

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

Product Number
SG2016EGN: X1G006131xxx15
SG2016VGN: X1G006111xxx15
SG2520EGN: X1G005881xxx15
SG2520VGN: X1G005901xxx15

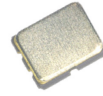
SG2016EGN / VGN

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 < $f_o \leq 500$ MHz, $V_{CC} = 2.5$ V, 3.3 V)



SG2016EGN
SG2016VGN
(2.0 × 1.6 × 0.63 mm)



SG2520EGN
SG2520VGN
(2.5 × 2.0 × 0.74 mm)

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks	
		LV-PECL	LVDS			
		SG2016EGN / SG2520EGN	SG2016VGN / SG2520VGN			
Output frequency range	f _o	25 MHz to 500 MHz			Please contact us for available frequencies.	
Supply voltage	V _{CC}	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: ±25 × 10 ⁻⁶ Max. J: ±50 × 10 ⁻⁶ Max.			Includes initial frequency tolerance, frequency / temperature characteristics, frequency / voltage coefficient and 10 years aging (+25 °C)	
Current consumption	I _{CC}	60 mA Max.	—		OE or $\overline{ST}$ = V _{CC} , L ECL = 50 Ω	
		—	25 mA / 30 mA / 25 mA Max.	25 mA / — / 25 mA Max.	25 MHz ≤ f _o < 212 MHz	OE or $\overline{ST}$ = V _{CC} , Output option: A / B / C
			28 mA / 35 mA / 28 mA Max.		212 MHz ≤ f _o < 392 MHz	
			28 mA / 35 mA / 30 mA Max.		392 MHz ≤ f _o ≤ 500 MHz	
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	
Symmetry	SYM	60 µA Max.			$\overline{ST}$ = GND, T _{use} Max. = +105 °C	
		45 % to 55 %			At output crossing point	
Output voltage (LV-PECL)	V _{OH}	V _{CC} - 1.1 V Min.	—		Output option: A, DC characteristic	
	V _{OL}	V _{CC} - 1.5 V Max.				
Differential swing	V _{SW}	0.8 V to 2.0 V	500 mV to 900 mV	500 mV to 900 mV	Output option: A	
		—	800 mV to 1 600 mV	—	Output option: B	
		—	600 mV to 1 200 mV	600 mV to 1 200 mV	Output option: C	
Output voltage (LVDS)	V _{OD}	—	250 mV to 450 mV	250 mV to 450 mV	Output option: A	Differential output voltage, V _{OD1} , V _{OD2}
		—	400 mV to 800 mV	—	Output option: B	
		—	300 mV to 600 mV	300 mV to 600 mV	Output option: C	
	dV _{OD}	—	50 mV Max.		dV _{OD} = V _{OD1} - V _{OD2}	
	V _{OS}	—	1.15 V to 1.35 V	0.65 V to 0.85 V	Offset voltage, V _{OS1} , V _{OS2}	
	dV _{OS}	—	50 mV Max.		dV _{OS} = V _{OS1} - V _{OS2}	
Output load condition	L ECL	50 Ω	—		Terminated to V _{CC} - 2.0 V	
	L LVDS	—	100 Ω		Connected between OUT and $\overline{OUT}$	
Input voltage	V _{IH}	70 % V _{CC} Min.			OE or $\overline{ST}$ terminal	
	V _{IL}	30 % V _{CC} Max.				
Rise/Fall times	tr/tf	0.35 ns Max.			LV-PECL: 20 % - 80 % (V _{OH} - V _{OL}) LVDS: 20 % - 80 % differential output peak to peak	
Start-up time	t _{str}	10 ms Max.			t = 0 at 90 % V _{CC}	
Phase jitter	t _{PJ}	250 fs Max.	250 fs Max.	400 fs Max.	25 MHz ≤ f _o < 100 MHz	Offset frequency fo < 50 MHz: 12 kHz to 5 MHz
		90 fs Max.	100 fs Max.	130 fs Max.	100 MHz ≤ f _o ≤ 156 MHz	
		70 fs Max.	60 fs Max.	70 fs Max.	156 MHz < f _o ≤ 212 MHz	fo ≥ 50 MHz: 12 kHz to 20 MHz
		60 fs Max.	50 fs Max.	60 fs Max.	212 MHz < f _o ≤ 391 MHz	
		50 fs Max.			391 MHz < f _o ≤ 500 MHz	

Product Name SG2016 EGN 156.250000MHz C D H P Z A
(Standard form)
① ② ③ ④⑤⑥⑦⑧⑨
①Model ②Output (E: LV-PECL, V: LVDS) ③Frequency ④Supply voltage ⑤Frequency tolerance
⑥Operating temperature ⑦Function ⑧Output disable type (Z: High impedance) ⑨Output option

④Supply voltage	
C	3.3 V Typ.
D	2.5 V Typ.
E*	1.8 V Typ.

⑤Freq. tolerance	
D	$\pm 25 \times 10^{-6}$
J	$\pm 50 \times 10^{-6}$

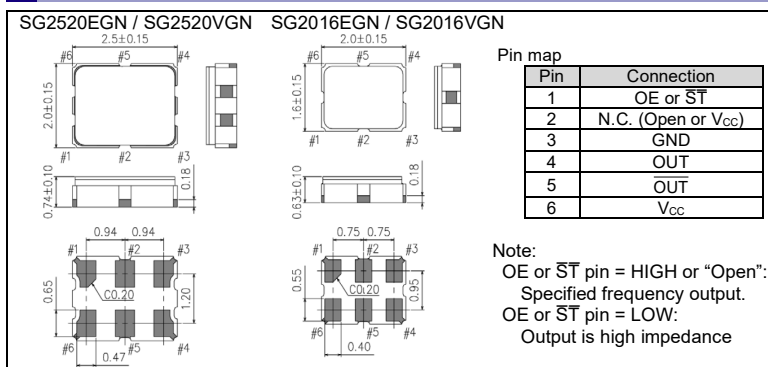
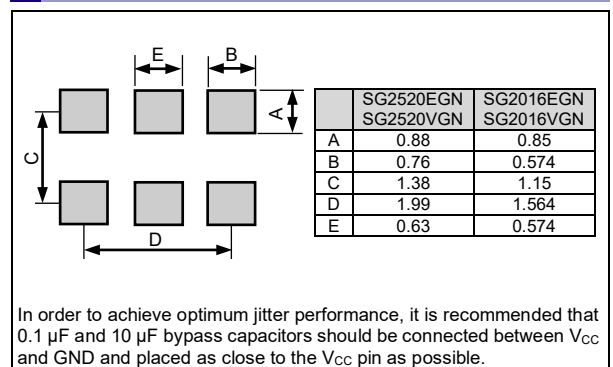
⑥Operating temp.	
G	-40 °C to +85 °C
H	-40 °C to +105 °C

⑦Function	
P	OE
S	$\overline{ST}$

⑨Output option		
	SG2016EGN / SG2520EGN	SG2016VGN / SG2520VGN
A	Default	$V_{OD} = 250$ mV to 450 mV
B*	—	$V_{OD} = 400$ mV to 800 mV
C	—	$V_{OD} = 300$ mV to 600 mV

* "E" is only for SG2016VGN and SG2520VGN

*Not available for $V_{CC} = 1.8$ V Typ.

External dimensions
(Unit:mm)

Footprint (Recommended)
(Unit:mm)


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

	► 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.)
	► Designed for automotive general equipment.
	► Designed for automotive applications related to driving and safety.

NOTICE : PLEASE READ CAREFULLY BELOW BEFORE THE USE OF THIS DOCUMENT

1. The content of this document is subject to change without notice. Before purchasing or using Epson products, please contact with sales representative of Seiko Epson Corporation ("Epson") for the latest information and be always sure to check the latest information published on Epson's official web sites and resources.
2. This document may not be copied, reproduced, or used for any other purposes, in whole or in part, without Epson's prior consent.
3. Information provided in this document including, but not limited to application circuits, programs and usage, is for reference purpose only. Epson makes no guarantees against any infringements or damages to any third parties' intellectual property rights or any other rights resulting from the information. This document does not grant you any licenses, any intellectual property rights or any other rights with respect to Epson products owned by Epson or any third parties.
4. Epson has prepared this document carefully to be accurate and dependable, but Epson does not guarantee that the information is always accurate and complete. Epson assumes no responsibility for any damages you incurred due to any misinformation in this document.
5. Epson products listed in this document and our associated technologies shall not be used in any equipment or systems that laws and regulations in Japan or any other countries prohibit to manufacture, use or sell. Furthermore, Epson products and our associated technologies shall not be used for the purposes of military weapons development (e.g. mass destruction weapons), military use, or any other military applications. If exporting Epson products or our associated technologies, please be sure to comply with the Foreign Exchange and Foreign Trade Control Act in Japan, Export Administration Regulations in the U.S.A (EAR) and other export-related laws and regulations in Japan and any other countries and to follow their required procedures.
6. Epson assumes no responsibility for any damages (whether direct or indirect) caused by or in relation with your non-compliance with the terms and conditions in this document or for any damages (whether direct or indirect) incurred by any third party that you give, transfer or assign Epson products.
7. For more details or other concerns about this document, please contact our sales representative.
8. Company names and product names listed in this document are trademarks or registered trademarks of their respective companies.

● Disclaimer

1. Epson products are designed for use in general electronic equipment applications that do not require extremely high reliability or safety.
2. Epson does not represent or warrant that its products will not cause a failure for any particular application, except for cases where the failure is a direct result caused by defects in materials and workmanship of this product.
If a product fails due to defects in materials and workmanship, to the maximum extent permitted by law, we will, at our sole discretion, refund or replace the affected product.
3. When products for used directly or indirectly in certain devices or applications (ex. Nuclear power, aerospace, infrastructure facilities, medical equipment, etc.) which are connected to or affect safety of human life or property, Customer is solely responsible for determining if the products and respective specifications are suitable for the intended use in particular customer applications.
Customer shall implement necessary and proper safety design and measures (including redundant design, malfunction prevention design, etc.) to ensure reliability and safety before using the products in/with customer's Equipment.
4. For the products designed for automotive applications, the products comply with AEC-Q100 or AEC-Q200.
Products do not comply with ISO 26262 (Products are not categorized to ASIL A, B, C and D).
5. No dismantling, analysis, reverse engineering, modification, alteration, adaptation, reproduction, etc., of Epson products is allowed.
Furthermore, any defects caused by this are not covered by the warranty.

©Seiko Epson Corporation 2025