



CRYSTAL OSCILLATOR

PROGRAMMABLE

OUTPUT : CMOS

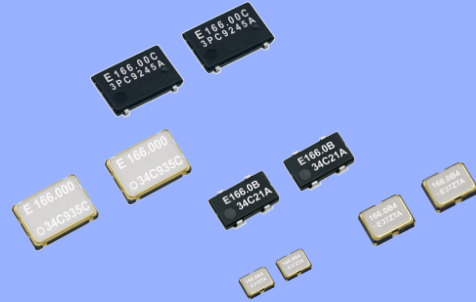
SG - 8003 series

- Frequency range : 1 MHz to 166 MHz
- Supply voltage : 1.8 V / 2.5 V / 3.0 V / 3.3 V
- Function : Output enable(OE) or Standby(\overline{ST})

- Short mass production lead time by PLL technology.
 - SG-Writer available to purchase.
- Please contact Epson or local sales representative.



Product Number (please contact us)
X1G003xx2xxxx00



Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		PE / SE	PD / SD	PC / SC	
Output frequency range	f_0	1 MHz to 166 MHz			
Supply voltage	V_{CC}	1.8 V Typ. 1.6 V to 2.2 V	2.5 V Typ. 2.2 V to 2.8 V	3.3 V Typ. 2.7 V to 3.6 V	
Storage temperature	T_{stg}	-40 °C to +85 °C			Storage as single product.
Operating temperature	T_{use}	-20 °C to +70 °C / -40 °C to +85 °C			
Frequency tolerance	f_{tol}	B: $\pm 50 \times 10^{-6}$, C: $\pm 100 \times 10^{-6}$			-20 °C to +70 °C
		L: $\pm 50 \times 10^{-6}$, M: $\pm 100 \times 10^{-6}$			-40 °C to +85 °C
Current consumption	I_{CC}	3.5 mA Max.	4.0 mA Max.		No load condition, 1 MHz $\leq f_0 \leq$ 25 MHz
		5.0 mA Max.	6.5 mA Max.		No load condition, 25 MHz $< f_0 \leq$ 50 MHz
		6.0 mA Max.	8.5 mA Max.		No load condition, 50 MHz $< f_0 \leq$ 75 MHz
		7.0 mA Max.	10.5 mA Max.		No load condition, 75 MHz $< f_0 \leq$ 100 MHz
		8.5 mA Max.	12.5 mA Max.		No load condition, 100 MHz $< f_0 \leq$ 125 MHz
		10.0 mA Max.	15.0 mA Max.		No load condition, 125 MHz $< f_0 \leq$ 166 MHz
Output disable current	I_{dis}	8 mA Max.			OE=GND (PE,PD,PC)
Stand-by current	I_{std}	50 μ A Max.			\overline{ST} =GND (SE,SD,SC)
Symmetry	SYM	45 % to 55 %			50 % V_{CC} level, $L_{CMOS} \leq 15$ pF
Output voltage	V_{OH}	90 % V_{CC} Min.		V_{CC} -0.4 V Min.	$I_{OH} = -4$ mA(PD,SD,PE,SE), -8.0 mA(PC,SC)
	V_{OL}	10 % V_{CC} Max.		0.4 V Max.	$I_{OL} = 4$ mA(PD,SD,PE,SE), 8.0 mA(PC,SC)
Output load condition (CMOS)	L_{CMOS}	15 pF Max.			
Input voltage	V_{IH}	80 % V_{CC} Min.			OE terminal or \overline{ST} terminal
	V_{IL}	20 % V_{CC} Max.			
Rise and Fall time	t_r / t_f	5.0 ns Max.			1 MHz $\leq f_0 <$ 80 MHz 20 % V_{CC} to 80 % V_{CC}
		2.5 ns Max.			80 MHz $\leq f_0 \leq$ 166 MHz level, $L_{CMOS} = 15$ pF
Start-up time	t_{str}	5 ms Max.			$t=0$ at 90 % V_{CC}
Frequency aging	f_{aging}	$\pm 3 \times 10^{-6}$ / year Max.			+25 °C, First year, $V_{CC} = 1.8$ V, 2.5 V, 3.3 V

Product Name
(Standard form)

SG-8003 CG 166.000000MHz P E B

① ② ③ ④⑤⑥

① Model ② Package type ③ Frequency

④ Function (P: Output enable, S: Standby)

⑤ Supply voltage ⑥ Frequency tolerance

⑤ Supply voltage

C 3.3 V Typ.

D 2.5 V Typ.

E 1.8 V Typ.

⑥ Frequency tolerance

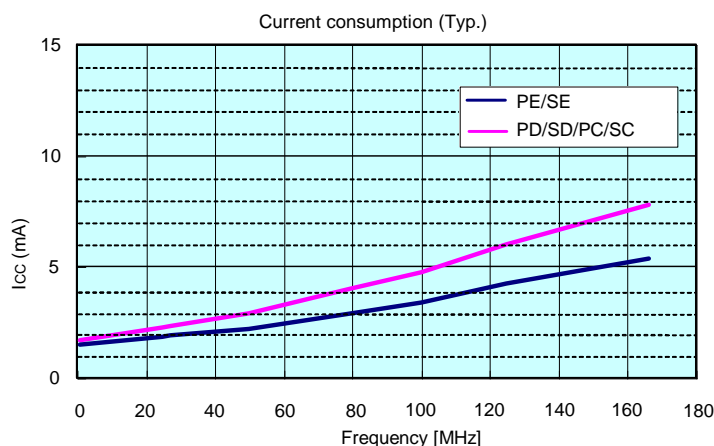
B $\pm 50 \times 10^{-6}$ / -20 to +70 °C

C $\pm 100 \times 10^{-6}$ / -20 to +70 °C

L $\pm 50 \times 10^{-6}$ / -40 to +85 °C

M $\pm 100 \times 10^{-6}$ / -40 to +85 °C

Current consumption

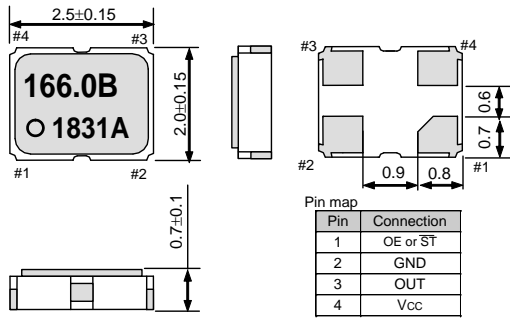


External dimensions

(Unit:mm)

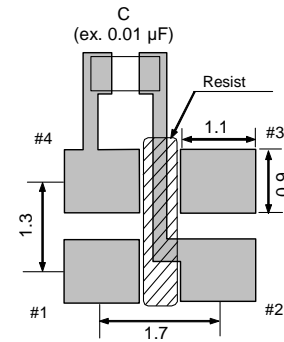
SG-8003CG

Actual size



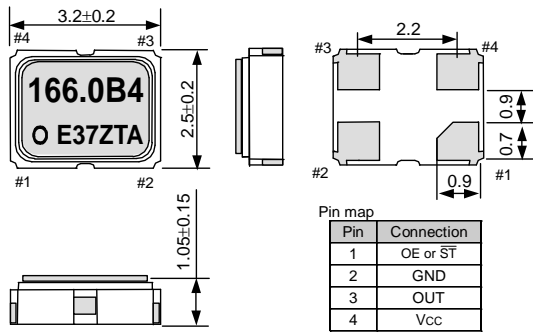
SG-8003CG

(Unit:mm)

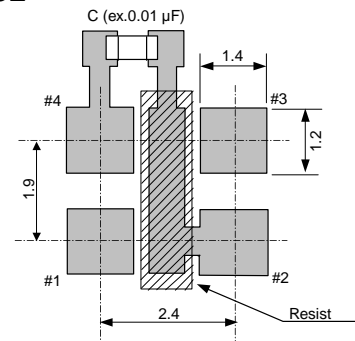


SG-8003CE

Actual size

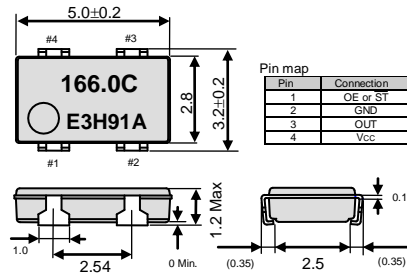


SG-8003CE



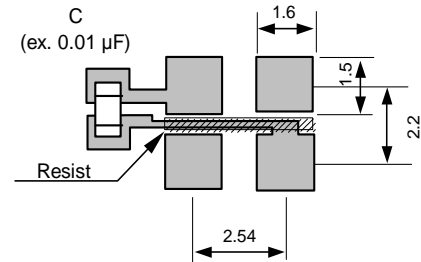
SG-8003LB

Actual size



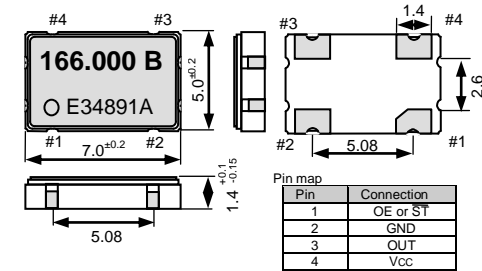
Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

SG-8003LB

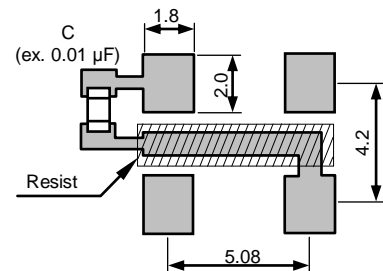


SG-8003CA

Actual size

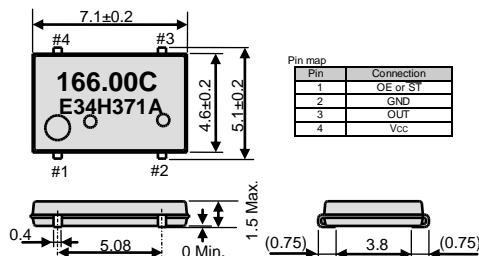


SG-8003CA

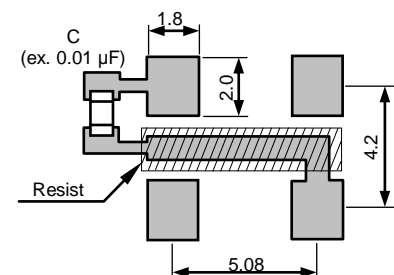


SG-8003JF

Actual size



SG-8003JF



Note.

OE Pin (PE, PD, PC)
 OE Pin = "H" or "open" : Specified frequency output.
 OE Pin = "L" : Output is low level (weak pull - down)

ST Pin (SE, SD, SC)
 ST Pin = "H" or "open" : Specified frequency output.
 ST Pin = "L" : Output is low level (weak pull - down), oscillation stops.

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