

## PROGRAMMABLE HIGH-FREQUENCY CRYSTAL OSCILLATOR

**SG-8002CA series**

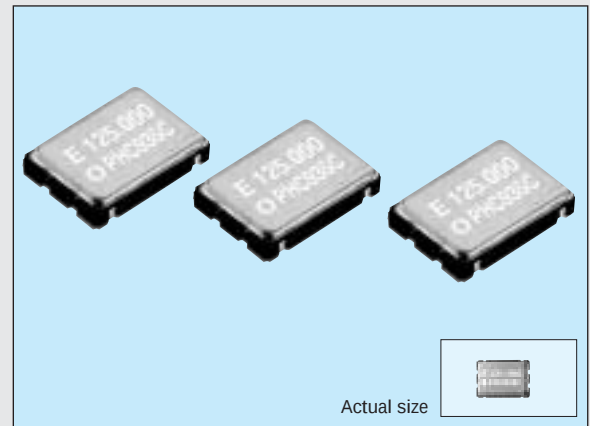
Product number (please refer to page 1)

**Q3309CAxxxxxx00**

- Wide frequency output by PLL technology.
- Quick delivery of samples and short lead mass production time.
- Excellent environmental capability.
- Output enable function (OE) and stand-by function (ST) can be used for low current consumption applications.

8002 PROM Writer available to purchase.

Please contact EPSON or local sales representative.



Actual size

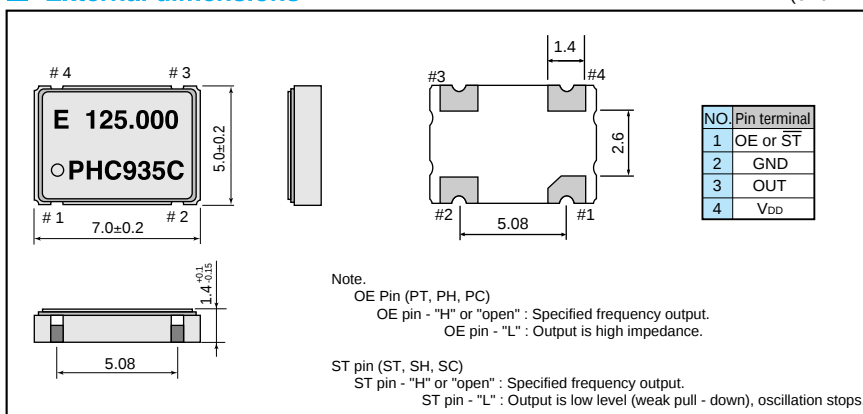
**Specifications (characteristics)**

| Item                                  |                       | Symbol              | Specifications *2                                                               |                       | Remarks                                                                                                                        |
|---------------------------------------|-----------------------|---------------------|---------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
|                                       |                       |                     | PT/ST                                                                           | PH/SH                 |                                                                                                                                |
| Output frequency range                |                       | f <sub>0</sub>      | 1.0000 MHz to 125.0000 MHz                                                      |                       | Refer to page 33. "Frequency range"                                                                                            |
| Power source voltage                  | Max. supply voltage   | V <sub>DD-GND</sub> | -0.5 V to +7.0 V                                                                |                       |                                                                                                                                |
|                                       | Operating voltage     | V <sub>DD</sub>     | 5.0 V±0.5 V                                                                     | 3.3 ± 0.3 V           | 2.7 V to 3.6 V: f <sub>0</sub> ≤ 66.7 MHz(PC/SC)                                                                               |
| Temperature range                     | Storage temperature   | T <sub>STG</sub>    | -55 °C to +125 °C                                                               |                       | Stored as bare product after unpacking                                                                                         |
|                                       | Operating temperature | T <sub>OPR</sub>    | -20 °C to +70 °C (-40 °C to +85 °C)                                             | -40 °C to +85 °C      | Refer to page 33."Frequency range"                                                                                             |
| Frequency stability                   |                       | Δf/f <sub>0</sub>   | B: ±50 x 10 <sup>-6</sup> C: ±100 x 10 <sup>-6</sup> M: ±100 x 10 <sup>-6</sup> |                       | B,C: -20 °C to +70 °C, M: -40 °C to +85 °C                                                                                     |
| Current consumption                   |                       | I <sub>OP</sub>     | 45 mA Max.                                                                      | 28 mA Max.            | No load condition, Max. frequency range                                                                                        |
| Output disable current                |                       | I <sub>OE</sub>     | 30 mA Max.                                                                      | 16 mA Max.            | OE=GND (PT, PH, PC)                                                                                                            |
| Standby current                       |                       | I <sub>ST</sub>     | 50 μA Max.                                                                      |                       | $\overline{ST}$ =GND (ST, SH, SC)                                                                                              |
| Duty *1                               | t <sub>w</sub> /t     | —                   | 40 % to 60 %                                                                    |                       | CMOS load: 1/2V <sub>DD</sub> level                                                                                            |
|                                       |                       | 40 % to 60 %        | —                                                                               |                       | TTL load: 1.4 V level                                                                                                          |
| High output voltage                   |                       | V <sub>OH</sub>     | V <sub>DD</sub> -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 *1<br>condition (fan out) | TTL                   | N                   | 5 TTL Max.                                                                      | —                     | Max. frequency and Max. operating voltage range                                                                                |
|                                       | CMOS                  | C <sub>L</sub>      | 15 pF Max.                                                                      | 25 pF Max. 15 pF Max. |                                                                                                                                |
| Output enable/disable input voltage   |                       | V <sub>IH</sub>     | 2.0 V Min.                                                                      |                       | $\overline{ST}$ , OE terminal                                                                                                  |
|                                       |                       | V <sub>IL</sub>     | 0.8 V Max                                                                       |                       |                                                                                                                                |
| Output rise time *1                   | CMOS level            | t <sub>TLH</sub>    | —                                                                               | 4 ns Max.             | CMOS load: 20 %→80 % V <sub>DD</sub>                                                                                           |
|                                       | TTL level             |                     | 4 ns Max.                                                                       | —                     | TTL load: 0.4 V→2.4 V                                                                                                          |
| Output fall time *1                   | CMOS level            | t <sub>THL</sub>    | —                                                                               | 4 ns Max.             | CMOS load: 80 %→20 % V <sub>DD</sub>                                                                                           |
|                                       | TTL level             |                     | 4 ns Max.                                                                       | —                     | TTL load: 2.4 V→0.4 V                                                                                                          |
| Oscillation start up time             |                       | t <sub>OSC</sub>    | 10 ms Max.                                                                      |                       | Time at minimum operating voltage to be 0 s                                                                                    |
| Aging                                 |                       | fa                  | ±5 x 10 <sup>-6</sup> /year Max.                                                |                       | Ta= +25 °C, V <sub>DD</sub> = 5.0 V/3.3 V, First year                                                                          |
| Shock resistance                      |                       | S.R.                | ±20 x 10 <sup>-6</sup> Max.                                                     |                       | Three drops on a hard board from 750 mm or excitation test with 29400 m/s <sup>2</sup> x 0.3 ms x 1/2sine wave in 3 directions |

\*1 Operating temperature(-40 °C to +85 °C), the available frequency, duty and output load conditions, please refer to page 33.

\*2 PLL - PLL connection & Jitter specification, please refer to page 53, 54.  
Checking possible by the Frequency Checking Program.<http://www.epsondevice.com/domcfg.nsf>**External dimensions**

(Unit: mm)

**Recommended soldering pattern** (Unit: mm)