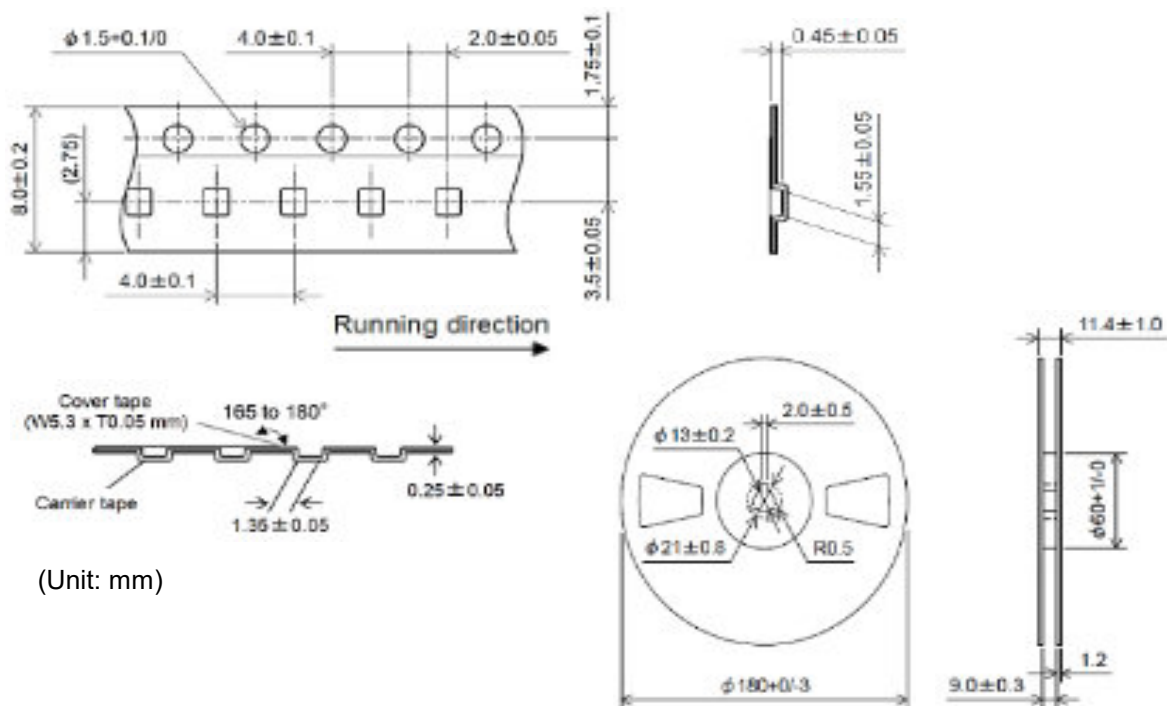
Y 7 pF

F 12.5 pF

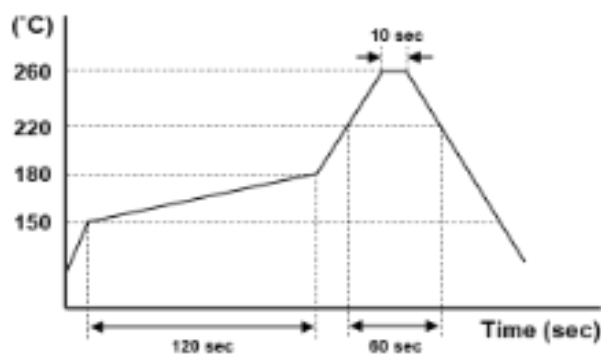
Frequency Stability (over Temp.)

Z **Standard for kHz**

Packing



Reflow Profile



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