

## CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS, TTL

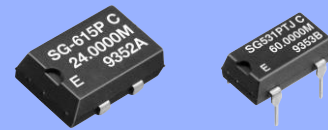
# SG-615P

# 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)

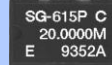


Product Number (please contact us)  
 SG-615P : Q33615012xxxx00  
 SG-531P : Q32531012xxxx00



Actual size

SG-615P



SG-531P



### Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks
		SG-615P / SG-531P		
Output frequency range	$f_o$	1.025 MHz to 26 MHz		Please contact us about available frequencies.
Supply voltage	$V_{cc}$	5.0 V $\pm$ 0.5 V		
Storage temperature	$T_{stg}$	-55 °C to +125 °C		Storage as single product.
Operating temperature	$T_{use}$	-20 °C to +70 °C		
Frequency tolerance	$f_{tol}$	B: $\pm 50 \times 10^{-6}$ , C: $\pm 100 \times 10^{-6}$		-20 °C to +70 °C
Current consumption	$I_{cc}$	23 mA Max.		No load condition
Disable current	$I_{dis}$	12 mA Max.		OE=GND
Symmetry	SYM	40 % to 60 %		CMOS load:50 % $V_{cc}$ level
		40 % to 60 %		TTL load: 1.4 V level
Output voltage	$V_{OH}$	$V_{cc}$ -0.4 V Min.		$I_{OH}$ =-400 $\mu$ A
	$V_{OL}$	0.4 V Max.		$I_{OL}$ =16 mA(P)/ 8 mA(PTJ)
Output load condition (TTL)	$L_{TTL}$	10 TTL Max.		$L_{CMOS} \leq 15$ pF
Output load condition (CMOS)	$L_{CMOS}$	50 pF Max.		
Input voltage	$V_{IH}$	2.0 V Min.		$I_{IH}$ = 1 $\mu$ A Max. (OE= $V_{cc}$ )
	$V_{IL}$	0.8 V Max.		$I_{IL}$ = -100 $\mu$ A Min. (OE=GND), PTJ: $I_{IL}$ = -500 $\mu$ A Min.(OE=GND)
Rise time / Fall time	$t_r / t_f$	8 ns Max.		CMOS load:20 % $V_{cc}$ to 80 % $V_{cc}$ level
		8 ns Max.		TTL load:0.4 V to 2.4 V level
Start-up time	$t_{str}$	4 ms Max.		Time at minimum supply voltage to be 0 s
Frequency aging	$f_{aging}$	$\pm 5 \times 10^{-6}$ / year Max.		+25 °C, $V_{cc}$ =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:  $\pm 50 \times 10^{-6}$  / -20 ~ +70°C / C:  $\pm 100 \times 10^{-6}$  / -20 ~ +70°C)

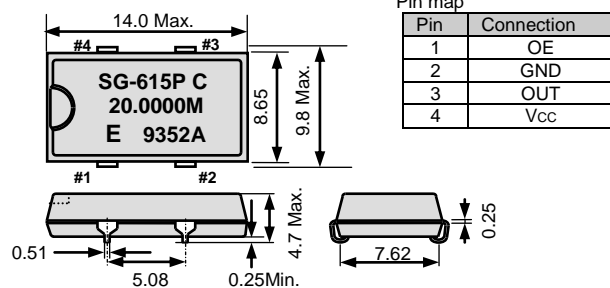
### External dimensions

(Unit:mm)

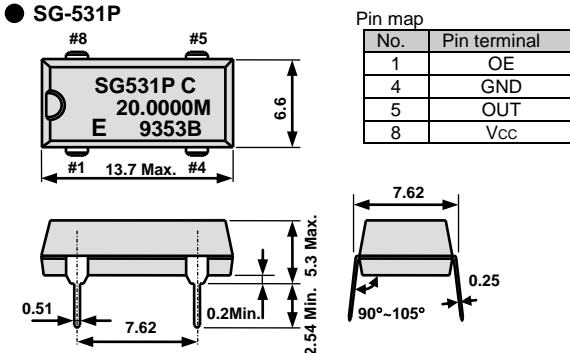
### Footprint (Recommended)

(Unit:mm)

#### ● SG-615P

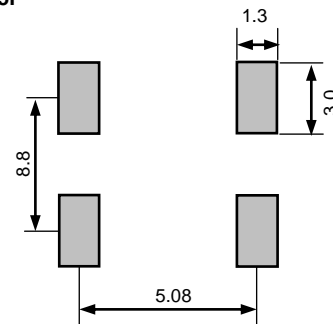


#### ● SG-531P



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

#### ● SG-615P



To maintain stable operation, provide a 0.01 $\mu$ F to 0.1 $\mu$ F by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between  $V_{cc}$  - 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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ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (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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