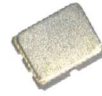


**CRYSTAL OSCILLATOR (SPXO)**  
**OUTPUT : LV-PECL, LVDS**



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

**SG2520EHN**  
**SG2520VHN**



(2.5 × 2.0 × 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 ( $\overline{ST}$ )
- 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>	C: 3.3 V $\pm$ 5 % D: 2.5 V $\pm$ 5 %		E: 1.8 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 $\overline{ST}$ = V <sub>cc</sub> , L <sub>ECL</sub> = 50 $\Omega$
		-	25 mA / 30 mA / 25 mA Max.	25 mA / - / 25 mA Max.	25 MHz $\leq$ fo < 212 MHz
		-	28 mA / 35 mA / 28 mA Max.	-	212 MHz $\leq$ fo < 392 MHz
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.			$\overline{ST}$ = GND, T <sub>use</sub> Max. = +85 °C
		60 $\mu$ A Max.			$\overline{ST}$ = 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	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 <sub>OD</sub>	-	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
	dV <sub>OD</sub>	-	50 mV Max.		dV <sub>OD</sub> =  V <sub>OD1</sub> - V <sub>OD2</sub>
	V <sub>OS</sub>	-	1.15 V to 1.35 V	0.65 V to 0.85 V	Offset voltage, V <sub>OS1</sub> , V <sub>OS2</sub>
dV <sub>OS</sub>	-	50 mV Max.		dV <sub>OS</sub> =  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 $\Omega$		Connected between OUT and $\overline{OUT}$
Input voltage	V <sub>IH</sub> V <sub>IL</sub>	70 % V <sub>cc</sub> Min.			OE or $\overline{ST}$ 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	tp <sub>j</sub>	250 fs Max.	250 fs Max.	400 fs Max.	25 MHz $\leq$ fo < 100 MHz
		90 fs Max.	100 fs Max.	130 fs Max.	100 MHz $\leq$ fo $\leq$ 156 MHz
		70 fs Max.	60 fs Max.	70 fs Max.	156 MHz < fo $\leq$ 212 MHz
		60 fs Max.	50 fs Max.	60 fs Max.	212 MHz < fo $\leq$ 391 MHz
		50 fs Max.	50 fs Max.	60 fs Max.	391 MHz < fo $\leq$ 500 MHz

Product Name **SG2520 EHN 156.250000MHz C C H P Z A**  
 (Standard form) ① ② ③ ④⑤⑥⑦⑧⑨

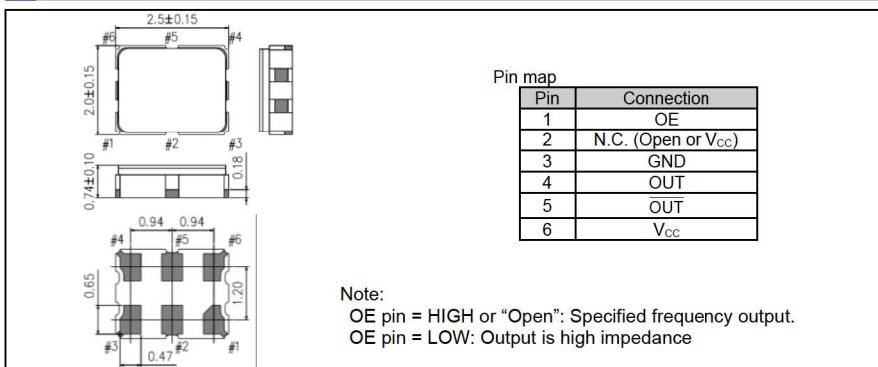
- ① Model ② Output (E: LV-PECL, V: LVDS) ③ Frequency ④ Supply voltage ⑤ Frequency tolerance (C:  $\pm 20 \times 10^{-6}$ )  
 ⑥ Operating temperature ⑦ Function ⑧ Output disable type (Z: High impedance) ⑨ Output option

④ Supply voltage		⑥ Operating temp.		⑦ Function		⑨ Output option	
C	3.3 V Typ.	G	-40 °C to +85 °C	P	OE	A	SG2520EHN
D	2.5 V Typ.	H	-40 °C to +105 °C	S	$\overline{ST}$	B	SG2520VHN
E*	1.8 V Typ.					C	

\*E\* is only for SG2520VHN

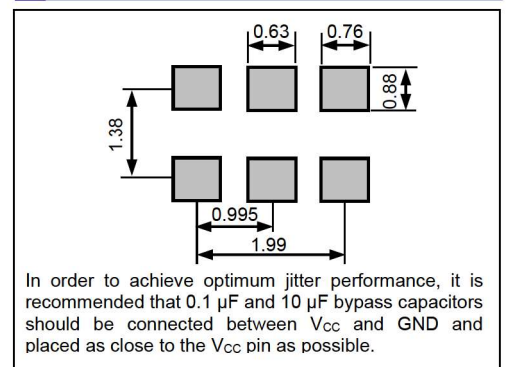
**External dimensions**

(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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