

CRYSTAL OSCILLATOR (SPXO)

OUTPUT : HCSSL



Product Number

SG2016HGN: X1G006221xxxx15

SG2520HGN: X1G005891xxxx15

SG2016HGN / SG2520HGN

- Frequency range : 25 MHz to 500 MHz
- Supply voltage : 2.5 V Typ. / 3.3 V Typ.
- Frequency tolerance : $\pm 25 \times 10^{-6}$, $\pm 50 \times 10^{-6}$
- Operating temperature range : -40 °C to +85 °C, -40 °C to +105 °C
- Function : Output enable (OE) or Standby (\overline{ST})
- Phase jitter : 90 fs Max.



•PCIe Gen5.6 Jitter specification compliant.

Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	fo	25 MHz to 500 MHz	Please contact us for available frequencies.
Supply voltage	V _{CC}	D: 2.5 V \pm 5 %, C: 3.3 V \pm 5 %	
Storage temperature range	T _{stg}	-55 °C to +125 °C	
Operating temperature range	T _{use}	G: -40 °C to +85 °C, H: -40 °C to +105 °C	
Frequency tolerance	f _{tol}	D: $\pm 25 \times 10^{-6}$ Max. J: $\pm 50 \times 10^{-6}$ Max.	Includes initial frequency tolerance, frequency / temperature characteristics, frequency / voltage coefficient and 10 years aging (+25 °C)
Current consumption	I _{CC}	35 mA Max. 40 mA Max.	25 MHz \leq fo < 212 MHz OE or \overline{ST} = V _{CC} , 212 MHz \leq fo < 500 MHz L _{HCSSL} = 50 Ω
Disable current	I _{dis}	25 mA Max. 30 μ A Max.	OE = GND \overline{ST} = GND, T _{use} Max. = +85 °C
Stand-by current	I _{std}	60 μ A Max.	\overline{ST} = GND, T _{use} Max. = +105 °C
Symmetry	SYM	45 % to 55 %	At output crossing point
Output voltage	V _{OH}	0.5 V to 0.7 V	25 MHz \leq fo \leq 212 MHz Output option: A
		0.4 V to 0.65 V	212 MHz < fo \leq 500 MHz Output option: B
	V _{OL}	0.6 V to 0.8 V	25 MHz \leq fo \leq 212 MHz
		0.5 V to 0.75 V	212 MHz < fo \leq 500 MHz
Differential swing	V _{SW}	0.7 V to 1.4 V 0.8 V to 1.6 V	Output option: A Output option: B
Crossing voltage	V _{CR}	0.25 V to 0.55 V	
Rise time / Fall time	tr/tf	0.7 ns Max.	20 % - 80 % (V _{OH} - V _{OL})
Differential output rise slew rate / fall slew rate	Rr/Rf	2 V/ns to 10 V/ns	Between -0.15 V and 0.15 V of differential output
Output load condition	L _{HCSSL}	50 Ω	
Input voltage	V _{IH}	70 % V _{CC} Min.	OE or \overline{ST} terminal
	V _{IL}	30 % V _{CC} Max.	
Output enable time	t _{sta_oe}	500 ns Max.	t = 0 at OE = 70 % V _{CC}
	t _{sta_st}	10 ms Max.	t = 0 at \overline{ST} = 70 % V _{CC}
Output disable time	t _{stp_oe}	100 ns Max.	t = 0 at OE = 30 % V _{CC}
	t _{stp_st}	100 ns Max.	t = 0 at \overline{ST} = 30 % V _{CC}
Start-up time	t _{str}	10 ms Max.	t = 0 at 90 % V _{CC}
Phase jitter	t _{pj}	200 fs Max.	25 MHz \leq fo < 100 MHz Offset frequency fo < 50 MHz: 12 kHz to 5 MHz
		90 fs Max.	100 MHz \leq fo \leq 156 MHz
		70 fs Max.	156 MHz < fo \leq 212 MHz
		60 fs Max.	212 MHz < fo \leq 391 MHz
		50 fs Max.	391 MHz < fo \leq 500 MHz fo \geq 50 MHz: 12 kHz to 20 MHz
Jitter	t _{cc}	60 ps Max.	Cycle to cycle jitter (Peak to Peak)
PCIe jitter limits for CC architecture	-	0.1 ps Max.	For PCIe Gen5
		0.06 ps Max.	For PCIe Gen6

Product name

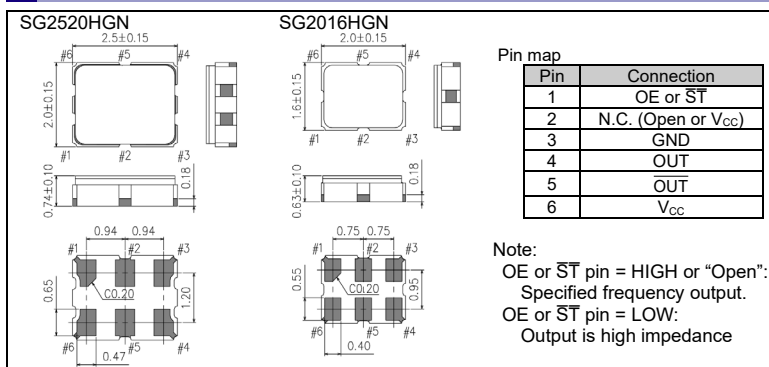
Product Name SG2016 HGN 100.000000MHz C D H P Z A
(Standard form) a b c d e f g h i

- a: Model b: Output (H: HCSSL) c: Frequency d: Supply voltage e: Frequency tolerance
- f: Operating temperature g: Function h: Output disable type (Z: High impedance) i: Output option

d: Supply voltage	e: Freq. tolerance	f: Operating temp.	g: Function	i: Output option
C 3.3 V Typ.	D $\pm 25 \times 10^{-6}$	G -40 °C to +85 °C	P OE	A V _{SW} = 0.7 V to 1.4 V
D 2.5 V Typ.	J $\pm 50 \times 10^{-6}$	H -40 °C to +105 °C	S \overline{ST}	B V _{SW} = 0.8 V to 1.6 V

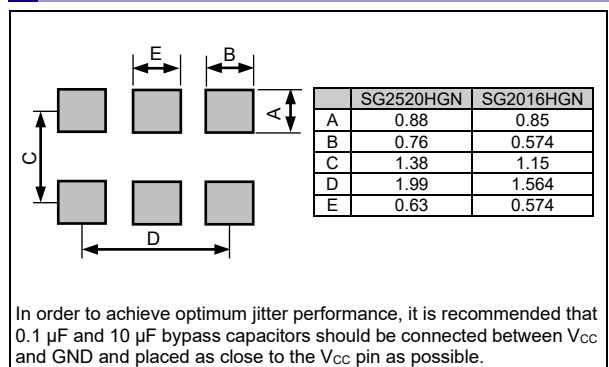
External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



► Explanation of the mark that are using it for the catalog

	<p>► Pb free.</p>
	<p>► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)</p>
	<p>► Designed for automotive general equipment.</p>
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