

HIGH-FREQUENCY CRYSTAL OSCILLATOR

SG-615/531/51 series

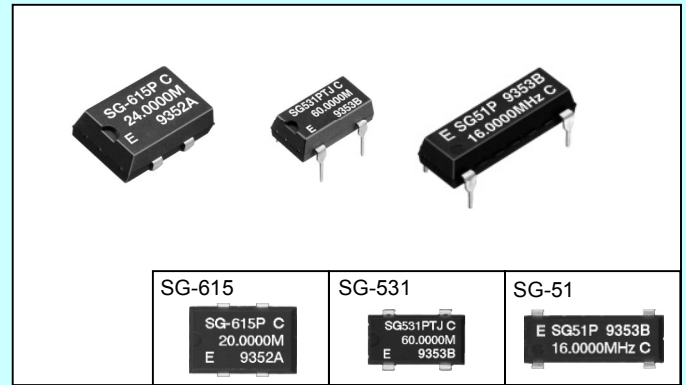
Product number (please contact us)

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		Δf/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 ≤ 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		Δf/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.	—	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.	
Outout enable / disable input voltage		V _{IH}	70 % V _{DD} Min.		70 % V _{DD} Min.	OE Terminal , ST Terminal
		V _{IL}	20 % V _{DD} Max.		30 % V _{DD} Max.	
Output rise and fall time		t _{TR} / t _F	4 ns Max.			20 % V _{DD} to 80 % V _{DD} , C _L ≤ Max.
Oscillation start up time		t _{OSC}	12 ms Max.		10 ms Max.	t=0 at 90% V _{DD}
Aging		f _a	±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/f ₀	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.			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.
		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		f _a	±5 × 10 ⁻⁶ / year Max.			T _a =+25 °C, V _{DD} =5.0 V / 3.3 V, First year

*1 "C" stability : $f_0 \geq 66.667$ MHz(PTW,STW,PHW,SHW)

■ External dimensions

(Unit:mm)

■ Recommended soldering pattern

(Unit:mm)

