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.

RoHS Compliant

Product Number
SG-3030LC : Q3102LC02000100
SG-3030JF : Q3102JF02000100
SG-3030JC : Q3102JC02000100
SG-3040LC : Q3103LC02000100
SG-3040JC : Q3103JC01000100

SG-3030LC
SG-3040LC

SG-3030JF

SG-3030JC
SG-3040JC

Actual size

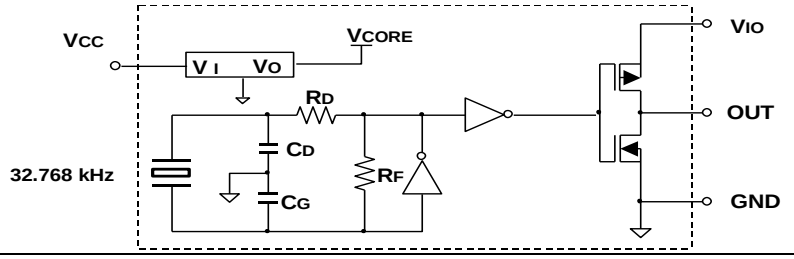
LC Type.	JF Type.	JC Type.
		

Specifications (characteristics)

Item	Symbol	Specifications		Conditions / 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	
Storage temperature	T_stg	-55 °C to +125 °C		Store as bare product .
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	fo-Tc	$+10 \times 10^{-6}$ / -120×10^{-6}		-20 °C to +70 °C (+25 °C is reference)
Frequency / voltage coefficient	fo-Vcc	$\pm 2 \times 10^{-6}$ / V Max.	$\pm 5 \times 10^{-6}$ / V Max.	+25 °C
Current consumption	I_{CC}	2 μA Max.	3.1 μA 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)
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)
	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	$\pm 5 \times 10^{-6}$ / 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

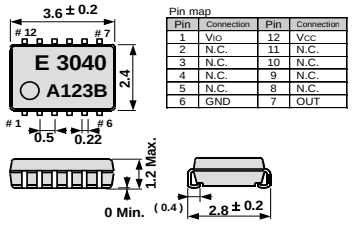


If V_{IO} function is not used, connect #1 to V_{CC}.

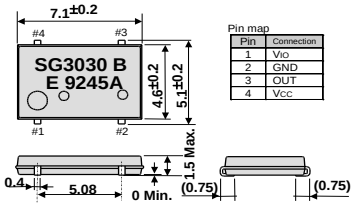
External dimension

(Unit:mm)

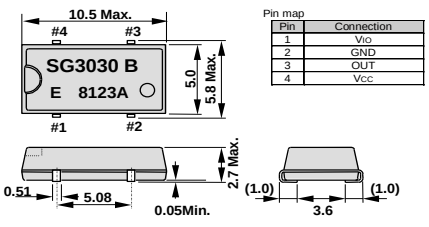
● SG-3030LC / 3040LC



● SG-3030JF



● SG-3030JC / 3040JC

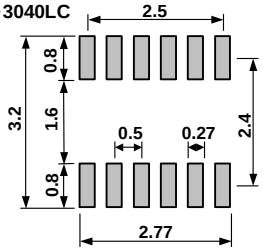


Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

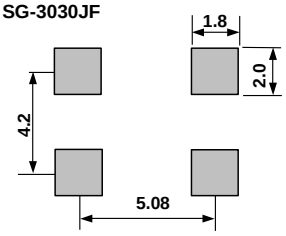
Footprint (Recommended)

(Unit:mm)

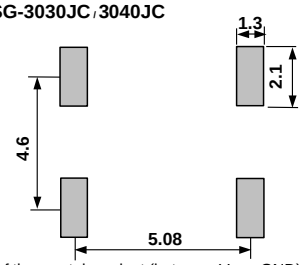
● SG-3030LC / 3040LC



● SG-3030JF



● SG-3030JC / 3040JC



To maintain stable operation, provide a 0.01uF to 0.1uF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - GND).