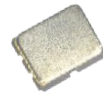


**CRYSTAL OSCILLATOR (SPXO)**  
**OUTPUT : LV-PECL, LVDS**



**Product Number**  
**SG2520EHN: X1G005921xxxx15**  
**SG2520VHN: X1G005941xxxx15**

**SG2520EHN**  
**SG2520VHN**



(2.5 x 2.0 x 0.74 mm)

- 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 :  $\pm 20 \times 10^{-6}$
- Operating temperature : -40 °C to +85 °C, -40 °C to +105 °C
- Function : Output enable (OE) or Standby (ST)
- Phase jitter : 50 fs Max. (fo = 491.52 MHz)

**Specifications (characteristics)**

Item	Symbol	Specifications			Conditions / Remarks	
		LV-PECL	LVDS			
		SG2520EHN	SG2520VHN			
Output frequency range	fo	25 MHz to 500 MHz			Please contact us for available frequencies.	
Supply voltage	V <sub>CC</sub>	D: 2.5 V $\pm$ 5 % C: 3.3 V $\pm$ 5 %	E: 1.8 V $\pm$ 5 %	D: 2.5 V $\pm$ 5 % C: 3.3 V $\pm$ 5 %		
Storage temperature	T <sub>stg</sub>	-55 °C to +125 °C				
Operating temperature	T <sub>use</sub>	G: -40 °C to +85 °C, H: -40 °C to +105 °C				
Frequency tolerance	f <sub>tol</sub>	C: $\pm 20 \times 10^{-6}$ Max.			Includes initial frequency tolerance, frequency / temperature characteristics, frequency / voltage coefficient and 10 years aging (+25 °C)	
Current consumption	I <sub>CC</sub>	60 mA Max.	-		OE or ST = V <sub>CC</sub> , L <sub>ECL</sub> = 50 $\Omega$	
		-	25 mA / - / 25 mA Max.	25 mA / 30 mA / 25 mA Max. 28 mA / 35 mA / 28 mA Max. 28 mA / 35 mA / 30 mA Max.	Output option: A / B / C	
Disable current	I <sub>dis</sub>	35 mA Max.	20 mA Max.		OE = GND	
Stand-by current	I <sub>std</sub>	30 $\mu$ A Max.			ST = GND, T <sub>use</sub> Max. = +85 °C	
		60 $\mu$ A Max.			ST = GND, T <sub>use</sub> Max. = +105 °C	
Symmetry	SYM	45 % to 55 %			At output crossing point	
Output voltage (LV-PECL)	V <sub>OH</sub> V <sub>OL</sub>	V <sub>CC</sub> - 1.1 V Min.	-		Output option: A, DC characteristic	
		V <sub>CC</sub> - 1.5 V Max.	-			
Differential swing	V <sub>SW</sub>	0.8 V to 2.0 V			Output option: A	
		-	-	500 mV to 900 mV	Output option: B	
		-	-	400 mV to 1 000 mV	Output option: C	
Output voltage (LVDS)	V <sub>OD</sub>	-	-	250 mV to 450 mV	Differential output voltage, V <sub>OD1</sub> , V <sub>OD2</sub>	
		-	-	200 mV to 500 mV		
	dV <sub>OD</sub>	-	300 mV to 600 mV	Output option: B		
	dV <sub>OS</sub>	-	50 mV Max.	Output option: C		
	V <sub>OS</sub>	-	0.65 V to 0.85 V	1.15 V to 1.35 V	Offset voltage, V <sub>OS1</sub> , V <sub>OS2</sub>	
Output load condition	L <sub>ECL</sub> L <sub>LVDS</sub>	50 $\Omega$	-		Terminated to V <sub>CC</sub> - 2.0 V	
		-	100 $\Omega$	50 $\Omega$	Output option: A, C	
Input voltage	V <sub>IH</sub> V <sub>IL</sub>	70 % V <sub>CC</sub> Min.			OE or ST terminal	
		30 % V <sub>CC</sub> Max.				
Rise/Fall times	tr/tf	0.35 ns Max.			LV-PECL: 20 % - 80 % (V <sub>OH</sub> - V <sub>OL</sub> ) LVDS: 20 % - 80 % differential output peak to peak	
Start-up time	t <sub>str</sub>	10 ms Max.			t = 0 at 90 % V <sub>CC</sub>	
Phase jitter	t <sub>PJ</sub>	250 fs Max.	400 fs Max.	250 fs Max.	Offset frequency	
		90 fs Max.	130 fs Max.	100 fs Max.		fo < 50 MHz:
		70 fs Max.	70 fs Max.	60 fs Max.		12 kHz to 5 MHz
		60 fs Max.	60 fs Max.	50 fs Max.		fo $\geq$ 50 MHz:
		50 fs Max.	60 fs Max.	50 fs Max.		12 kHz to 20 MHz

Product Name **SG2520 EHN 156.250000MHz C C H P Z A**

(Standard form) ① ② ③ ④⑤⑥⑦⑧⑨

- ①Model ②Output (E: LV-PECL, V: LVDS) ③Frequency ④Supply voltage ⑤Frequency tolerance (C:  $\pm 20 \times 10^{-6}$ )  
 ⑥Operating temperature ⑦Function ⑧Output disable type (Z: High impedance) ⑨Output option

④Supply voltage	⑥Operating temp.
C 3.3 V Typ.	G -40 °C to +85 °C
D 2.5 V Typ.	H -40 °C to +105 °C
E* 1.8 V Typ.	

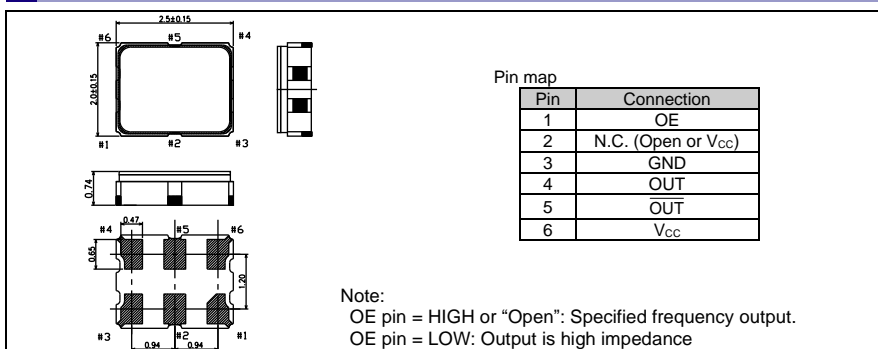
⑦Function
P OE
S ST

⑨Output option
SG2520EHN
SG2520VHN

	SG2520EHN	SG2520VHN
A	Default	L <sub>LVDS</sub> = 100 $\Omega$ , V <sub>OD</sub> = 250 mV to 450 mV
B	-	L <sub>LVDS</sub> = 50 $\Omega$ , V <sub>OD</sub> = 200 mV to 500 mV
C	-	L <sub>LVDS</sub> = 100 $\Omega$ , V <sub>OD</sub> = 300 mV to 600 mV

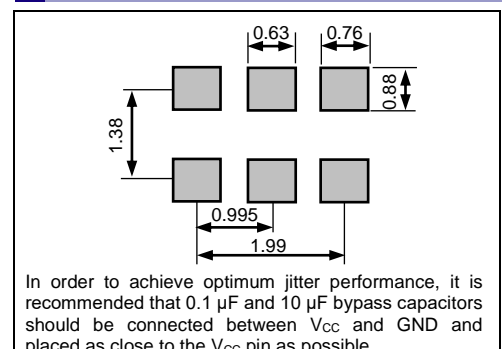
**External dimensions**

(Unit:mm)



**Footprint (Recommended)**

(Unit:mm)



## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

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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In order provide high quality and reliable products and services than meet customer needs, Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

### ► 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 applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc ).

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