CRYSTAL OSCILLATOR (Programmable)
OUTPUT: CMOS
SG-8018 series

Pb Free RoHS Compliant

Product Number
SG-8018CG: X1G005601xxxx00
SG-8018CE: X1G005591xxxx00
SG-8018CB: X1G005581xxxx00
SG-8018CA: X1G005571xxxx00

- 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 ($\overline{ST}$)
- Frequency tolerance : ±50 ppm (-40 ºC to +105 ºC)
  Including frequency aging(+25 ºC, 10 years)
- PLL technology to enable short lead time
- Available field oscillator programmer “SG-Writer II”



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

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.	3.0 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	$\overline{ST}$ = 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]	
	V_{OL}	10 % V_{CC} 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	
Output load condition	L_CMOS	15 pF Max.				-	
Input voltage	V_{IH}	70 % V_{CC} Min.				OE or $\overline{ST}$	
	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
Default		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) Output disable time (ST)	tstp_oe tstp_st	1 µs Max.				Measured from the time OE or $\overline{ST}$ pin crosses 30 % V_{CC}	
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 $\overline{ST}$ 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	

Rise time /Fall time Default	tr/tf	3.0 ns Max.				f_O > 40 MHz	20 % - 80 % V_{CC}, L_CMOS = 15 pF	
Default		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		

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
	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

*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.
	$\overline{ST}$	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/$\overline{ST}$ 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: ±50 × 10^{-6})
⑥Operating temperature (H: -40 °C to +105 °C)
⑦Function ⑧Rise/Fall time

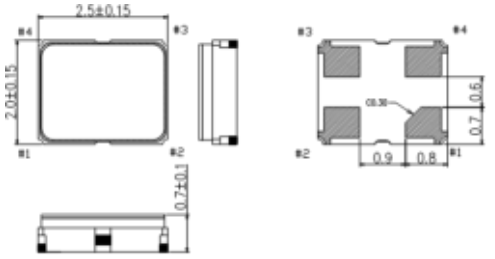
②Package type	
CG	2.5 mm × 2.0 mm
CE	3.2 mm × 2.5 mm
CB	5.0 mm × 3.2 mm
CA	7.0 mm × 5.0 mm

⑦Function	
P	Output enable
S	Standby

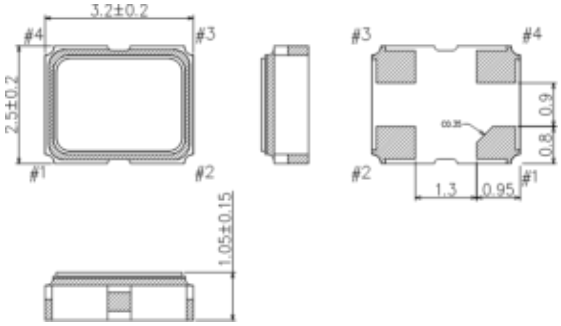
⑧Rise time/Fall time	
A	Default
B	Fast
C	Slow

External dimensions (Unit: mm)

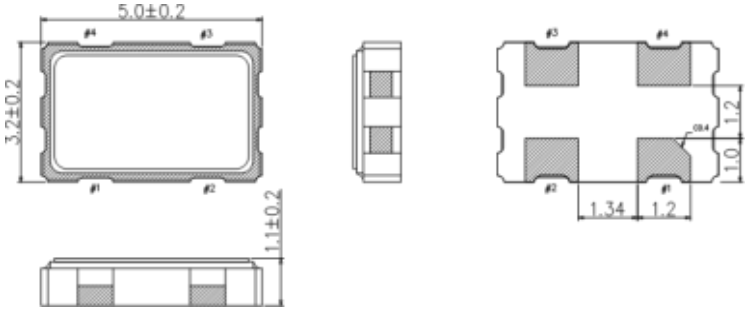
SG-8018CG



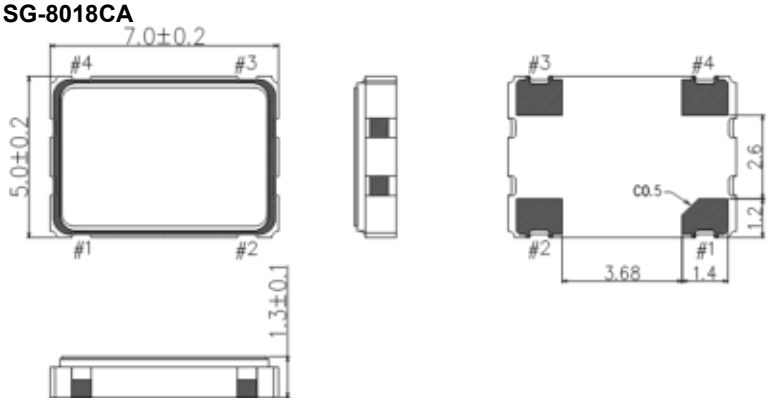
SG-8018CE



SG-8018CB

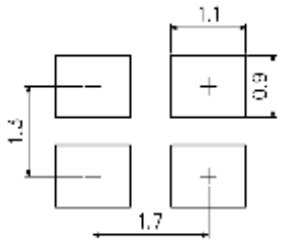


SG-8018CA

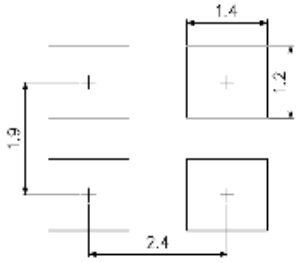


Footprint (Recommended) (Unit: mm)

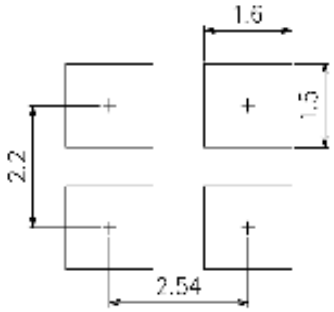
SG-8018CG



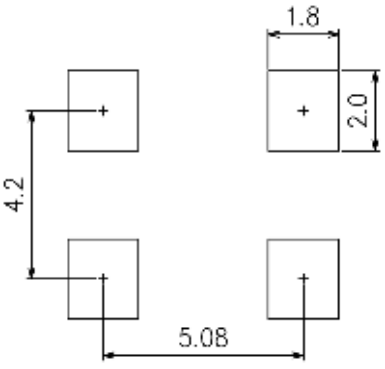
SG-8018CE



SG-8018CB



SG-8018CA



■Notes:
In order to achieve optimum jitter performance, the 0.1 µF 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.

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	►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.)
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