

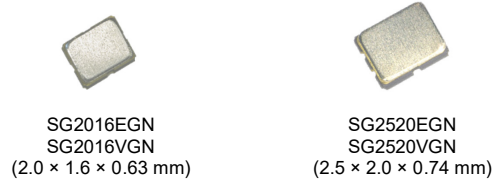
CRYSTAL OSCILLATOR (SPXO)
OUTPUT : LV-PECL, LVDS



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.		25 mA / - / 25 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	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	Offset voltage, VOS1, VOS2
	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	
				Offset frequency 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}

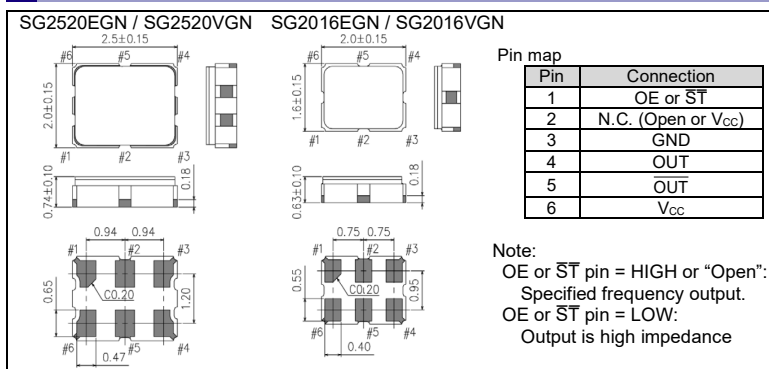
⑨ Output option	SG2016EGN / SG2520EGN	SG2016VGN / SG2520VGN
A Default	-	VOD = 250 mV to 450 mV
B*	-	VOD = 400 mV to 800 mV
C	-	VOD = 300 mV to 600 mV

*E is only for SG2016VGN and SG2520VGN

*Not available for Vcc = 1.8 V Typ.

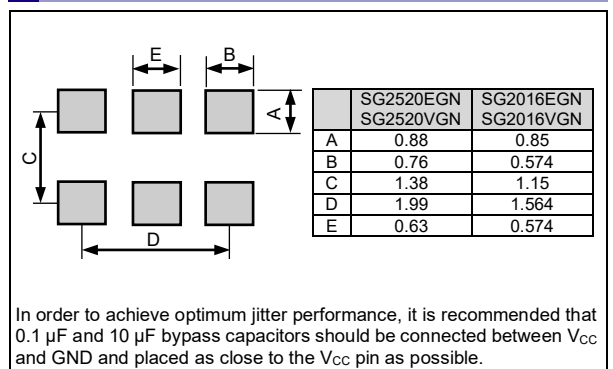
External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



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At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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	► Pb free.
	► 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.)
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