## CRYSTAL OSCILLATOR

32.768 kHz

## SG-3030 CM

-Built-in 32.768 kHz crystal unit allows adjustment-free efficient operation. -Use of C-MOS IC enables reduction of current consumption.
-VIO controls swing amplitude.

Product Number (please contact us) X1B000211xxxx00


## Specifications (characteristics)

| Item | Symbol | Specifications | Remarks |
| :---: | :---: | :---: | :---: |
| Output frequency range | fo | 32.768 kHz |  |
| Supply voltage | Vcc | 1.5 V to 5.5 V |  |
| Interface power supply voltage | Vıo | 1.5 V to 5.5 V |  |
| Temperature Storage temperature | T_stg | $-55^{\circ} \mathrm{C}$ to $+125^{\circ} \mathrm{C}$ | Store as bare product after unpacking |
| range $\quad$ Operating temperature | T_use | $-40^{\circ} \mathrm{C}$ to $+85{ }^{\circ} \mathrm{C}$ |  |
| Frequency tolerance | f_tol | $+5 \pm 23 \times 10^{-6}$ | $+25^{\circ} \mathrm{C}, \mathrm{Vcc}=3.3 \mathrm{~V}$ |
| Frequency temperature coefficient | fo-Tc | $+10 \times 10^{-6} /-120 \times 10^{-6}$ | $-20^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}\left(+25^{\circ} \mathrm{C}\right.$ is reference) |
| Frequency voltage coefficient | fo-Vcc | $\pm 2 \times 10^{-6} / \mathrm{V}$ Max | $+25^{\circ} \mathrm{C}$, |
| Current consumption | Icc | $2 \mu \mathrm{~A}$ Max. | 3.3V, No load condition |
| Symmetry | SYM | $45 \%$ to 55 \% | 1/2Vcc(Vıo) level |
| High output voltage | VOH | VIO-0.4V Min. | $\mathrm{IOH}=-0.4 \mathrm{~mA}$ |
| Low output voltage | Vol | 0.4V Max. | $\mathrm{loL}=0.4 \mathrm{~mA}$ |
| Output load condition (CMOS) | L_CMOS | 15 pF Max. | CMOS load |
| Rise time / Fall time | tr / tf | 200 ns Max. | CMOS load:20 \% Vcc(Vı) to 80 \% Vcc(Vıo) level |
| Start-up time | t_str | 1 s Max. | Time at minimum Supply voltage to be 0s $+25^{\circ} \mathrm{C}$ |
| Frequency aging | f_aging | $\pm 5 \times 10^{-6} /$ year Max. | $+25^{\circ} \mathrm{C}, \mathrm{Vcc}=3.3 \mathrm{~V}$, First year |

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

## Block diagram

Vcc
(Unit:mm)

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