

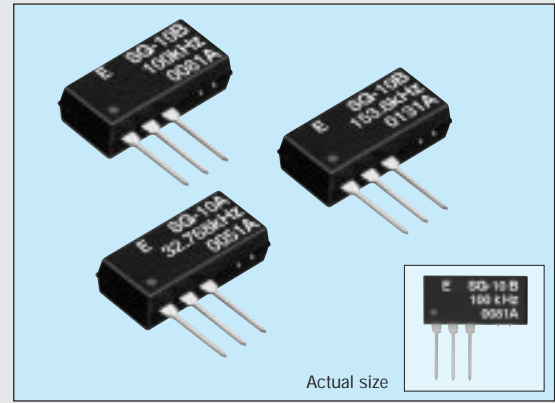
SIP LOW/MEDIUM-FREQUENCY CRYSTAL OSCILLATOR

# SG-10

Products number

**Q3110000xxxxx00**

- Low current consumption.
- Small suited to high-density mounting.
- Mountable on a standard printed circuit board.
- Cylindrical low/medium-frequency crystal unit builtin, thus assuring high reliability.



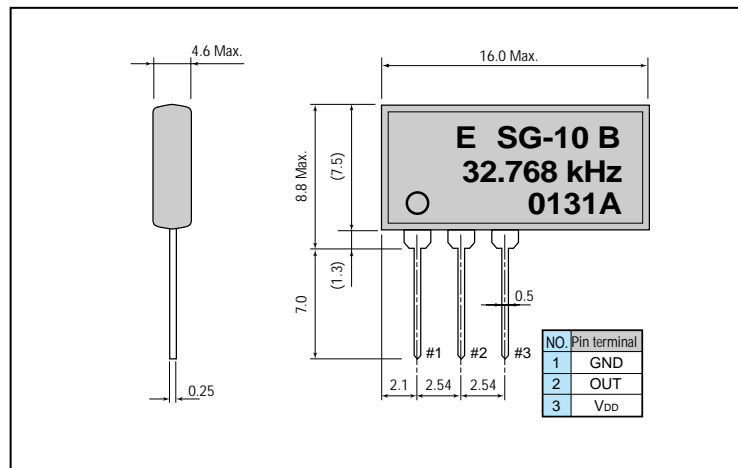
## Specifications (characteristics)

Item	Symbol	Specifications	Remarks
Output frequency range	$f_0$	10.0000 Hz to 153.6000 kHz	For output frequency, see the table below
Power source voltage	Max. supply voltage	$V_{DD-GND}$	-0.3 V to +7.0 V
	Operating voltage	$V_{DD}$	4.5 V to 5.5 V
Temperature range	Storage temperature	$T_{STG}$	-55 °C to +125 °C
	Operating temperature	$T_{OPR}$	-10 °C to +70 °C
Frequency tolerance	$\Delta f/f_0$	A: $\pm 10 \times 10^{-6}$ B: $\pm 50 \times 10^{-6}$	$V_{DD}=5\text{ V } T_a=+25\text{ }^\circ\text{C}$
Frequency temperature characteristics		$+10 \times 10^{-6} / -120 \times 10^{-6}$	-10 °C to +70 °C, taking $T_a=+25\text{ }^\circ\text{C}$ as the reference
Frequency voltage characteristics		$\pm 10 \times 10^{-6}$ Max.	
Current consumption	$I_{OP}$	0.5 mA Max..	No load condition
Duty	$t_w/t$	40 % to 60 % (except for cases of 1/3 and 1/5 divided frequency.)	$1/2 V_{DD}$ or 1.4 V level
Output voltage	$V_{OH}$	$V_{DD} - 1.0\text{ V}$ Min.	$I_{OH} = -40\ \mu\text{A}$
	$V_{OL}$	0.4 V Max.	$I_{OL} = 1.6\text{ mA}$
Output load condition (fan out)	$N/CL$	1 TTL Max./15 pF Max.	TTL load/C-MOS load
Output rise time	$t_{LH}$	60 ns Max.	
Output fall time	$t_{HL}$	50 ns Max.	
Oscillation start up time	$t_{osc}$	1 s Max.	For more than 1 ms until $V_{DD}=0\text{ V} \rightarrow 4.5\text{ V}$ . Time at 4.5 V to be 0 s
Aging	$f_a$	$\pm 5 \times 10^{-6}/\text{year}$ Max.	$T_a=+25\text{ }^\circ\text{C} \pm 3\text{ }^\circ\text{C}$ , $V_{DD}=5\text{ V}$ , 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)



## Output frequency table

Oscillation source	32.768 kHz, 60.000 kHz, 96.000 kHz, 100.000 kHz, 153.600 kHz
Divided frequency output (calculation method)	Oscillation source frequency x (any arbitrary one of 1/1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/12) x (any arbitrary one of 1/1, 1/10, 1/100, 1/1000). Over 10.0 Hz range.

For frequencies other than the above, please consult us. (Min. order lot 10000 pcs.)

## Output frequency example

Oscillation source	32.768 kHz, 60.000 kHz, 96.000 kHz, 100.000 kHz, 153.600 kHz
Divided frequency	10.000 Hz, 50.000 Hz, 100.000 Hz, 1.000 kHz, 4.800 kHz, 9.600 kHz, 19.200 kHz, 38.400 kHz, 50.000 kHz, 76.800 kHz