



## CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS, TTL

SG-615P

SG-531P

- Frequency range : 1.025 MHz to 26 MHz
- Supply voltage : 5.0 V Typ.
- Function : Output enable(OE)
- Pin compatible with half-size metal can. (SG-531P)



Product Number (please contact us)

SG-615P : Q33615012xxxx00

SG-531P : Q32531012xxxx00



Actual size

SG-615P



SG-531P



## Specifications (characteristics)

| Item                         | Symbol                          | Specifications                                         | Conditions / Remarks                                                                   |
|------------------------------|---------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------|
|                              |                                 | SG-615P / SG-531P                                      |                                                                                        |
| Output frequency range       | f <sub>o</sub>                  | 1.025 MHz to 26 MHz                                    | Please contact us about available frequencies.                                         |
| Supply voltage               | V <sub>cc</sub>                 | 5.0 V ±0.5 V                                           |                                                                                        |
| Storage temperature          | T <sub>stg</sub>                | -55 °C to +125 °C                                      | Storage as single product.                                                             |
| Operating temperature        | T <sub>use</sub>                | -20 °C to +70 °C                                       |                                                                                        |
| Frequency tolerance          | f <sub>tol</sub>                | B: ±50 × 10 <sup>-6</sup> , C: ±100 × 10 <sup>-6</sup> | -20 °C to +70 °C                                                                       |
| Current consumption          | I <sub>cc</sub>                 | 23 mA Max.                                             | No load condition                                                                      |
| Disable current              | I <sub>dis</sub>                | 12 mA Max.                                             | OE=GND                                                                                 |
| Symmetry                     | SYM                             | 40 % to 60 %                                           | CMOS load:50 % V <sub>cc</sub> level                                                   |
|                              |                                 | 40 % to 60 %                                           | TTL load: 1.4 V level                                                                  |
| Output voltage               | V <sub>OH</sub>                 | V <sub>cc</sub> -0.4 V Min.                            | I <sub>OH</sub> =400 μA                                                                |
|                              | V <sub>OL</sub>                 | 0.4 V Max.                                             | I <sub>OL</sub> =16 mA(P)/ 8 mA(PTJ)                                                   |
| Output load condition (TTL)  | L <sub>TTL</sub>                | 10 TTL Max.                                            | L <sub>CMOS</sub> ≤ 15 pF                                                              |
| Output load condition (CMOS) | L <sub>CMOS</sub>               | 50 pF Max.                                             |                                                                                        |
| Input voltage                | V <sub>IH</sub>                 | 2.0 V Min.                                             | I <sub>IH</sub> = 1 μA Max. (OE=V <sub>cc</sub> )                                      |
|                              | V <sub>IL</sub>                 | 0.8 V Max.                                             | I <sub>IL</sub> = -100 μA Min. (OE=GND),<br>PTJ:I <sub>IL</sub> = -500 μA Min.(OE=GND) |
| Rise time / Fall time        | t <sub>r</sub> / t <sub>f</sub> | 8 ns Max.                                              | CMOS load:20 % V <sub>cc</sub> to 80 % V <sub>cc</sub> level                           |
|                              |                                 | 8 ns Max.                                              | TTL load:0.4 V to 2.4 V level                                                          |
| Start-up time                | t <sub>str</sub>                | 4 ms Max.                                              | Time at minimum supply voltage to be 0 s                                               |
| Frequency aging              | f <sub>aging</sub>              | ±5 × 10 <sup>-6</sup> / year Max.                      | +25 °C, V <sub>cc</sub> =5.0 V, First year                                             |

Product Name SG-615P 20.000000MHz C

(Standard form)

① ② ③ ④

①Model ②Function (P: Output enable) ③Frequency

④Frequency tolerance(B: ±50 × 10<sup>-6</sup> / -20 ~ +70°C / C: ±100 × 10<sup>-6</sup> / -20 ~ +70°C)

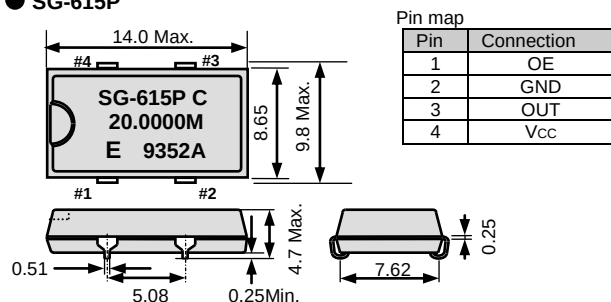
## External dimensions

(Unit:mm)

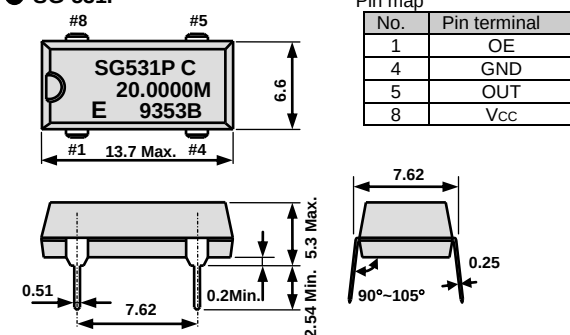
## Footprint (Recommended)

(Unit:mm)

## ● SG-615P

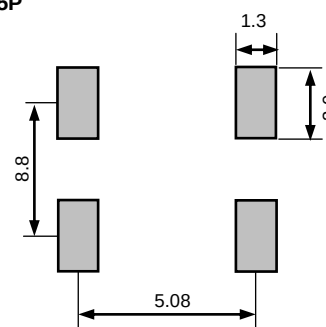


## ● SG-531P



Note.  
OE pin = "H" or "open" : Specified frequency output.  
OE pin = "L" : Output is high impedance.

## ● SG-615P



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 V<sub>cc</sub> - GND).

## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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### ► Explanation of the mark that are using it for the catalog

|                                                                                     |                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | ► Pb free.                                                                                                                                                                                                                      |
|  | ► Complies with EU RoHS directive.<br>*About the products without the Pb-free mark.<br>Contains Pb in products exempted by EU RoHS directive.<br>(Contains Pb in sealing glass, high melting temperature type solder or other.) |
|  | ► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.                                                                                                                      |
|  | ► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc ).                                                                                                                      |

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