



CRYSTAL OSCILLATOR

PROGRAMMABLE

OUTPUT : CMOS

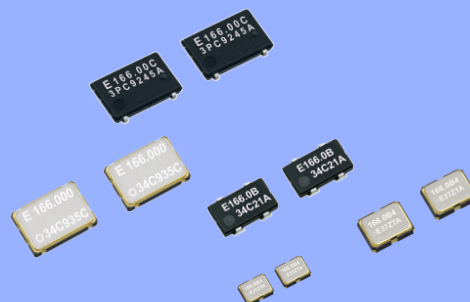
SG - 8003 series

- 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: ±50 × 10 ⁻⁶ , C: ±100 × 10 ⁻⁶			-20 °C to +70 °C	
		L:±50 × 10 ⁻⁶ , M: ±100 × 10 ⁻⁶			-40 °C to +85 °C	
Current consumption	I _{CC}	3.5 mA Max.	4.0 mA Max.		No load condition, 1 MHz≤f ₀ ≤25 MHz	
		5.0 mA Max.	6.5 mA Max.		No load condition, 25 MHz<f ₀ ≤50 MHz	
		6.0 mA Max.	8.5 mA Max.		No load condition, 50 MHz<f ₀ ≤75 MHz	
		7.0 mA Max.	10.5 mA Max.		No load condition, 75 MHz<f ₀ ≤100 MHz	
		8.5 mA Max.	12.5 mA Max.		No load condition, 100 MHz<f ₀ ≤125 MHz	
		10.0 mA Max.	15.0 mA Max.		No load condition, 125 MHz<f ₀ ≤166 MHz	
Output disable current	I _{dis}	8 mA Max.			OE=GND (PE,PD,PC)	
Stand-by current	I _{std}	50 μA Max.			ST =GND (SE,SD,SC)	
Symmetry	SYM	45 % to 55 %			50 % V _{CC} level, L _{CMOS} ≤ 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 ST terminal	
	V _{IL}	20 % V _{CC} Max.				
Rise and Fall time	tr/ tr	5.0 ns Max.			1 MHz≤f ₀ <80 MHz	20 % V _{CC} to 80 % V _{CC} level, L _{CMOS} =15 pF
		2.5 ns Max.			80 MHz≤f ₀ ≤166 MHz	
Start-up time	t _{str}	5 ms Max.			t=0 at 90 % V _{CC}	
Frequency aging	f _{aging}	±3 × 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 Model ② Package type ③ Frequency
④ Function (P: Output enable, S: Standby)
⑤ Supply voltage ⑥ Frequency tolerance

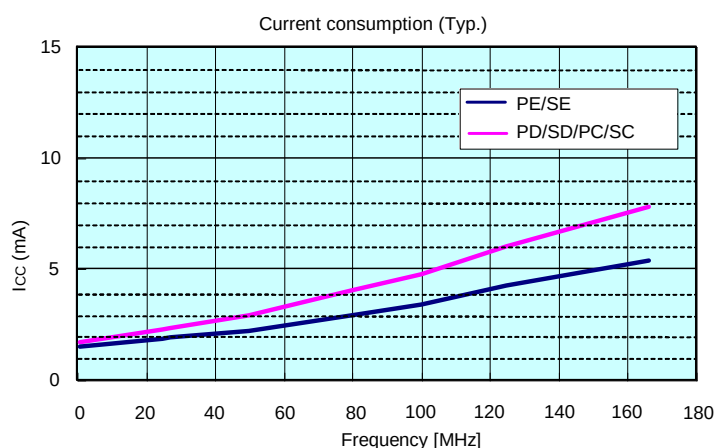
⑤ Supply voltage

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

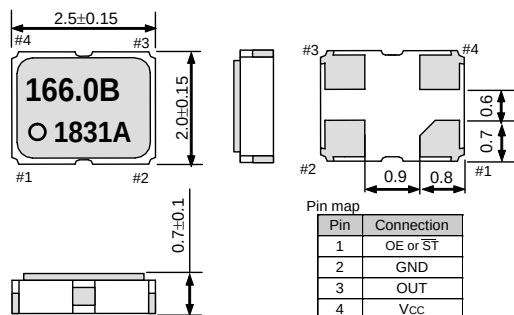
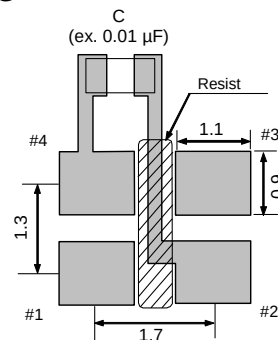


External dimensions

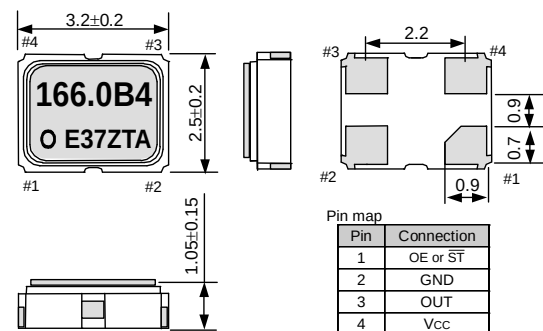
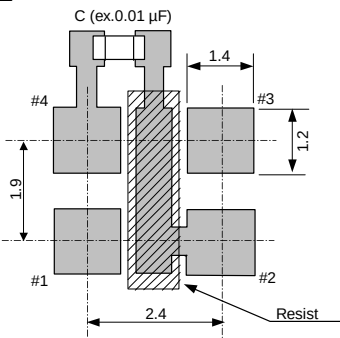
(Unit:mm)

SG-8003CG

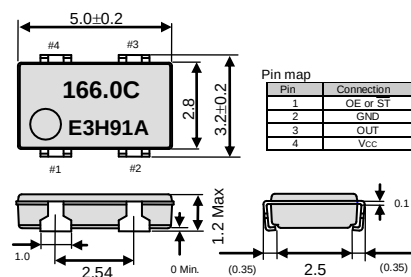
Actual size


SG-8003CG

SG-8003CE

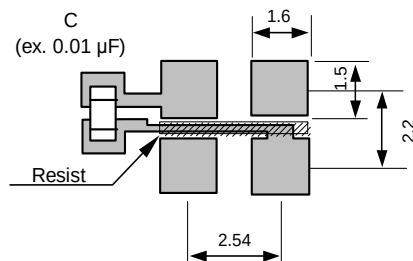
Actual size


SG-8003CE

SG-8003LB

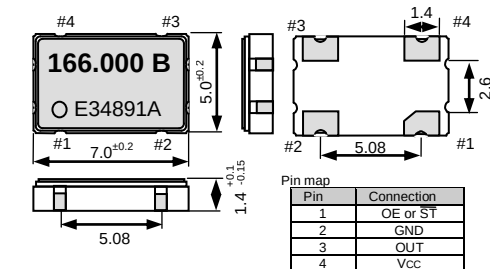
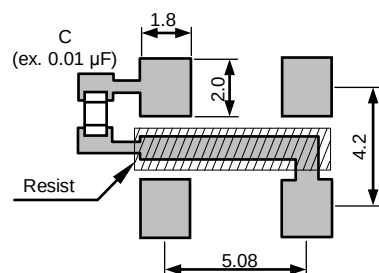
Actual size



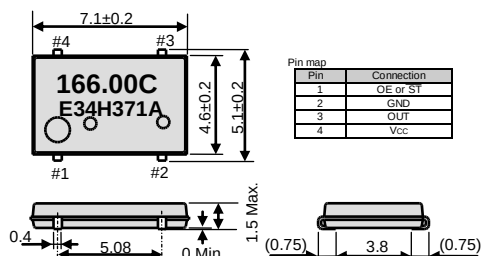
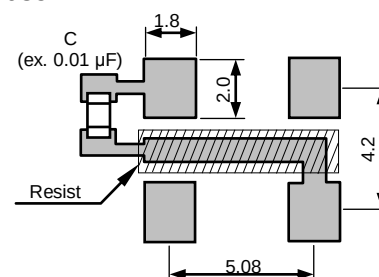
Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

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).