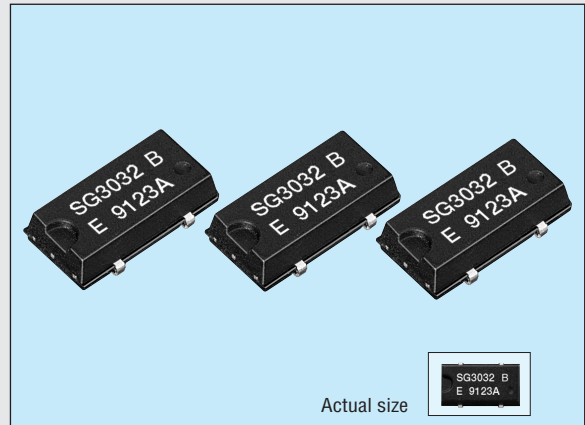


## 32kHz CRYSTAL OSCILLATOR

## SG-3032JC

- No adjustment required with 32.768 kHz crystal unit built-in.
- Use of C-MOS IC enables reduction of current consumption.
- Small suited to high-density mounting.



Actual size

## ■ Specifications (characteristics)

Item	Symbol	Specifications	Remarks
Output frequency range	$f_o$	32.768 kHz	
Power source voltage	Max. supply voltage	$V_{DD-GND}$	-0.3 V to +4.3 V
	Operating voltage	$V_{DD}$	1.8 V to 3.6 V
Temperature range	Storage temperature	$T_{STG}$	-55 °C to +125 °C
	Operating temperature	$T_{OPR}$	-20 °C to +70 °C
Soldering condition	$T_{SOL}$	Twice at Under +260 °C within 10 s	
Frequency tolerance	$\Delta f/f_o$	B: $5 \pm 23 \times 10^{-6}$ C: $5 \pm 50 \times 10^{-6}$ D: $5 \pm 100 \times 10^{-6}$	$V_{DD}=3.3$ V $T_a=+25$ °C
Frequency temperature characteristics		$+10 \times 10^{-6} / -120 \times 10^{-6}$	-20 °C to +70 °C, taking $T_a=+25$ °C as the reference
Frequency voltage characteristics		$\pm 2 \times 10^{-6} / V$ Max.	$T_a=+25$ °C
Current consumption	$I_{OP}$	5 $\mu$ A Max.	No load condition
Duty	$t_w/t$	40 % to 60 %	1/2 $V_{DD}$ level
Output voltage	$V_{OH}$	$V_{DD}-0.4$ V Min.	$I_{OH}=-50$ mA
	$V_{OL}$	0.4 V Max.	$I_{OL}=+0.5$ mA
Output load condition (fan out)	$C_L$	15 pF Max.	C-MOS load
Output rise time	$t_{TLH}$	100 ns Max.	C-MOS load: 20 % $\rightarrow$ 80 % $V_{DD}$
Output fall time	$t_{THL}$	100 ns Max.	C-MOS load: 80 % $\rightarrow$ 20 % $V_{DD}$
Oscillation start up time	$t_{OSC}$	3 s Max.	For more than 1 ms until $V_{DD}=0$ V $\rightarrow$ 1.8 V. Time at 1.8 V to be 0 s
Aging	$f_a$	$\pm 5 \times 10^{-6}$ /year Max.	$T_a=+25$ °C, $V_{DD}=3.3$ V, first year
Shock resistance	S.R.	$\pm 5 \times 10^{-6}$ Max.	Three drops on a hard board from 750 mm or excitation test with 29400 m/s <sup>2</sup> x 0.3 ms x 1/2 sine wave in 3 directions

Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.

## ■ External dimensions

(Unit: mm)

## ■ Recommended soldering pattern

(Unit: mm)

