

HIGH-FREQUENCY CRYSTAL OSCILLATOR

SG-615 / 531 / 51 series

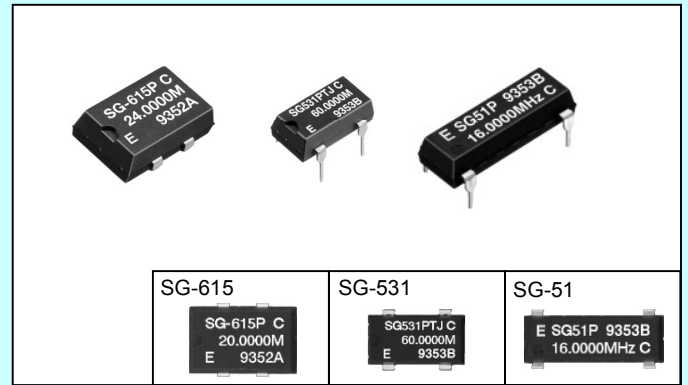
Product number (please contact us)

SG-615 : Q33615xx1xxxx00

SG-531 : Q32531xx1xxxx00

SG-51 : Q32510xx1xxxx00

- Frequency range : 1.025 MHz to 135 MHz
- Operating voltage : 3.3 V / 5.0 V
- Function : Output enable(OE) Standby(\overline{ST})
- Lead(Pb)-free : Complies with EU RoHS directive
- Pin compatible with full-size metal can. (SG-51 series)
- Pin compatible with half-size metal can. (SG-531 series)



Actual size

■ Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		SG-615P SG-531P SG-51P	SG-615PTJ SG-531PTJ SG-51PTJ	SG-615PH SG-531PH SG-51PH	
Output frequency range	f_0	1.0250 MHz to 26 MHz	26.001 MHz to 66.667 MHz		
Operating voltage	V_{DD}	5.0 V \pm 0.5 V			
Temperature range	Storage temperature	T_{STG} -55 °C to +125 °C			Stored as bare product after unpacking
	Operating temperature	T_{OPR} -20 °C to +70 °C			
Frequency stability	$\Delta f/f_0$	B: $\pm 50 \times 10^{-6}$, C: $\pm 100 \times 10^{-6}$			*1
Current consumption	I_{OP}	23 mA Max.	35 mA Max.		No load condition
Output disable current	I_{OE}	12 mA Max.	28 mA Max.	20 mA Max.	OE=GND
Duty	tw/t	40 % to 60 %	—	40 % to 60 %	CMOS load:50 % V_{DD} level
		40 % to 60 %	45 % to 55 %	—	TTL load: 1.4 V level
High output voltage	V_{OH}	V_{DD} -0.4 V Min.	2.4 V Min.	V_{DD} -0.4 V Min.	I_{OH} =-400 μ A(P,PTJ)/-4 mA(PH)
Low output voltage	V_{OL}	0.4 V Max.			I_{OL} =16 mA(P)/ 8 mA(PTJ)/ 4 mA(PH)
Output load condition (TTL)	N	10 TTL Max.	5 TTL Max.	—	$C_L \leq 15$ pF
Output load condition (CMOS)	C_L	50 pF Max.	—	50 pF Max.	
Output enable / disable input voltage	V_{IH}	2.0 V Min.	3.5 V Min.	2.0 V Min.	I_{IH} = 1 μ A Max. (OE= V_{DD})
	V_{IL}	0.8 V Max.	1.5 V Max.	0.8 V Max.	I_{IL} = -100 μ A Min. (OE=GND), PTJ: I_{IL} = -500 μ A Min.(OE=GND)
Output rise and fall time	t_R / t_F	8 ns Max.	—	7 ns Max.	CMOS load:20 % V_{DD} to 80 % V_{DD} level
		8 ns Max.	5 ns Max.	—	TTL load:0.4 V to 2.4 V level
Oscillation start up time	t_{OSC}	4 ms Max.	10 ms Max.		Time at minimum operating voltage to be 0 s
Aging	f_a	$\pm 5 \times 10^{-6}$ / year Max.			T_a =+25 °C, V_{DD} =5.0 V, First year

*1 "B" stability 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_0	1.500 MHz to 26.000 MHz		26.001 MHz to 66.667 MHz	
Operating voltage	V_{DD}	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			Stored as bare product after unpacking
	Operating temperature	T_{OPR} -40 °C to +85 °C			
Frequency stability	$\Delta f/f_0$	B: $\pm 50 \times 10^{-6}$ C: $\pm 100 \times 10^{-6}$ M: $\pm 100 \times 10^{-8}$			-20 °C to +70 °C -40 °C to +85 °C
Current consumption	I_{OP}	12 mA Max.		20 mA Max.	No load condition
Output disable current	I_{OE}	10 mA Max.	—	10 mA Max.	OE=GND (PCG,PCN)
Standby current	I_{ST}	—	50 μ A Max.	—	\overline{ST} =GND (SCG)
Duty	tw/t	45 % to 55 %			50 % V_{DD} , C_L =Max.
High output voltage	V_{OH}	V_{DD} -0.4 V Min.		V_{DD} -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	C_L	25 pF Max.		15 pF Max.	
Output enable / disable input voltage	V_{IH}	70 % V_{DD} Min.		70 % V_{DD} Min.	OE Terminal, \overline{ST} Terminal
	V_{IL}	20 % V_{DD} Max.		30 % V_{DD} Max.	
Output rise and fall time	t_R / t_F	4 ns Max.			20 % V_{DD} to 80 % V_{DD} , $C_L \leq$ Max.
Oscillation start up time	t_{OSC}	12 ms Max.		10 ms Max.	$t=0$ at 90% V_{DD}
Aging	f_a	$\pm 5 \times 10^{-6}$ / year Max.			T_a =+25 °C, V_{DD} =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	
Operating voltage	V _{DD}	5.0 V ±0.5 V		3.3 V ±0.3 V	
Temperature range	Storage temperature	-55 °C to +125 °C			Stored as bare product after unpacking
	Operating temperature	-20 °C to +70 °C		-40 °C to +85 °C	
Frequency stability	Δf/f ₀	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 _{OP}	45 mA Max.		28 mA Max.	No load condition(Max. frequency range)
Output disable current	I _{OE}	30 mA Max.		16 mA Max.	OE=GND (PTW,PHW,PCW)
Standby current	I _{ST}	50 μA Max.			ST=GND (STW,SHW,SCW)
Duty	tw/t	—		40 % to 60 %	50 % V _{DD} , C _L =Max.
		40 % to 60 %		—	1.4 V Level, C _L =Max.
High output voltage	V _{OH}	V _{DD} -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)	N	5 TTL Max.	—	—	f ₀ ≤ 90 MHz, Max.operating voltage
Output load condition (CMOS)	C _L	15 pF Max.			Max.frequency, Max.operating voltage
Output enable / disable input voltage	V _{IH}	2.0 V Min.		70 % V _{DD} Min.	OE Terminal, ST Terminal
	V _{IL}	0.8 V Max.		20 % V _{DD} Max.	
Output rise and fall time	t _r / t _f	—		4 ns Max.	20 % V _{DD} to 80 % V _{DD} , C _L ≤ Max. 0.4 V to 2.4 V
		4 ns Max.		—	
Oscillation start up time	t _{osc}	10 ms Max.			Time at minimum operating voltage to be 0 s
Aging	f _a	±5 × 10 ⁻⁶ / year Max.			T _a =+25 °C, V _{DD} =5.0 V / 3.3 V, First year

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

■ External dimensions

(Unit:mm)

■ Recommended soldering pattern

(Unit:mm)

● SG-615 Series

● SG-531 Series

● SG-51 Series

Note.
 OE pin (P,PTJ,PH,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.