



CRYSTAL OSCILLATOR SPXO

SG-615 series SG-531 / SG-51 series

- Frequency range : 1.025 MHz to 135 MHz
- Supply voltage : 3.3 V / 5.0 V
- Function : Output enable(OE) or Standby(\overline{ST})
- Pin compatible with full-size metal can. (SG-51 series)
- Pin compatible with half-size metal can. (SG-531 series)



Product Number (please contact us)

SG-615 : Q33615xx1xxxx00

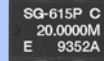
SG-531 : Q32531xx1xxxx00

SG-51 : Q32510xx1xxxx00



Actual size

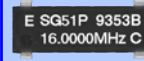
SG-615



SG-531



SG-51



Specifications (characteristics)

Item	Symbol	Specifications		Remarks
		SG-615P SG-531P SG-51P	SG-615PTJ SG-531PTJ SG-51PTJ	
Output frequency range	f_o	1.025 MHz to 26 MHz	26.001 MHz to 66.667 MHz	.
Supply voltage	V_{cc}	5.0 V \pm 0.5 V		
Temperature range	Storage temperature T_{stg}	-55 °C to +125 °C		Store as bare product after unpacking
	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 *1
Current consumption	I_{cc}	23 mA Max.	35 mA Max.	No load condition
Disable current	I_{dis}	12 mA Max.	28 mA Max.	OE=GND
Symmetry	SYM	40 % to 60 %	—	CMOS load: 50 % V_{cc} level
		40 % to 60 %	45 % to 55 %	TTL load: 1.4 V level
High output voltage	V_{OH}	V_{cc} -0.4 V Min.	2.4 V Min.	I_{OH} =-400 μ A
Low output voltage	V_{OL}	0.4 V Max.		I_{OL} =16 mA(P)/ 8 mA(PTJ)
Output load condition (TTL)	L_{TTL}	10 TTL Max.	5 TTL Max.	$L_{CMOS} \leq 15$ pF
Output load condition (CMOS)	L_{CMOS}	50 pF Max.	—	
Output enable / disable input voltage	V_{IH}	2.0 V Min.	3.5 V Min.	I_{IH} = 1 μ A Max. (OE= V_{cc})
	V_{IL}	0.8 V Max.	1.5 V Max.	I_{IL} = -100 μ A Min. (OE=GND), PTJ: I_{IL} = -500 μ 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.	5 ns Max.	TTL load: 0.4 V to 2.4 V level
Start-up time	t_{str}	4 ms Max.	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, V_{cc} =5.0 V, First year

*1 "B" tolerance will be available up to 55 MHz.

Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		SG-615PCG SG-531PCG	SG-615SCG SG-531SCG	SG-615PCN	
Output frequency range	f_o	1.500 MHz to 26.000 MHz		26.001 MHz to 66.667 MHz	
Supply voltage	V_{cc}	2.7 V to 3.6 V		3.0 V to 3.6 V	
Temperature range	Storage temperature T_{stg}	-55 °C to +125 °C			Store as bare product after unpacking
	Operating temperature T_{use}	-40 °C to +85 °C			
Frequency tolerance	f_{tol}	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
Current consumption	I_{cc}	12 mA Max.		20 mA Max.	No load condition
Disable current	I_{dis}	10 mA Max.	—	10 mA Max.	OE=GND (PCG, PCN)
Stand-by current	I_{std}	—	50 μ A Max.	—	\overline{ST} =GND (SCG)
Symmetry	SYM	45 % to 55 %			50 % V_{cc} level, L_{CMOS} =Max.
High output voltage	V_{OH}	V_{cc} -0.4 V Min.		V_{cc} -0.4 V Min.	I_{OH} =-8 mA
Low output voltage	V_{OL}	0.4 V Max.		0.4 V Max.	I_{OL} = 8 mA
Output load condition	L_{CMOS}	25 pF Max.		15 pF Max.	
Output enable / disable input voltage	V_{IH}	70 % V_{cc} Min.		70 % V_{cc} Min.	OE Terminal or \overline{ST} Terminal
	V_{IL}	20 % V_{cc} Max.		30 % V_{cc} Max.	
Rise time / Fall time	t_r / t_f	4 ns Max.			20 % V_{cc} to 80 % V_{cc} level, $L_{CMOS} \leq$ Max.
Start-up time	t_{str}	12 ms Max.		10 ms Max.	$t=0$ at 90% V_{cc}
Frequency aging	f_{aging}	$\pm 5 \times 10^{-6}$ / year Max.			+25 °C, V_{cc} =3.3 V, First year



Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		SG-615PTW / STW SG-531PTW / STW	SG-615PHW / SHW SG-531PHW / SHW	SG-615PCW / SCW SG-531PCW / SCW	
Output frequency range	f ₀	55.001 MHz to 135.000 MHz		26.001 MHz to 135.000 MHz	
Supply voltage	V _{cc}	5.0 V ±0.5 V		3.3 V ±0.3 V	
Temperature range	Storage temperature	-55 °C to +125 °C			Store as bare product after unpacking
	Operating temperature	-20 °C to +70 °C		-40 °C to +85 °C	
Frequency tolerance	f _{tol}	B: ±50 × 10 ⁻⁶ , C: ±100 × 10 ⁻⁶		M: ±100 × 10 ⁻⁶	-20 °C to +70 °C *1 -40 °C to +85 °C
Current consumption	I _{cc}	45 mA Max.		28 mA Max.	No load condition(Max. frequency range)
Disable current	I _{dis}	30 mA Max.		16 mA Max.	OE=GND (PTW,PHW,PCW)
Stand-by current	I _{std}	50 μA Max.		—	ST=GND (STW,SHW,SCW)
Symmetry	SYM	40 % to 60 %		40 % to 60 %	50 % V _{cc} level, L _{CMOS} =Max.
		—		—	1.4 V level, L _{CMOS} =Max.
High output voltage	V _{OH}	V _{cc} -0.4 V Min.			I _{OH} = 16 mA(PTW,STW,PHW,SHW),-8 mA(PCW,SCW)
Low output voltage	V _{OL}	0.4 V Max.			I _{OL} = 16 mA(PTW,STW,PHW,SHW), 8 mA(PCW,SCW)
Output load condition (TTL)	L _{TTL}	5 TTL Max.	—	—	f ₀ ≤ 90 MHz , Max.supply voltage
Output load condition (CMOS)	L _{CMOS}	15 pF Max.			Max.frequency , Max.supply voltage
Output enable / disable input voltage	V _{IH}	2.0 V Min.		70 % V _{cc} Min.	OE Terminal or ST Terminal
	V _{IL}	0.8 V Max.		20 % V _{cc} Max.	
Rise time / Fall time	t _r / t _f	—		4 ns Max.	20 % V _{cc} to 80 % V _{cc} level, L _{CMOS} ≤ Max.
		4 ns Max.	—	—	0.4 V to 2.4 V level
Start-up time	t _{str}	10 ms Max..			Time at minimum supply voltage to be 0 s
Frequency aging	f _{aging}	±5 × 10 ⁻⁶ / year Max.			+25 °C, V _{cc} =5.0 V / 3.3 V, First year

*1 "C" tolerance :f₀ ≥66.667 MHz(PTW,STW,PHW,SHW)

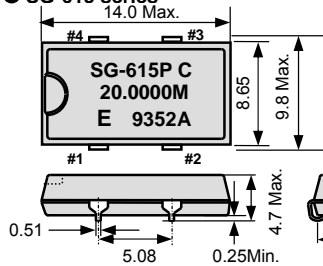
External dimensions

(Unit:mm)

Footprint (Recommended)

(Unit:mm)

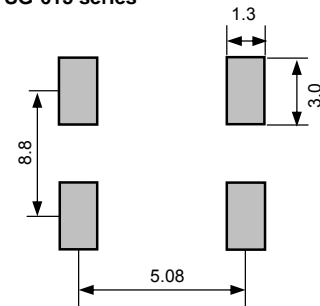
● SG-615 series



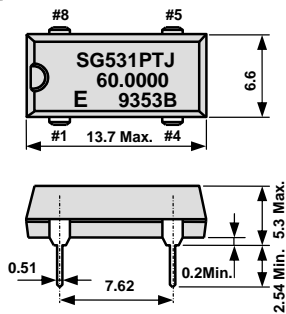
Pin map

Pin	Connection
1	OE or ST
2	GND
3	OUT
4	V _{cc}

● SG-615 series

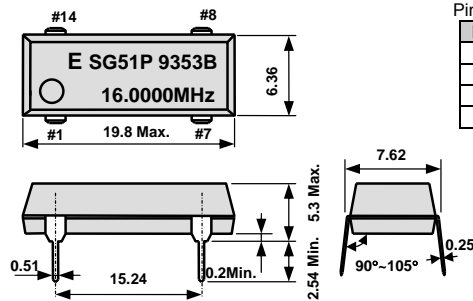


● SG-531 series



No.	Pin terminal
1	OE or ST
4	GND
5	OUT
8	V _{cc}

● SG-51 series



Pin map

Pin	Connection
1	OE or ST
7	GND
8	OUT
14	V _{cc}

Note.

OE pin (P,PTJ,PTW,PHW,PCW,PCN,PCG)
OE pin = "H" or "open" : Specified frequency output.
OE pin = "L" : Output is high impedance.

ST pin (STW, SHW, SCW,SCG)
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 by-pass capacitor with more than 0.1 μF at a location as near as possible to the power source terminal of the crystal products (between V_{cc} - GND).