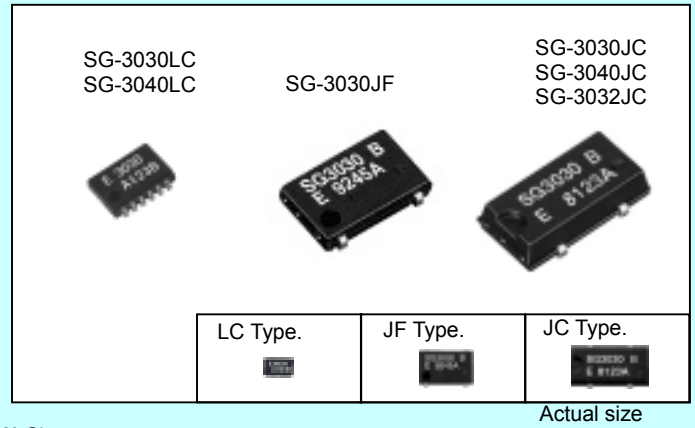


32.768kHz CRYSTAL OSCILLATOR

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

Product number (please contact us)

- SG-3030LC : Q3102LC00xxxx00
- SG-3030JF/JC : Q3102JF01xxxx00 / Q3102JC01xxxx00
- SG-3040LC/JC : Q3103LC00xxxx00 / Q3103JC01xxxx00
- SG-3032JC : Q3101JC01xxxx00



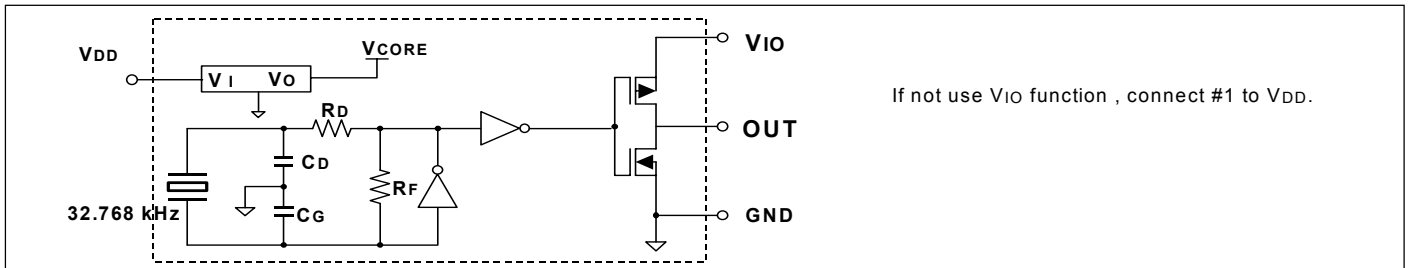
- No adjustment required with 32.768 kHz crystal unit built-in.
- Use of C-MOS IC enables reduction of current consumption.
- VIO controls swing amplitude (SG-3030 / SG-3040).
- Complies with EU RoHS directive (Lead free completely: SG-3030LC / SG-3040LC)

Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		SG-3030LC / JF/JC	SG-3040LC / JC	SG-3032JC	
Output frequency range	f <sub>0</sub>	32.768 kHz			
Operating voltage	V <sub>DD</sub>	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	V <sub>IO</sub>	1.5 V to 5.5 V	0.9 V to 3.6 V	—	
Temperature range	Storage temperature	-55 °C to +125 °C			Stored as bare product after unpacking
	Operating temperature	T <sub>OPR</sub>	-40 °C to +85 °C	-20 °C to +70 °C	
Frequency tolerance	Δf/f <sub>0</sub>	5 ± 23 × 10 <sup>-6</sup>			T <sub>a</sub> =+25 °C, V <sub>DD</sub> =3.3 V (SG-3040: V <sub>DD</sub> =1.2 V)
Frequency temperature characteristics	T <sub>OP</sub>	+10 × 10 <sup>-6</sup> / -120 × 10 <sup>-6</sup>			T <sub>a</sub> =+25 °C, -20 °C to +70 °C
Frequency voltage characteristics	f/V	± 2 × 10 <sup>-6</sup> / V Max.	± 5 × 10 <sup>-6</sup> / V Max.	± 2 × 10 <sup>-6</sup> / V Max.	T <sub>a</sub> =+25 °C
Current consumption	I <sub>OP</sub>	2 μA Max.	3.1 μA Max	5 μA Max	3.3 V, No load condition
Duty	tw/t	45 % to 55 %			1/2 V <sub>DD</sub> (V <sub>IO</sub> )Level (SG-3040: V <sub>IO</sub> =1.2 V to 3.6 V)
High output voltage	V <sub>OH</sub>	V <sub>IO</sub> -0.4 V Min.			I <sub>OH</sub> =0.4 mA (SG-3040: V <sub>IO</sub> =1.2 V to 3.6 V)
Low output voltage	V <sub>OL</sub>	0.4 V Max.			I <sub>OL</sub> = 0.4 mA (SG-3040: V <sub>IO</sub> =1.2 V to 3.6 V)
Output load condition	C <sub>L</sub>	15 pF Max.			CMOS load
Output rise fall time	t <sub>r</sub> / t <sub>f</sub>	200 ns Max.	100 ns Max		CMOS load: 20 % V <sub>DD</sub> (V <sub>IO</sub> ) to 80 % V <sub>DD</sub> (V <sub>IO</sub> )Level (SG-3040: V <sub>IO</sub> =1.2 V to 3.6 V)
Oscillation start up time	t <sub>osc</sub>	3 s Max.	3 s Max.		Time at minimum operating voltage to be 0 s T <sub>a</sub> =+25 °C (SG-3030: V <sub>DD</sub> = 2.0 V to 5.5 V)
Aging	f <sub>a</sub>	± 5 × 10 <sup>-6</sup> Max.			T <sub>a</sub> =+25 °C, V <sub>DD</sub> = 3.3 V, first year

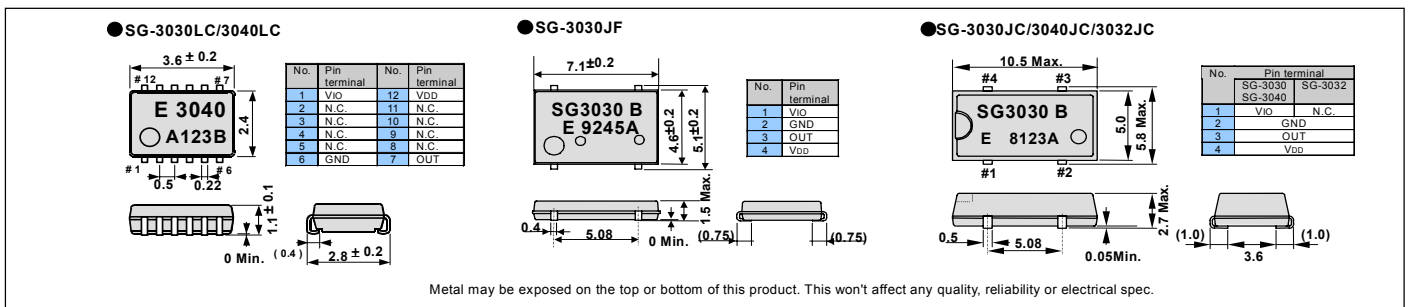
Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.

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



External dimension

(Unit:mm)



Recommended soldering pattern

(Unit:mm)

