



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	$\Delta f = T_C \cdot (T_A - T_{TP})^2 \text{ in [ppm]}$ $T_A = \text{actual ambient temperature}$ $T_{TP} = 25 ^\circ\text{C} \pm 5 ^\circ\text{C}$ $T_{TP} = \text{turning point temperature}$
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

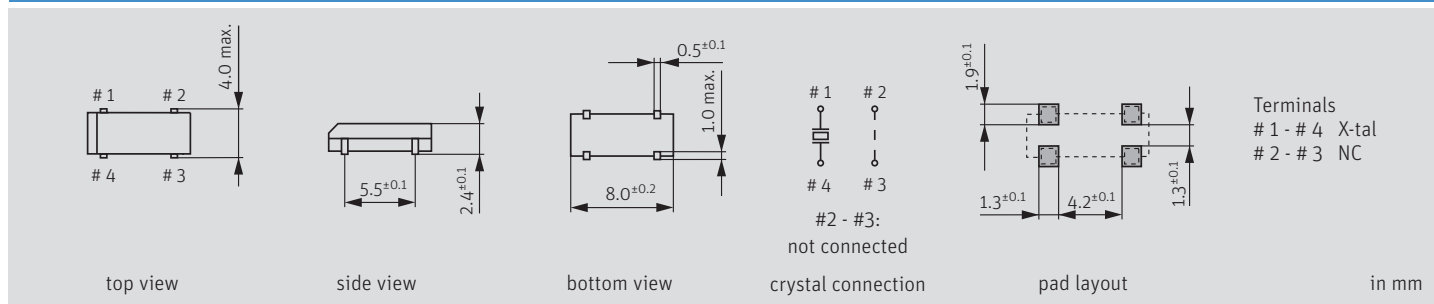
MARKING

frequency (optional)
internal code / date code

PACKING UNIT

3000 pcs per reel standard
1000 pcs per reel on request

DIMENSIONS



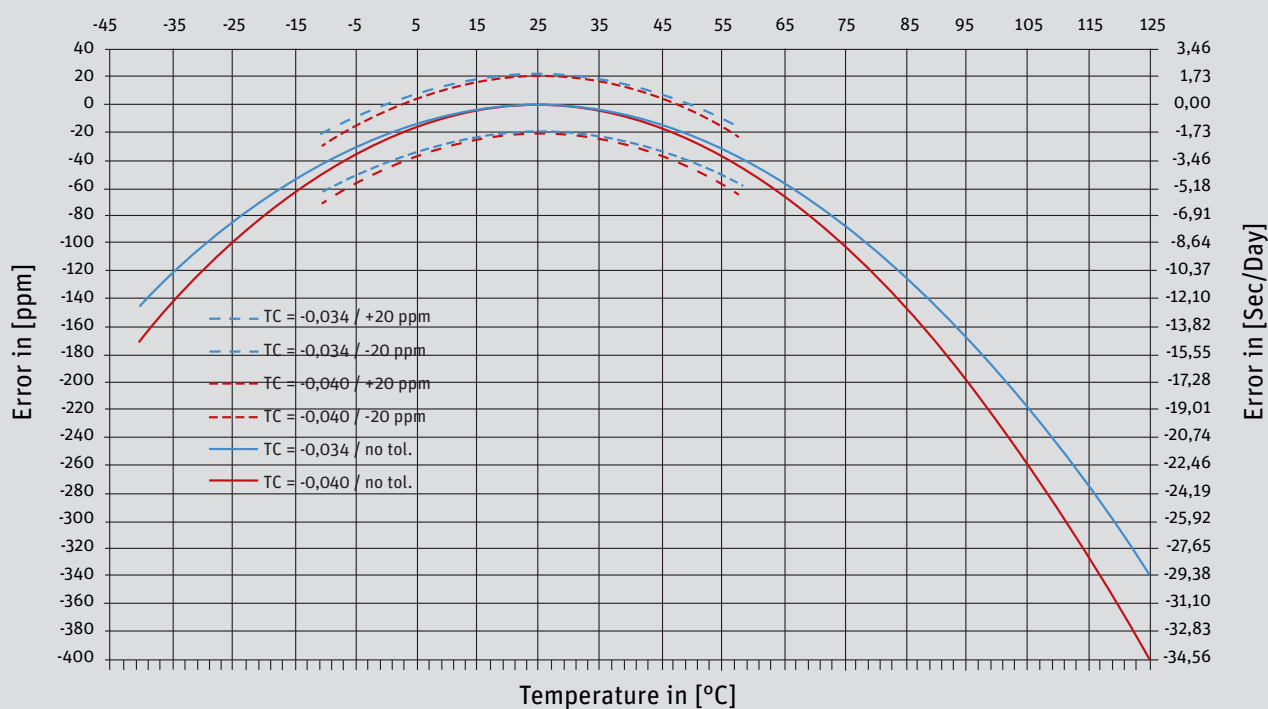
ORDER INFORMATION

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

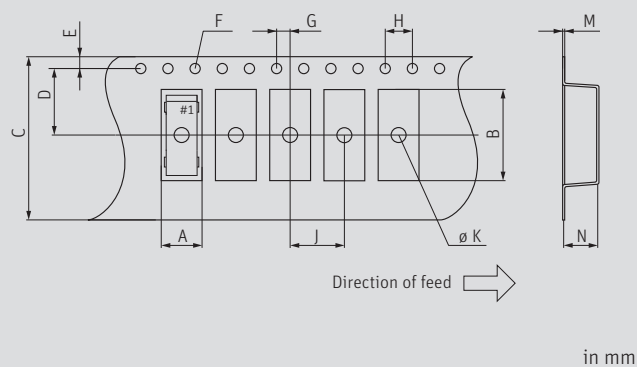
Example: Q 0.032768-SMQ32SL-12.5-20-T1-LF (Suffix LF = RoHS compliant / Pb free pads)

Quartz Crystal SMQ32SL

FREQUENCY ERROR VS. TEMPERATURE IN PPM OR SECONDS PER DAY



TAPING SPECIFICATION



A	B	C	D	E	G
4.1 $\pm$ 0.2	8.4 $\pm$ 0.2	16.0 $\pm$ 0.3	7.5 $\pm$ 0.1	1.75 $\pm$ 0.1	$\varnothing$ 1.5 $\pm$ 0.1
G	H	J	K	L	M
2.0 $\pm$ 0.1	4.0 $\pm$ 0.1	8.0 $\pm$ 0.1	$\varnothing$ 2.5 max.	0.3 $\pm$ 0.05	2.7 $\pm$ 0.1

REFLOW SOLDERING PROFILE

