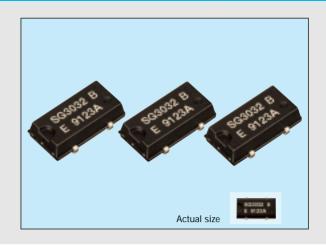
# 32kHz CRYSTAL OSCILLATOR SG-3032JC

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



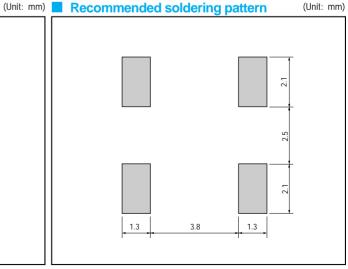
#### **■** Specifications (characteristics)

External dimensions

| Item                                  |                       | Symbol               | Specifications                      | Remarks  |
|---------------------------------------|-----------------------|----------------------|-------------------------------------|--|
| Output frequency range                |                       | fo                   | 32.768 kHz                          |  |
| Power source voltage                  | Max. supply voltage   | V <sub>DD</sub> -GND | -0.3V to +4.3V                      |  |
|                                       | Operating voltage     | V <sub>DD</sub>      | 1.8V to 3.6V                        |  |
| Temperature range                     | Storage temperature   | Тѕтс                 | -55°C to +125°C                     |  |
|                                       | Operating temperature | Topr                 | -20°C to +70°C                      |  |
| Soldering condition                   |                       | TsoL                 | Twice at Under 260°C within 10 sec. |  |
| Frequency tolerance                   |                       | ∆f/fo                | B: 5±23ppm C: 5±50ppm D: 5±100ppm   | V <sub>DD</sub> =3.3V Ta=25°C  |
| Frequency temperature characteristics |                       |                      | +10ppm / -120ppm                    | -20°C to +70°C, taking Ta=25°C as the reference  |
| Frequency voltage characteristics     |                       |                      | ±2ppm /V max.                       | Ta=25°C  |
| Current consumption                   |                       | Іор                  | 5μA max.                            | No load condition  |
| Duty                                  |                       | tw/t                 | 40% to 60%                          | 1/2 V <sub>DD</sub> level  |
| Output voltage                        |                       | Vон                  | V <sub>DD</sub> -0.4V min.          | Iон= -50mA   |
|                                       |                       | Vol                  | 0.4V max.                           | IoL=+0.5mA   |
| Output load condition (fan out)       |                       | CL                   | 15pF max.                           | C-MOS load   |
| Output rise time                      |                       | tтьн                 | 100ns max.                          | C-MOS load:20%→80% V <sub>DD</sub>   |
| Output fall time                      |                       | tтнL                 | 100ns max.                          | C-MOS load:80%→20% V <sub>DD</sub>   |
| Oscillation start up time             |                       | tosc                 | 3s max.                             | For more than 1ms until VDD=0V→1.8V.   |
|                                       |                       |                      |                                     | Time at 1.8V to be 0 sec.  |
| Aging                                 |                       | fa                   | ±5ppm/year max.                     | Ta=25°C, VDD=3.3V, first year  |
| Shock resistance                      |                       | S.R.                 | ±5ppm max.                          | Three drops on a hard board from 75 cm or excitation test with 3000G x 0.3ms 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.

# 10.5 max. | MO | Pin terminal | NC | 2 GND | 3 OUT | 4 V<sub>10</sub> | V<sub>10</sub>



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### THE CRYSTALMASTER



## ENERGY SAVING EPSON

EPSON offers effective savings to its customers through a wide range of electronic devices, such as semiconductors, liquid crystal display (LCD) modules, and crystal devices. These savings are achieved through a sophisticated melding of three different efficiency technologies.

Power saving technology provides low power consumption at low voltages.

Space saving technology provides further reductions in product size and weight through super-precise processing and high-density assembly technology.

Time saving technology shortens the time required for design and development on the customer side and shortens delivery times.



Our concept of Energy Saving technology conserves resources by blending the essence of these three efficiency technologies. The essence of these technologies is represented in each of the products that we provide to our customers.

In the industrial sector, leading priorities include measures to counter the greenhouse effect by reducing CO2,

measures to preserve the global environ-

ment, and the development of energyefficient products. Environmental
problems are of global concern, and
although the contribution of energysaving technology developed by
EPSON may appear insignificant,
we seek to contribute to the development of energy-saving products by our

customers through the utilization of our electronic devices. EPSON is committed to the conservation of energy, both for the sake of people and of the planet on which we live.





Resource

Saving



SEIKO EPSON CORP. QUARTZ DEVICE DIVISION acquired ISO9001 and ISO14001 certification by B.V.Q.I. (Bureau Veritas Quality International).

ISO9001 in October, 1992. ISO14001 in November,1997.

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