

CRYSTAL OSCILLATOR (SPXO)
OUTPUT : LV-PECL, LVDS



Product Number
SG2016EGN: X1G006131xxxx15
SG2016VGN: X1G006111xxxx15
SG2520EGN: X1G005881xxxx15
SG2520VGN: X1G005901xxxx15

SG2016EGN / VGN
SG2520EGN / VGN

- Frequency range : 25 MHz to 500 MHz
- Supply voltage : 1.8 V Typ. (LVDS only) / 2.5 V Typ. / 3.3 V Typ.
- Frequency tolerance : $\pm 25 \times 10^{-6}$, $\pm 50 \times 10^{-6}$
- Operating temperature : -40 °C to +85 °C, -40 °C to +105 °C
- Function : Output enable (OE) or Standby (\overline{ST})
- Phase jitter : 50 fs Max. (391 MHz < fo ≤ 500 MHz, Vcc = 2.5 V, 3.3 V)



Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks
		LV-PECL SG2016EGN / SG2520EGN	LVDS SG2016VGN / SG2520VGN	
Output frequency range	fo	25 MHz to 500 MHz		Please contact us for available frequencies.
Supply voltage	Vcc	C: 3.3 V ± 5 % D: 2.5 V ± 5 %	E: 1.8 V ± 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	Icc	60 mA Max.	-	OE or \overline{ST} = Vcc, L ECL = 50 Ω 25 MHz ≤ fo < 212 MHz 212 MHz ≤ fo < 392 MHz 392 MHz ≤ fo ≤ 500 MHz Output option: A / B / C
		-	25 mA / 30 mA / 25 mA Max. 28 mA / 35 mA / 28 mA Max. 28 mA / 35 mA / 30 mA Max.	
Disable current	I_dis	35 mA Max.	20 mA Max.	OE = GND
Stand-by current	I_std	30 μA Max.		\overline{ST} = GND, T_use Max. = +85 °C \overline{ST} = GND, T_use Max. = +105 °C
		60 μA Max.		
Symmetry	SYM	45 % to 55 %		At output crossing point
Output voltage (LV-PECL)	VOH VOL	Vcc - 1.1 V Min.	-	Output option: A, DC characteristic
		0.8 V to 2.0 V	-	
Differential swing	Vsw	500 mV to 900 mV	500 mV to 900 mV	Output option: A
		800 mV to 1 600 mV	-	Output option: B
Output voltage (LVDS)	VOD	600 mV to 1 200 mV	600 mV to 1 200 mV	Output option: C
		250 mV to 450 mV	250 mV to 450 mV	Output option: A
	400 mV to 800 mV	-	Output option: B	
	300 mV to 600 mV	300 mV to 600 mV	Output option: C	
	dVOD	-	50 mV Max.	dVOD = VOD1 - VOD2
	VOs	-	1.15 V to 1.35 V	0.65 V to 0.85 V
dVOS	-	50 mV Max.	-	dVOS = VOS1 - VOS2
Output load condition	L ECL	50 Ω	-	Terminated to Vcc - 2.0 V
	L LVDS	-	100 Ω	Connected between OUT and \overline{OUT}
Input voltage	VIH	70 % Vcc Min.		OE or \overline{ST} terminal
	VIL	30 % Vcc Max.		
Rise/Fall times	tr/tf	0.35 ns Max.		LV-PECL: 20 % - 80 % (VOH - VOL) LVDS: 20 % - 80 % differential output peak to peak
Start-up time	t_str	10 ms Max.		t = 0 at 90 % Vcc
Phase jitter	tpj	250 fs Max.	250 fs Max.	25 MHz ≤ fo < 100 MHz
		90 fs Max.	100 fs Max.	100 MHz ≤ fo ≤ 156 MHz
		70 fs Max.	60 fs Max.	156 MHz < fo ≤ 212 MHz
		60 fs Max.	-	212 MHz < fo ≤ 391 MHz
		50 fs Max.	50 fs Max.	391 MHz < fo ≤ 500 MHz
				fo < 50 MHz: 12 kHz to 5 MHz fo ≥ 50 MHz: 12 kHz to 20 MHz

Product Name **SG2016 EGN 156.250000MHz C D H P Z A**

(Standard form) ① ② ③ ④⑤⑥⑦⑧⑨

① Model ② Output (E: LV-PECL, V: LVDS) ③ Frequency ④ Supply voltage ⑤ Frequency tolerance
 ⑥ Operating temperature ⑦ Function ⑧ Output disable type (Z: High impedance) ⑨ Output option

④ Supply voltage	⑤ Freq. tolerance
C 3.3 V Typ.	D $\pm 25 \times 10^{-6}$
D 2.5 V Typ.	J $\pm 50 \times 10^{-6}$
E* 1.8 V Typ.	

⑥ Operating temp.	⑦ Function
G -40 °C to +85 °C	P OE
H -40 °C to +105 °C	S \overline{ST}

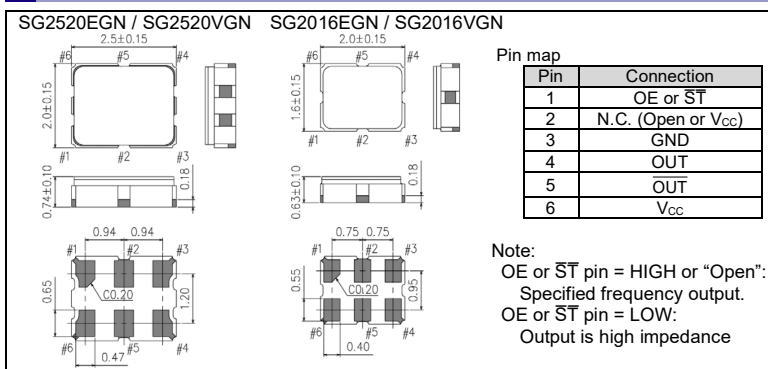
⑨ Output option	SG2016EGN / SG2520EGN	SG2016VGN / SG2520VGN
A Default		VOD = 250 mV to 450 mV
B*	-	VOD = 400 mV to 800 mV
C	-	VOD = 300 mV to 600 mV

*E is only for SG2016VGN and SG2520VGN

*Not available for Vcc = 1.8 V Typ.

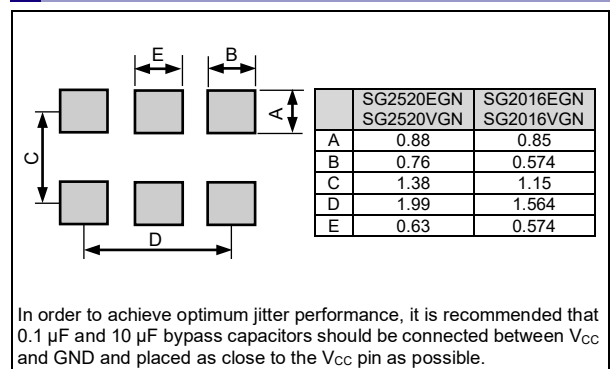
External dimensions

(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>
	<p>► Designed for automotive applications related to driving and safety.</p>

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