

**CRYSTAL OSCILLATOR  
PROGRAMMABLE**

**SG - 8002CE series**

- Frequency range : 1 MHz to 125 MHz
- Supply voltage : 3.3 V or 5.0 V
- Function : Output enable(OE) or Standby( $\overline{ST}$ )
- Thickness : 1.05 mm Typ.
- Short mass production lead time by PLL technology.



Actual size



**Specifications (characteristics)**

Item	Symbol	Specifications *2			Remarks
		PT / ST	PH / SH	PC / SC	
Output frequency range	$f_0$	1 MHz to 125 MHz		—	Vcc=4.5 V to 5.5 V
		—		1 MHz to 125 MHz	Vcc=3.0 V to 3.6 V
		—		1 MHz to 66.7 MHz	Vcc=2.7 V to 3.6 V
Supply voltage	Vcc	4.5 V to 5.5 V		2.7 V to 3.6 V	
Temperature range	Storage temperature	-40 °C to +125 °C			Store as bare product after unpacking
	Operating temperature	-20 °C to +70 °C (-40 °C to +85 °C)		-40 °C to +85 °C	Refer to "Frequency range"(Page.39)
Frequency tolerance	F_tol(osc)	B: $\pm 50 \times 10^{-6}$ , C: $\pm 100 \times 10^{-6}$ M: $\pm 100 \times 10^{-6}$			-20 °C to +70 °C -40 °C to +85 °C *3
Current consumption	I <sub>cc</sub>	40 mA Max.		28 mA Max.	No load condition, Max. frequency
Output disable current	I <sub>dis</sub>	30 mA Max.		16 mA Max.	OE=GND
Standby current	I <sub>std</sub>	50 $\mu$ A Max.			$\overline{ST}$ =GND(ST,SH,SC)
Symmetry *1	SYM	—		40 % to 60 %	CMOS load:50 % Vcc level, Max. load condition
		40 % to 60 %		—	TTL load: 1.4 V, Max. load condition
High output voltage	V <sub>OH</sub>	Vcc-0.4 V Min.			I <sub>OH</sub> =-16 mA(PT,ST,PH,SH),-8 mA(PC,SC)
Low output voltage	V <sub>OL</sub>	0.4 V Max.			I <sub>OL</sub> =16 mA(PT,ST,PH,SH), 8 mA(PC,SC)
Output load condition (TTL) *1	L_TTL	5 TTL Max.		—	Max. frequency and Max. Supply voltage
Output load condition (CMOS) *1	L_CMOS	15 pF Max.			
Output enable / disable input voltage	V <sub>IH</sub>	2.0 V Min.		70 % Vcc Min.	$\overline{ST}$ , OE terminal
	V <sub>IL</sub>	0.8 V Max.		20 % Vcc Max.	$\overline{ST}$ , OE terminal
Output rise and fall time *1	t <sub>r</sub> / t <sub>f</sub>	—		3 ns Max.	CMOS load: 20 % Vcc to 80 % Vcc level
		4 ns Max.		—	TTL load: 0.4 V to 2.4 V level
Oscillation start up time	t <sub>osc</sub>	10 ms Max.			Time at minimum supply voltage to be 0 s
Frequency aging	F_aging	$\pm 5 \times 10^{-6}$ / year Max.			+25 °C, Vcc=5.0 V / 3.3 V (PC,SC) First year

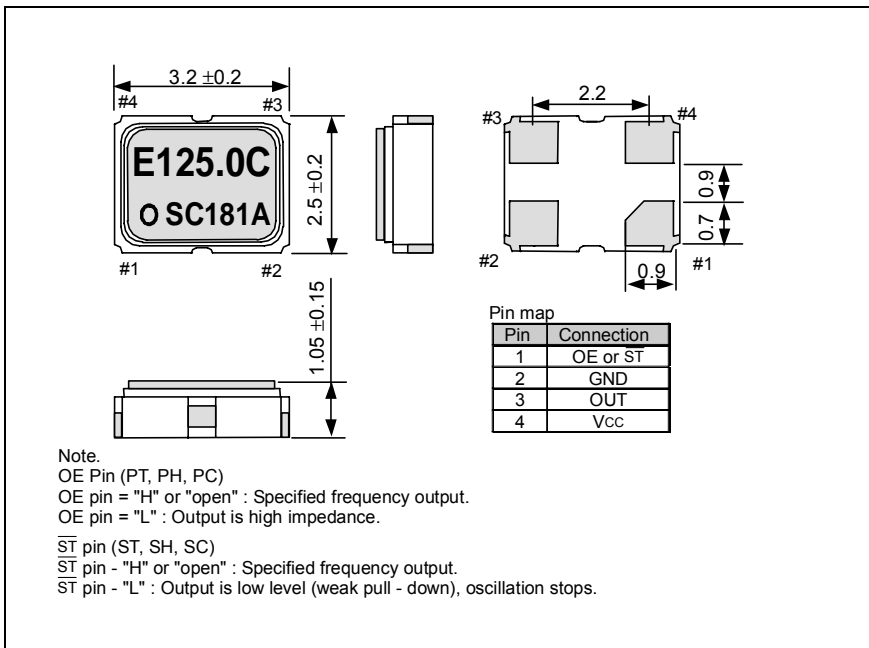
\*1 Operating temperature (-40 °C to +85 °C), the available frequency, symmetry and output load conditions, please refer to Page 39.

\*2 PLL-PLL connection & Jitter specification, please refer to Page 40.

\*3 PT / ST and PH / SH for "M" tolerance will be available up to 27 MHz. Checking possible by the Frequency checking program.

**External dimensions**

(Unit:mm)



**Footprint (Recommended) (Unit:mm)**

