

CRYSTAL OSCILLATOR (Programmable)

OUTPUT: CMOS

SG-8018

series

- Frequency range : 0.67 MHz to 170 MHz (1 ppm Step)
- Supply voltage : 1.62 V to 3.63 V
- Function : Output enable (OE) or Standby (ST)
- Frequency tolerance : ± 50 ppm (-40 °C to +105 °C)
Including frequency aging(+25 °C, 10 years)
- PLL technology to enable short lead time
- Available field oscillator programmer “SG-Writer II”



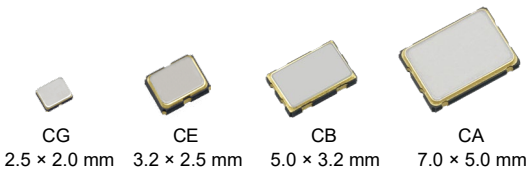
Product Number

SG-8018CG: X1G005601xxxx00

SG-8018CE: X1G005591xxxx00

SG-8018CB: X1G005581xxxx00

SG-8018CA: X1G005571xxxx00



Specifications (characteristics)												
Item		Symbol	Specifications				Conditions/Remarks					
Supply voltage		V _{CC}	1.80 V Typ.		2.50 V Typ.	3.30 V Typ.	-					
			1.62 V to 1.98 V	1.98 V to 2.20 V	2.20 V to 2.80 V	2.70 V to 3.63 V						
Output frequency range		f _o	0.67 MHz to 170 MHz									
Storage temperature range		T _{stg}	-40 °C to +125 °C				Storage as single product.					
Operating temperature range		T _{use}	-40 °C to +105 °C				-					
Frequency tolerance ^{*1}		f _{tol}	J: ±50 × 10 ⁻⁶				T _{use} = -40 °C to +105 °C					
Current consumption		I _{CC}	3.2 mA Max.	3.3 mA Max.	3.4 mA Max.	3.5 mA Max.	T _{use} = +105 °C	No load, f _o = 20 MHz				
			2.7 mA Typ.		2.9 mA Typ.		T _{use} = +25 °C					
			5.5 mA Max.	5.8 mA Max.	6.7 mA Max.	8.1 mA Max.	T _{use} = +105 °C	No load, f _o = 170 MHz				
			4.7 mA Typ.		5.7 mA Typ.		6.8 mA Typ.			T _{use} = +25 °C		
Output disable current		I _{dis}	3.2 mA Max.	3.2 mA Max.	3.3 mA Max.	3.5 mA Max.	OE = GND, f _o = 170 MHz					
Standby current		I _{std}	0.9 μA Max.	1.0 μA Max.	1.5 μA Max.	2.5 μA Max.	T _{use} = +105 °C	ST = GND				
			0.3 μA Typ.	0.4 μA Typ.	0.5 μA Typ.	1.1 μA Typ.	T _{use} = +25 °C					
Symmetry		SYM	45 % to 55 %				50 % V _{CC} Level					
Output voltage (DC characteristics)		V _{OH}	90 % V _{CC} Min.				I _{OH} /I _{OL} Conditions [mA]					
							Rise/Fall time	V _{CC}	*A	*B	*C	*D
							Default (f _o > 40 MHz), Fast	I _{OH}	-2.5	-3.5	-4.0	-5.0
		V _{OL}	10 % V _{CC} Max.				I _{OL}	2.5	3.5	4.0	5.0	
							Default (f _o ≤ 40 MHz)	I _{OH}	-1.5	-2.0	-2.5	-3.0
							I _{OL}	1.5	2.0	2.5	3.0	
							Slow	I _{OH}	-1.0	-1.5	-2.0	-2.5
I _{OL}	1.0	1.5	2.0	2.5								
Output load condition		L _{CMOS}	15 pF Max.				- *A: 1.62 V to 1.98 V, *B: 1.98 V to 2.20 V, *C: 2.20 V to 2.80 V, *D: 2.70 V to 3.63 V					
Input voltage		V _{IH}	70 % V _{CC} Min.				OE or ST					
		V _{IL}	30 % V _{CC} Max.									
Rise time /Fall time	Default	tr/tf	3.0 ns Max.			f _o > 40 MHz		20 % - 80 % V _{CC} , L _{CMOS} = 15 pF				
	6.0 ns Max.			f _o ≤ 40 MHz								
	Fast		3.0 ns Max.			f _o = 0.67 MHz to 170 MHz						
	Slow		10.0 ns Max.			f _o = 0.67 MHz to 20 MHz						
Output disable time (OE)		tstp_oe	1 μs Max.				Measured from the time OE or ST pin crosses 30 % V _{CC}					
Output disable time (ST)		tstp_st										
Output enable time (OE)		tsta_oe	1 μs Max.				Measured from the time OE pin crosses 70 % V _{CC}					
Output enable time (ST)		tsta_st	3 ms Max.				Measured from the time ST pin crosses 70 % V _{CC}					
Start-up time		t _{str}	3 ms Max.				Measured from the time V _{CC} reaches its rated minimum value, 1.62 V					
Frequency aging		f _{age}	This is included in frequency tolerance specification.				+25 °C, 10 years					

^{*1} Frequency tolerance includes initial frequency tolerance, frequency / temperature characteristics, frequency / voltage coefficient, frequency / load coefficient and frequency aging (+25 °C, 10 years).

Pin description				
Pin	Name	I/O type	Function	
1	OE	Input	Output enable	High ^{*2} : Specified frequency output from OUT pin Low: Out pin is low (weak pull down), only output driver is disabled.
	ST	Input	Standby	High ^{*2} : Specified frequency output from OUT pin Low: Out pin is low (weak pull down), Device goes to standby mode. Supply current reduces to the least as I _{std} .
2	GND	Power	Ground	
3	OUT	Output	Clock output	
4	V _{CC}	Power	Power supply	

^{*2} Please do not use the OE/ST terminal in the open state.



Product Name

SG-8018CG **25.000000MHz** **T J H P A**
① ② ③ ④⑤⑥⑦⑧

- ①Model ②Package type ③Frequency
④Supply voltage (T: 1.8 V to 3.3 V Typ.)
⑤Frequency tolerance (J: $\pm 50 \times 10^{-6}$)
⑥Operating temperature (H: -40 °C to +105 °C)
⑦Function ⑧Rise/Fall time

②Package type

CG	2.5 mm × 2.0 mm
CE	3.2 mm × 2.5 mm
CB	5.0 mm × 3.2 mm
CA	7.0 mm × 5.0 mm

⑦Function

P	Output enable
S	Standby

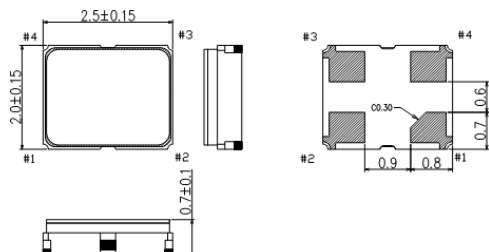
⑧Rise time/Fall time

A	Default
B	Fast
C	Slow

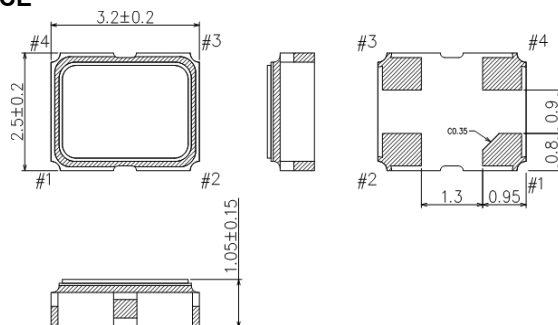
External dimensions

(Unit: mm)

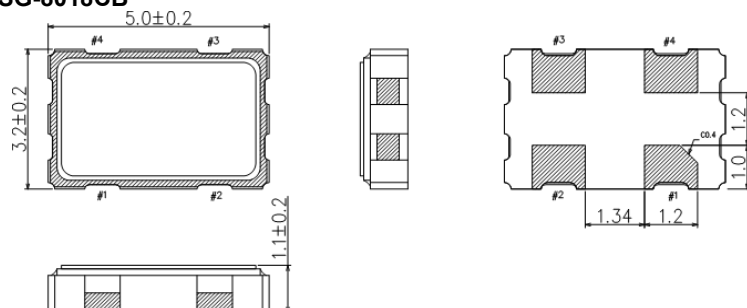
SG-8018CG



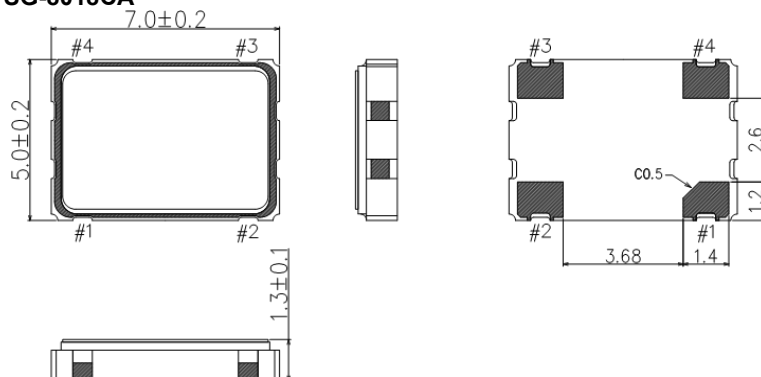
SG-8018CE



SG-8018CB



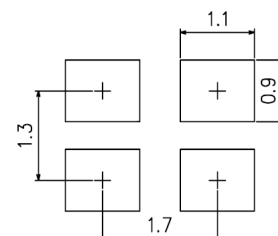
SG-8018CA



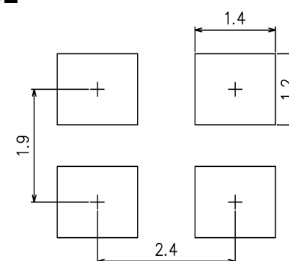
Footprint (Recommended)

(Unit: mm)

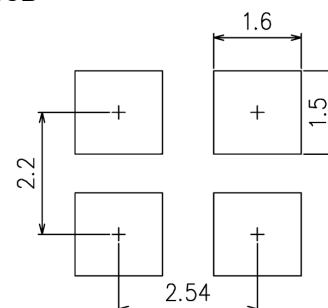
SG-8018CG



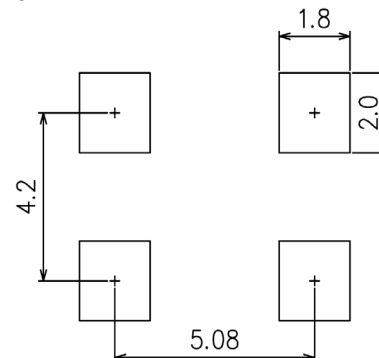
SG-8018CE



SG-8018CB



SG-8018CA



■Notes:

In order to achieve optimum jitter performance, the 0.1 μ F capacitor between V_{CC} and GND should be placed. It is also recommended that the capacitors are placed on the device side of the PCB, as close to the device as possible and connected together with short wiring pattern.

► Explanation of the mark that are using it for the catalog

	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive general equipment.
	► Designed for automotive applications related to driving and safety.

NOTICE : PLEASE READ CAREFULLY BELOW BEFORE THE USE OF THIS DOCUMENT

1. The content of this document is subject to change without notice. Before purchasing or using Epson products, please contact with sales representative of Seiko Epson Corporation ("Epson") for the latest information and be always sure to check the latest information published on Epson's official web sites and resources.
2. This document may not be copied, reproduced, or used for any other purposes, in whole or in part, without Epson's prior consent.
3. Information provided in this document including, but not limited to application circuits, programs and usage, is for reference purpose only. Epson makes no guarantees against any infringements or damages to any third parties' intellectual property rights or any other rights resulting from the information. This document does not grant you any licenses, any intellectual property rights or any other rights with respect to Epson products owned by Epson or any third parties.
4. Epson has prepared this document carefully to be accurate and dependable, but Epson does not guarantee that the information is always accurate and complete. Epson assumes no responsibility for any damages you incurred due to any misinformation in this document.
5. Epson products listed in this document and our associated technologies shall not be used in any equipment or systems that laws and regulations in Japan or any other countries prohibit to manufacture, use or sell. Furthermore, Epson products and our associated technologies shall not be used for the purposes of military weapons development (e.g. mass destruction weapons), military use, or any other military applications. If exporting Epson products or our associated technologies, please be sure to comply with the Foreign Exchange and Foreign Trade Control Act in Japan, Export Administration Regulations in the U.S.A (EAR) and other export-related laws and regulations in Japan and any other countries and to follow their required procedures.
6. Epson assumes no responsibility for any damages (whether direct or indirect) caused by or in relation with your non-compliance with the terms and conditions in this document or for any damages (whether direct or indirect) incurred by any third party that you give, transfer or assign Epson products.
7. For more details or other concerns about this document, please contact our sales representative.
8. Company names and product names listed in this document are trademarks or registered trademarks of their respective companies.

● Disclaimer

1. Epson products are designed for use in general electronic equipment applications that do not require extremely high reliability or safety.
2. Epson does not represent or warrant that its products will not cause a failure for any particular application, except for cases where the failure is a direct result caused by defects in materials and workmanship of this product.
If a product fails due to defects in materials and workmanship, to the maximum extent permitted by law, we will, at our sole discretion, refund or replace the affected product.
3. When products for used directly or indirectly in certain devices or applications (ex. Nuclear power, aerospace, infrastructure facilities, medical equipment, etc.) which are connected to or affect safety of human life or property, Customer is solely responsible for determining if the products and respective specifications are suitable for the intended use in particular customer applications.
Customer shall implement necessary and proper safety design and measures (including redundant design, malfunction prevention design, etc.) to ensure reliability and safety before using the products in/with customer's Equipment.
4. For the products designed for automotive applications, the products comply with AEC-Q100 or AEC-Q200.
Products do not comply with ISO 26262 (Products are not categorized to ASIL A, B, C and D).
5. No dismantling, analysis, reverse engineering, modification, alteration, adaptation, reproduction, etc., of Epson products is allowed.
Furthermore, any defects caused by this are not covered by the warranty.

©Seiko Epson Corporation 2025