



# SMQ32 series HOORAY

## surface mount tuning fork quartz crystal

### features

- for reflow soldering
- various packages

type	SMQ32	SMQ32 S	SMQ32 SL
frequency	32.768 kHz	32.768 kHz	32.768 kHz
frequency tolerance at 25 °C <sup>*1)</sup>	± 30 ppm	± 30 ppm	± 30 ppm
frequency temp. characteristic <sup>*2)</sup>	$f \text{ (ppm)} = -0.036 (25 \text{ °C} - T)^2$	$f \text{ (ppm)} = -0.036 (25 \text{ °C} - T)^2$	$f \text{ (ppm)} = -0.036 (25 \text{ °C} - T)^2$
parabolic curvature constant	$-0.036 \pm 0.006 \text{ ppm/°C}^2$	$-0.036 \pm 0.006 \text{ ppm/°C}^2$	$-0.036 \pm 0.006 \text{ ppm/°C}^2$
standard operating temperature <sup>*3)</sup>	-20 °C ~ +70 °C	-20 °C ~ +70 °C	-20 °C ~ +70 °C
storage temperature	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-30 °C ~ +80 °C
load capacitance $C_L$	10 pF   12.5 pF	12.5 pF	12.5 pF
shunt capacitance $C_0$	2 pF typical	1.75 pF typical	1.3 pF typical
capacitance ratio	580 typ.	480 typ.	518 typ.
series resistance $R_s$ max.	33 kΩ	50 kΩ	50 kΩ
drive level	1μW	1μW	1μW
aging	< ± 3 ppm	< ± 3 ppm	< ± 3 ppm

\*1) ±20 ppm on request

\*2) T = requested temperature

\*3) operating temperature -40 °C ~ +85 °C on request

### order information example:

**Q - 0.032768 - SMQ32 - 10 - 30**

1. 2. 3. 4. 5.

- quartz: Q
- frequency: 0.032768 MHz
- type: SMQ32
- load capacitance: 10.0 pF
- frequency stability at 25 °C: ± 30 ppm

marking: **SMQ32 / SMQ32S / SMQ32SL: D32.76 - date code**  
month: N - Z

date code: year/month example: N = 2006 January

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
N	P	Q	R	S	T	U	V	W	X	Y	Z

### test conditions:

- acceleration: 1000 g /0.5 ms, 1/2 sine wave
- shock (random drop): height 75 cm, 3 times to firmwood surface ( $\Delta R/R \leq \pm 15 \%$ ;  $\Delta f/f \leq \pm 5 \text{ ppm}$ )
- vibration:  $f = 10 \text{ Hz} \sim 55 \text{ Hz}$ ; amplitude = 1.5 mm; period = about 1 minute; time = 2 h each direction
- solderability: according to DIN 68-2-54

# SMQ32 series

# HOORAY

