

CRYSTAL OSCILLATOR SPXO

SG-615/531/51 series

- Frequency range : 1.025 MHz to 135 MHz
- Supply voltage : 3.3 V / 5.0 V
- Function : Output enable(OE) Standby(\overline{ST})
- Lead(Pb)-free : Contains high melting temperature type solder (Pb85 %) exempted by 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_o	1.0250 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			Stored as bare product after unpacking
	Operating temperature T_{use}	-20 °C to +70 °C			
Frequency tolerance	$F_{tol(osc)}$	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
Output disable current	I_{dis}	12 mA Max.	28 mA Max.	20 mA Max.	OE=GND
Symmetry	SYM	40 % to 60 %	—	40 % to 60 %	CMOS load:50 % V_{cc} level TTL load: 1.4 V level
		40 % to 60 %	45 % to 55 %	—	
High output voltage	V_{OH}	V_{cc} -0.4 V Min.	2.4 V Min.	V_{cc} -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)	L_{TTL}	10 TTL Max.	5 TTL Max.	—	$L_{CMOS} \leq 15$ pF
Output load condition (CMOS)	L_{CMOS}	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_{cc})
	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_{cc} to 80 % V_{cc} level TTL load:0.4 V to 2.4 V level
		8 ns Max.	5 ns Max.	—	
Oscillation start up time	t_{osc}	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			Stored as bare product after unpacking
	Operating temperature T_{use}	-40 °C to +85 °C			
Frequency tolerance	$F_{tol(osc)}$	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
Output 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 , \overline{ST} Terminal
	V_{IL}	20 % V_{cc} Max.		30 % V_{cc} Max.	
Output rise and fall time	t_r / t_f	4 ns Max.			20 % V_{cc} to 80 % V_{cc} level, $L_{CMOS} \leq$ Max.
Oscillation start up time	t_{osc}	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			Stored as bare product after unpacking	
	Operating temperature	-20 °C to +70 °C		-40 °C to +85 °C		
Frequency tolerance	F _{tol(osc)}	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)	
Output 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 %	50 % V _{cc} level, L _{CMOS} =Max.	
		40 % to 60 %		—	—	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, ST Terminal	
	V _{IL}	0.8 V Max.		20 % V _{cc} Max.		
Output rise and fall time	tr / tf	—			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
Oscillation start up time	t _{osc}	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

SG-531 Series

SG-51 Series

SG-615 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.