

CRYSTAL OSCILLATOR

32.768 kHz

SG-3030LC/JF/JC
SG-3040LC/JC

- 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)

SG-3030LC : Q3102LC0xxxxxx00

SG-3030JF : Q3102JF0xxxxxx00

SG-3030JC : Q3102JC0xxxxxx00

SG-3040LC : Q3103LC0xxxxxx00

SG-3040JC : Q3103JC0xxxxxx00

SG-3030LC
SG-3040LC

SG-3030JF

SG-3030JC
SG-3040JC

Actual size

LC Type.



JF Type.



JC Type.

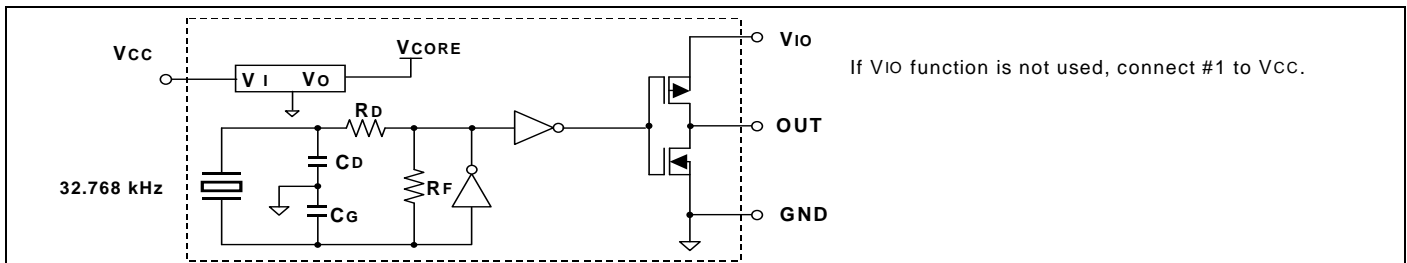


Specifications (characteristics)

Item	Symbol	Specifications		Remarks
		SG-3030LC/JF/JC	SG-3040LC/JC	
Output frequency range	f_0	32.768 kHz		
Supply voltage	V_{CC}	1.5 V to 5.5 V	0.9 V to 3.6 V	
Interface power supply voltage	V_{IO}	1.5 V to 5.5 V	0.9 V to 3.6 V	
Temperature range	Storage temperature	T_{stg} -55 °C to +125 °C		Store as bare product after unpacking
	Operating temperature	T_{use} -40 °C to +85 °C		
Frequency tolerance	f_{tol}	$5 \pm 23 \times 10^{-6}$		+25 °C, $V_{CC}=3.3$ V (SG-3040: $V_{CC}=1.2$ V)
Frequency temperature coefficient	f_0-T_c	$+10 \times 10^{-6} / -120 \times 10^{-6}$		-20 °C to +70 °C (+25 °C is reference)
Frequency / voltage coefficient	f_0-V_{CC}	$\pm 2 \times 10^{-6} / V$ Max.	$\pm 5 \times 10^{-6} / V$ Max.	+25 °C
Current consumption	I_{CC}	2 μ A Max.	3.1 μ A Max.	3.3 V, No load condition
Symmetry	SYM	45 % to 55 %		1/2 $V_{CC}(V_{IO})$ level (SG-3040: $V_{IO}=1.2$ V to 3.6 V)
High output voltage	V_{OH}	$V_{IO}-0.4$ V Min.		$I_{OH}=-0.4$ mA (SG-3040: $V_{IO}=1.2$ V to 3.6 V)
Low output voltage	V_{OL}	0.4 V Max.		$I_{OL}=0.4$ mA (SG-3040: $V_{IO}=1.2$ V to 3.6 V)
Output load condition (CMOS)	L_{CMOS}	15 pF Max.		CMOS load
Rise time / Fall time	t_r / t_f	200 ns Max.	100 ns Max.	CMOS load: 20 % $V_{CC}(V_{IO})$ to 80 % $V_{CC}(V_{IO})$ level (SG-3040: $V_{IO}=1.2$ V to 3.6 V)
Start-up time	t_{str}	1 s Max.	3 s Max.	Time at minimum Supply voltage to be 0 s +25 °C (SG-3030: $V_{CC}=2.0$ V to 5.5 V)
Frequency aging	f_{aging}	$\pm 5 \times 10^{-6} / \text{year}$ Max.		+25 °C, $V_{CC}=3.3$ V, First year

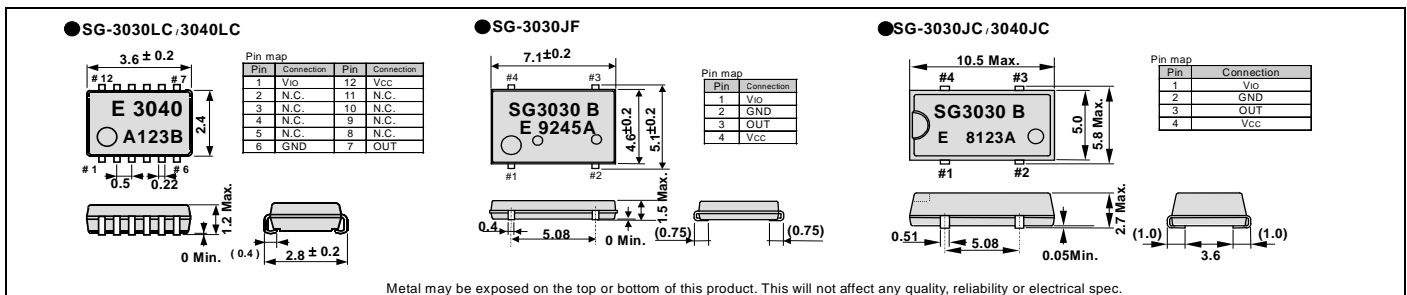
Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.

Block diagram



External dimension

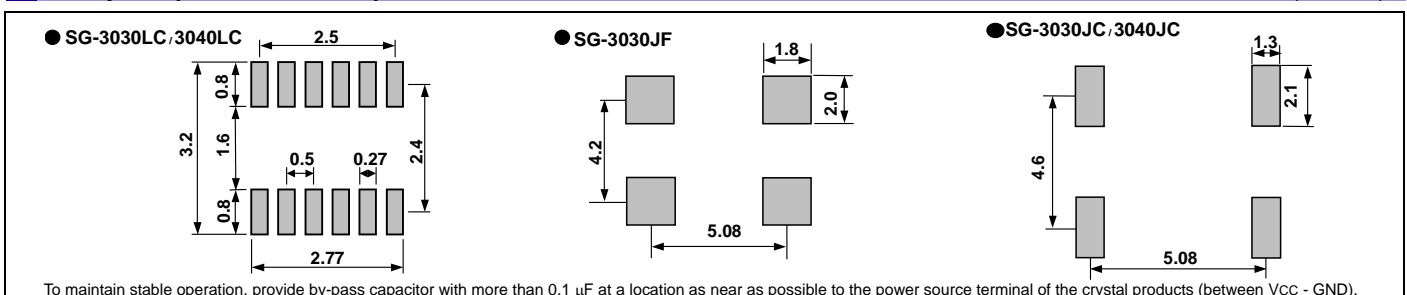
(Unit:mm)



Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

Footprint (Recommended)

(Unit:mm)

To maintain stable operation, provide by-pass capacitor with more than 0.1 μ F at a location as near as possible to the power source terminal of the crystal products (between VCC - GND).