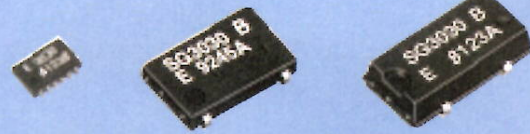


CRYSTAL OSCILLATOR

32.768 kHz

SG-3030LC / JF / JC
SG-3040LC / JC
SG-3032JC

- 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 (SG-3030 / SG-3040).



SG-3030LC
SG-3040LC

SG-3030JF

SG-3030JC
SG-3040JC
SG-3032JC

Actual size

LC Type.

JF Type.

JC Type.

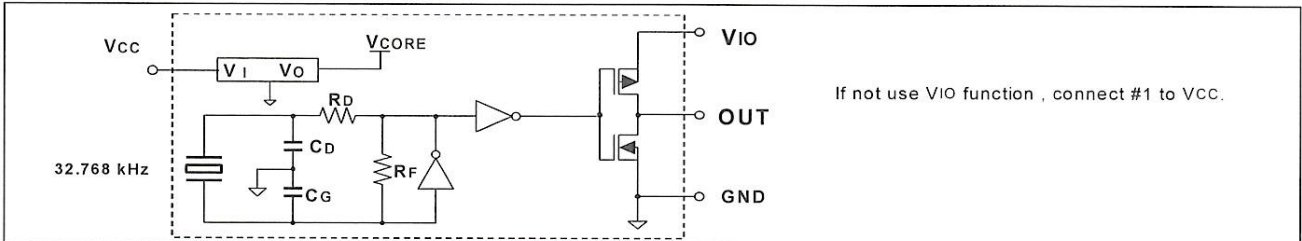


Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		SG-3030LC / JF / JC	SG-3040LC / JC	SG-3032JC	
Output frequency range	f_0	32.768 kHz			
Supply voltage	Vcc	1.5 V to 5.5 V	0.9 V to 3.6 V	1.8 V to 3.6 V	
Interface power supply voltage	Vio	1.5 V to 5.5 V	0.9 V to 3.6 V	—	
Temperature range	Storage temperature	-55 °C to +125 °C			Store as bare product after unpacking
	Operating temperature	-40 °C to +85 °C			
Frequency tolerance	$F_{tol}(osc)$	$5 \pm 23 \times 10^{-6}$			+25 °C, Vcc=3.3 V (SG-3040: Vcc=1.2 V)
Frequency temperature coefficient	Fo-Tc	$+10 \times 10^{-6} / -120 \times 10^{-6}$			-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	$-2 \times 10^{-6} / V$ Max.	+25 °C
Current consumption	Icc	2 μ A Max.	3.1 μ A Max.	5 μ A Max	3.3 V, No load condition
Symmetry	SYM	45 % to 55 %			1/2 Vcc(Vio) level (SG-3040: Vio=1.2 V to 3.6 V)
High output voltage	VOH	Vio-0.4 V Min.			IOH=-0.4 mA (SG-3040: Vio=1.2 V to 3.6 V)
Low output voltage	VOL	0.4 V Max.			IOL= 0.4 mA (SG-3040: Vio=1.2 V to 3.6 V)
Output load condition (CMOS)	L_CMOS	15 pF Max.			CMOS load
Output rise and fall time	t_r / t_f	200 ns Max.	100 ns Max.		CMOS load: 20 % Vcc(Vio) to 80 % Vcc(Vio) level (SG-3040: Vio=1.2 V to 3.6 V)
Oscillation start up time	tosc	1 s Max.	3 s Max.		Time at minimum Supply voltage to be 0 s
Frequency aging	F_aging	$\pm 5 \times 10^{-6} / \text{year}$ Max.			+25 °C, Vcc= 3.3 V, First year

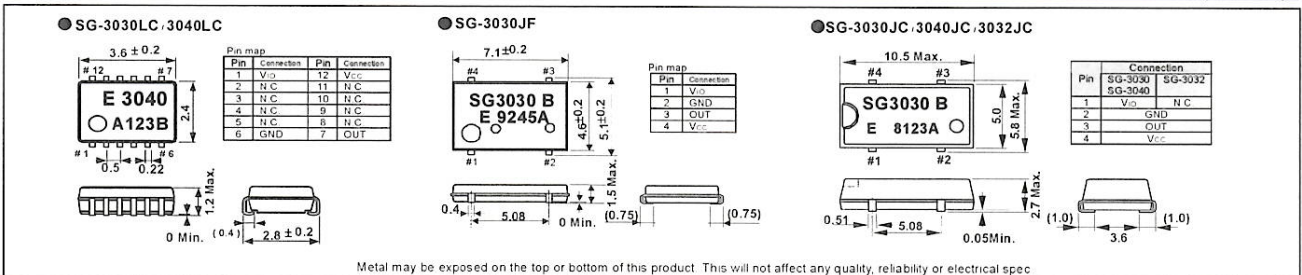
Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.

Block diagram (SG-3030LC / JC / JF, SG3040JC / LC)



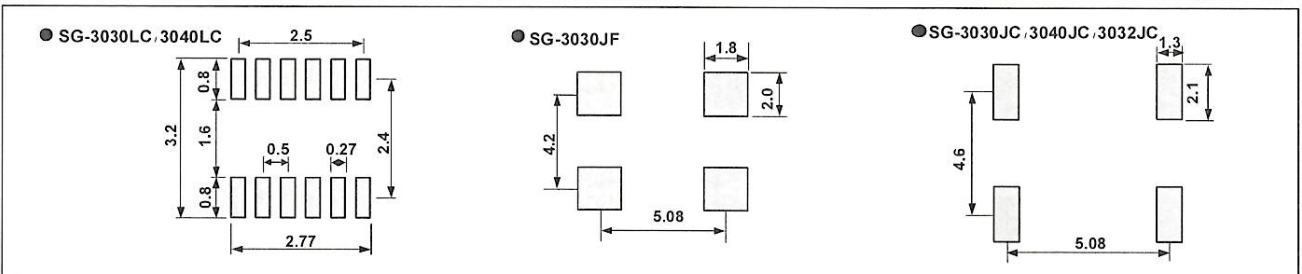
External dimension

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



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