CRYSTAL OSCILLATOR (SPXO)

OUTPUT : LV-PECL, LVDS

SG3225EAN / VAN
SG5032EAN / VAN
SG7050EAN / VAN

- Achieved wide frequency range by PLL technology and Fundamental AT crystal units
- Frequency range : 73.5 MHz to 700 MHz
- Supply voltage : 2.5 V to 3.3 V
- Function : Output enable (OE)
- Output : LV-PECL or LVDS

Pb Free RoHS Compliant

Product Number

SG3225EAN: X1G004251xxxx00
SG3225VAN: X1G004241xxxx00
SG5032EAN: X1G004271xxxx00
SG5032VAN: X1G004261xxxx00
SG7050EAN: X1G004291xxxx00
SG7050VAN: X1G004281xxxx00

SG3225EAN/VAN
(3.2 × 2.5 × 1.05 mm)

SG5032EAN/VAN
(5.0 × 3.2 × 1.0 mm)

SG7050EAN/VAN
(7.0 × 5.0 × 1.4 mm)

Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks	
		LV-PECL	LVDS		
		SG3225EAN / SG5032EAN / SG7050EAN	SG3225VAN / SG5032VAN / SG7050VAN		
Output frequency range	f_0	73.5 MHz to 700 MHz		Please contact us about available frequencies.	
Supply voltage	V_{CC}	K: 2.5 V - 10 % to 3.3 V + 10 %			
Storage temperature	T_stg	-40 °C to +125 °C		Storage as single product.	
Operating temperature	T_use	B: -20 °C to +70 °C, G: -40 °C to +85 °C			
Frequency tolerance	f_tol	J: ± 50 × 10^{-6}, E: ± 30 × 10^{-6}, C: ± 20 × 10^{-6}			
Current consumption	I_{CC}	65 mA Max.	30 mA Max.	OE = Vcc, L_ECL = 50 Ω or L_LVDS = 100 Ω	
Disable current	I_dis	20 mA Max.		OE = GND	
Symmetry	SYM	45 % to 55 %		At outputs crossing point	
Output voltage (LV-PECL)	V_{OH}	Vcc - 1.0 V to Vcc - 0.8 V	–	DC characteristics	
	V_{OL}	Vcc - 1.78 V to Vcc - 1.62 V	–		
Output voltage (LVDS)	V_{OD}	–	250 mV to 450 mV	V_{OD1}, V_{OD2}	DC characteristics
	dVOD	–	50 mV Max.	dVOD = | V_{OD1}-V_{OD2} |	
	V_{OS}	–	1.15 V to 1.35 V	V_{OS1}, V_{OS2}	
	dVOS	–	150 mV Max.	dVOS = | V_{OS1}-V_{OS2} |	
Output load condition (ECL) / (LVDS)	L_ECL	50 Ω	–	Terminated to Vcc -2.0 V	
	L_LVDS	–	100 Ω	Connected between OUT to $\overline{OUT}$	
Input voltage	V_{IH}	70 % Vcc Min.		OE terminal	
	V_{IL}	30 % Vcc Max.			
Rise time / Fall time	t_r / t_f	350 ps Max.	300 ps Max.	LV-PECL: Between 20 % and 80 % of (VOH-VOL). LVDS: Between 20 % and 80 %of Differential Output peak to peak voltage	
Start-up time	t_str	3 ms Max.		Time at minimum supply voltage to be 0 s	
Phase Jitter	t_{PJ}	0.6 ps Max.*1		Offset frequency: 12 kHz to 20 MHz	
Frequency aging	f_age	± 5 × 10^{-6} / year Max.		+25 °C, First year, Vcc = 2.5 V, 3.3 V	

*1 0.9 ps Max. (f_0 = 243 MHz ~ 250 MHz, 486 MHz ~ 500 MHz)

Product Name (Standard form)

SG3225 E AN 156.250000MHz K J G A (⑤⑥: CG is not available)
① ② ③ ④⑤⑥⑦

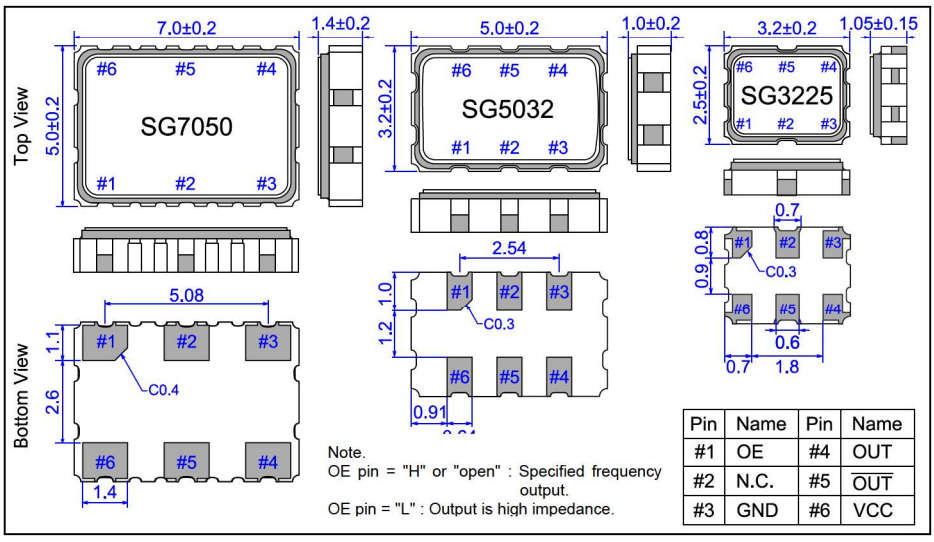
①Model ②Output (E: LV-PECL, V: LVDS) ③Frequency ④Supply voltage ⑤Frequency tolerance ⑥Operating temperature ⑦Internal identification code ("A" is default)

④Supply voltage	
K	2.5 V ~ 3.3 V

⑤Frequency tolerance	
J	±50 × 10^{-6}
E	±30 × 10^{-6}
C	±20 × 10^{-6}

⑥Operating temperature	
B	-20 °C ~ +70 °C
G	-40 °C ~ +85 °C

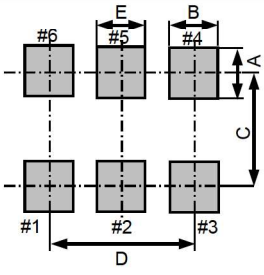
External dimensions (Unit: mm)



Note.
OE pin = "H" or "open" : Specified frequency output.
OE pin = "L" : Output is high impedance.

Pin	Name	Pin	Name
#1	OE	#4	OUT
#2	N.C.	#5	$\overline{OUT}$
#3	GND	#6	VCC

Footprint (Recommended) (Unit: mm)



Size

	SG3225 type	SG5032 type	SG7050 type
A	1.05	1.60	2.00
B	0.86	0.89	1.80
C	1.85	2.60	4.20
D	2.58	2.54	5.08
E	0.82	0.89	1.80

To maintain stable operation, provide a 0.01 µF to 0.1 µF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - GND).

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.

WORKING FOR HIGH QUALITY

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	►Pb free.
RoHS Compliant	►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.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).