



actual size

Quartz Crystal SMQ32SL

- SMD Tuning Fork Crystal • 8.0 x 3.8 mm
- 32.768 kHz standard
- package height 2.5 mm max.



RoHS compliant



Pb free pads



REACH compliant



Conflict mineral free

GENERAL DATA	
TYPE	SMQ32SL
frequency	32.768 kHz
frequency tolerance at 25 °C ± 5 °C	± 20 ppm / ± 30 ppm ± 10 ppm (ask if available)
load capacitance C_L	12.5 pF std. (6 pF optional)
temperature constant (T_C)	$T_C = -0.04 \text{ ppm} / ^\circ\text{C}^2 \text{ max.}$ $T_C = -0.034 \text{ ppm} / ^\circ\text{C}^2 \text{ typical}$
frequency temperature characteristic	$\Delta f = T_C \cdot (T_A - T_{TP})^2$ in [ppm] $T_A = \text{actual ambient temperature}$ $T_{TP} = 25 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ $T_{TP} = \text{turning point temperature}$
operating temperature range	-20 °C ~ +70 °C / -40 °C ~ +85 °C
shunt capacitance C_0	1.3 pF typical
series resistance max. (ESR)	50 kΩ
storage temperature	-40 °C ~ +90 °C
drive level max.	1 μW
aging first year	< ± 3 ppm

TABLE 1: FREQUENCY STABILITY VS. TEMPERATURE		
frequency stability	-80 ppm	-160 ppm
-20 °C ~ +70 °C	STD.	●
-40 °C ~ +85 °C	T1	●

● standard

MARKING
frequency (optional)
internal code / date code

PACKING UNIT
3000 pcs per reel standard
1000 pcs per reel on request

DIMENSIONS

top view side view bottom view crystal connection pad layout in mm

Terminals
1 - # 4 X-tal
2 - # 3 NC

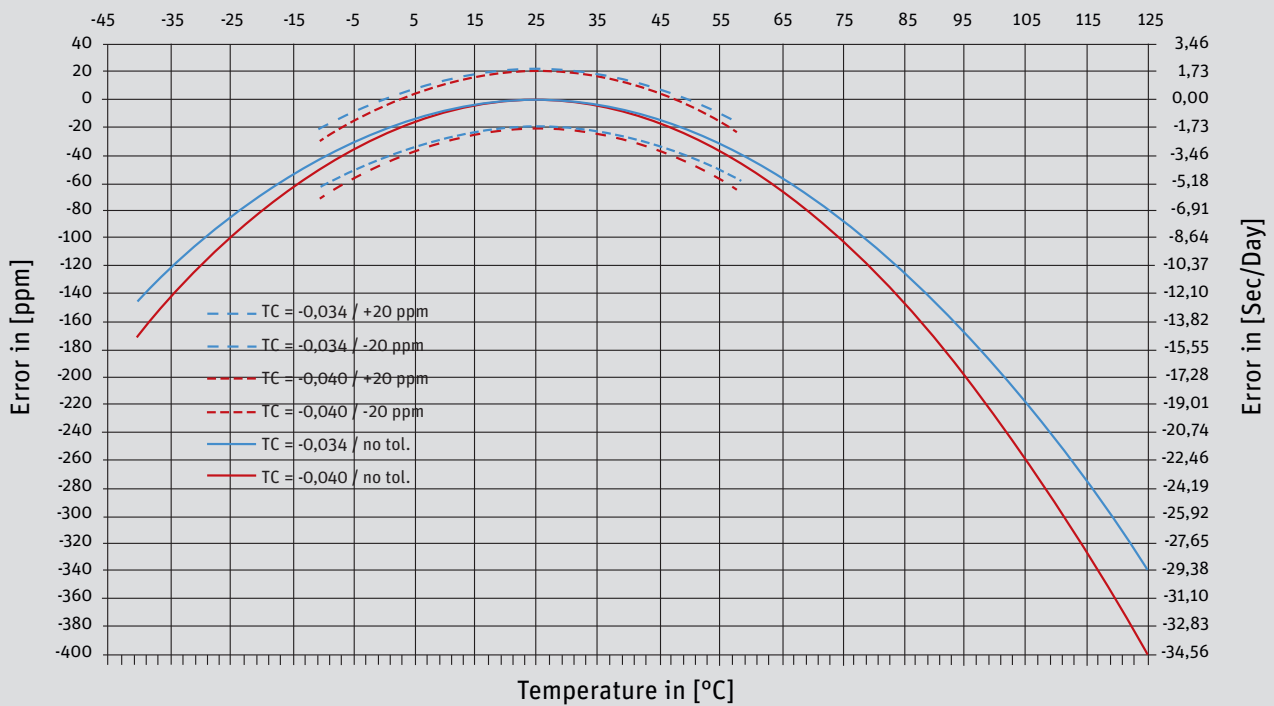
ORDER INFORMATION

Q	frequency	type	load capacitance	tolerance at 25 °C	option
Quartz	0.032768 MHz	SMQ32SL	12.5 pF Std. 6 pF optional	10 = ±10 ppm 20 = ±20 ppm 30 = ±30 ppm	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

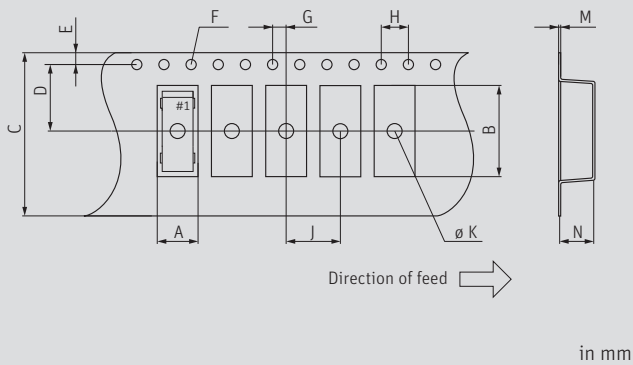
Example: Q 0.032768-SMQ32SL-12.5-20-T1-LF (Suffix LF = RoHS compliant / Pb free pads)

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FREQUENCY ERROR VS. TEMPERATURE IN PPM OR SECONDS PER DAY

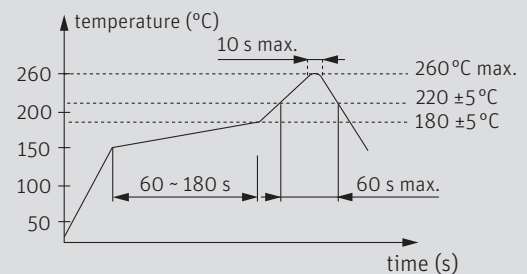


TAPING SPECIFICATION



A	B	C	D	E	G
4.1 ^{±0.2}	8.4 ^{±0.2}	16.0 ^{±0.3}	7.5 ^{±0.1}	1.75 ^{±0.1}	∅1.5 ^{±0.1}
G	H	J	K	L	M
2.0 ^{±0.1}	4.0 ^{±0.1}	8.0 ^{±0.1}	∅2.5 max.	0.3 ^{±0.05}	2.7 ^{±0.1}

REFLOW SOLDERING PROFILE



note: parts are also suitable for soldering systems with lead (Pb) content