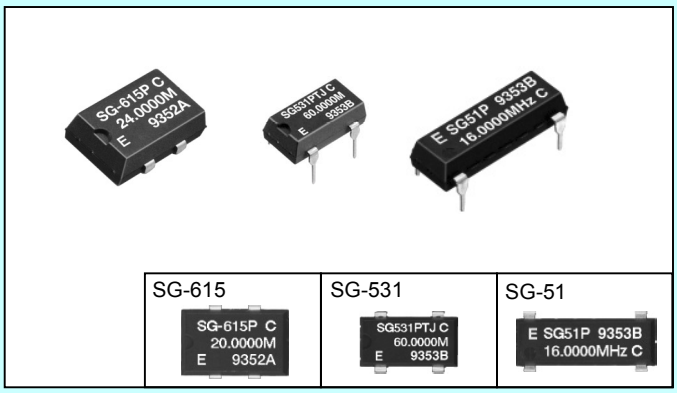
HIGH-FREQUENCY CRYSTAL OSCILLATOR

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 ±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: ±50 × 10^{-6} , C: ±100 × 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 µA(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 µA Max. (OE=V_{DD})
		V_{IL}	0.8 V Max.	1.5 V Max.	0.8 V Max.	I_{IL}= -100 µA Min. (OE=GND), PTJ:I_{IL}= -500 µA 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		fa	±5 × 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)

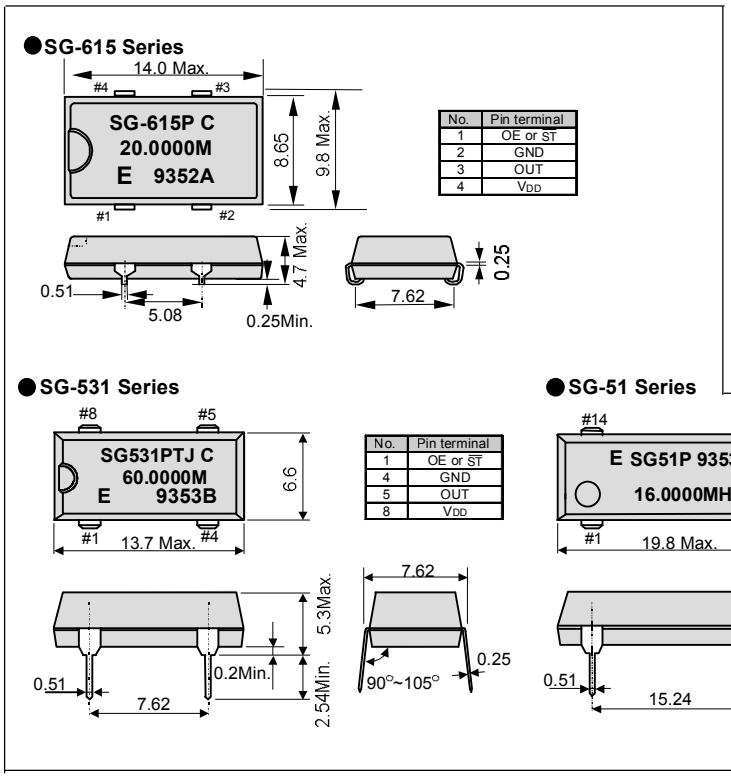
Item		Symbol	Specifications			Remarks
			SG-615PCG SG-531PCG	SG-615SCG SG-531SCG	SG-615PCN	
Output frequency range		f_0	1.500 MHz to 26.000 MHz		26.001 MHz to 66.667 MHz	
Operating voltage		V_{DD}	2.7 V to 3.6 V		3.0 V to 3.6 V	
Temperature range	Storage temperature	T_{STG}	-55 °C to +125 °C			Stored as bare product after unpacking
	Operating temperature	T_{OPR}	-40 °C to +85 °C			
Frequency stability		$\Delta f/f_0$	B: ±50 × 10^{-6} C: ±100 × 10^{-6}			-20 °C to +70 °C
			M: ±100 × 10^{-6}			-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 µA 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		fa	±5 × 10^{-6} / year Max.			T_a=+25 °C, V_{DD}=3.3 V , First year

■ Specifications (characteristics)

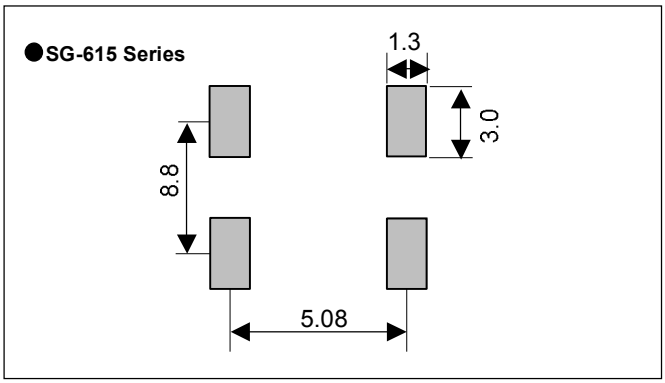
Item		Symbol	Specifications			Remarks
			SG-615PTW / STW SG-531PTW / STW	SG-615PHW / SHW SG-531PHW / SHW	SG-615PCW / SCW SG-531PCW / SCW	
Output frequency range		f_0	55.001 MHz to 135.000 MHz		26.001 MHz to 135.000 MHz	
Operating voltage		V_{DD}	5.0 V ±0.5 V		3.3 V ±0.3 V	
Temperature range	Storage temperature	T_{STG}	-55 °C to +125 °C			Stored as bare product after unpacking
	Operating temperature	T_{OPR}	-20 °C to +70 °C		-40 °C to +85 °C	
Frequency stability		Δf/f0	B: ±50 × 10^{-6} , C: ±100 × 10^{-6}			-20 °C to +70 °C *1
			—		M: ±100 × 10^{-6}	-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.			$\overline{ST}$ =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.	—	—	f0 ≤ 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 , $\overline{ST}$ 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.
			4 ns Max.	—	—	0.4 V to 2.4 V
Oscillation start up time		t_{OSC}	10 ms Max..			Time at minimum operating voltage to be 0 s
Aging		fa	±5 × 10^{-6} / year Max.			Ta=+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)



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.

$\overline{ST}$ pin (STW, SHW, SCW,SCG)
$\overline{ST}$ pin = "H" or "open" : Specified frequency output.
$\overline{ST}$ pin = "L" : Output is low level
(weak pull - down),oscillation stops.