CRYSTAL OSCILLATOR (SPXO)

OUTPUT : LV-PECL, LVDS

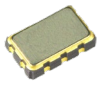
SG3225 / 5032 / 7050EEN
SG3225 / 5032 / 7050VEN

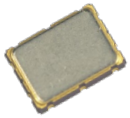
Pb Free RoHS Compliant

Product Number
SG3225EEN: X1G005221xxxx00 (fo ≤ 200 MHz)
X1G005511xxxx00 (fo > 200 MHz)
SG5032EEN: X1G005531xxxx00
SG7050EEN: X1G005131xxxx00 (fo ≤ 200 MHz)
X1G005551xxxx00 (fo > 200 MHz)
SG3225VEN: X1G005351xxxx00 (fo ≤ 200 MHz)
X1G005521xxxx00 (fo > 200 MHz)
SG5032VEN: X1G005541xxxx00
SG7050VEN: X1G005331xxxx00 (fo ≤ 200 MHz)
X1G005561xxxx00 (fo > 200 MHz)

- Frequency range : 25 MHz to 500 MHz
- Supply voltage : 2.5 V Typ. / 3.3 V Typ.
- Output : LV-PECL or LVDS
- Function : Output enable (OE)
- Phase jitter : 50 fs Typ. (fo = 156.25 MHz, LV-PECL)
- Operating temperature : -40 °C to +105 °C


SG3225EEN
SG3225VEN
(3.2 × 2.5 × 1.05 mm)


SG5032EEN
SG5032VEN
(5.0 × 3.2 × 1.3 mm)


SG7050EEN
SG7050VEN
(7.0 × 5.0 × 1.5 mm)

Specifications (characteristics)

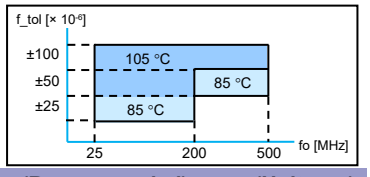
Item	Symbol	Specifications		Conditions / Remarks	
		LV-PECL	LVDS		
		SG3225EEN / SG5032EEN / SG7050EEN	SG3225VEN / SG5032VEN / SG7050VEN		
Output frequency range	fo	25 MHz to 500 MHz		Except for SG5032EEN / SG5032VEN	Please contact us for available frequencies.
		200.1 MHz to 500 MHz		SG5032EEN / SG5032VEN	
Supply voltage	V_{CC}	D: 2.5 V ± 0.125 V, C: 3.3 V ± 0.165 V			
Storage temperature	T_stg	-55 °C to +125 °C			
Operating temperature	T_use	G: -40 °C to +85 °C, H: -40 °C to +105 °C			
Frequency tolerance	f_tol	D: ±25 × 10^{-6} Max.		Includes initial frequency tolerance, temperature variation, supply voltage change and 5 years aging (+25 °C)	Refer to figure *1
		J: ±50 × 10^{-6} Max.		Includes initial frequency tolerance, temperature variation, supply voltage change and 10 years aging (+25 °C)	
		L: ±100 × 10^{-6} Max.			
Current consumption	I_{CC}	60 mA Max.	25 mA Max.	OE = V_{CC}, L_ECL = 50 Ω or L_LVDS = 100 Ω	
Disable current	I_dis	25 mA Max.	15 mA Max.	OE = GND	
Symmetry	SYM	45 % to 55 %		At output crossing point	
Output voltage (LV-PECL)	V_{OH}	V_{CC} - 1.1 V Min.	–	DC characteristics	
	V_{OL}	V_{CC} - 1.5 V Max.	–		
Output voltage (LVDS)	V_{OD}	–	250 mV to 450 mV	Differential output voltage, V_{OD1}, V_{OD2}	DC characteristics
	dV_{OD}	–	50 mV Max.	dV_{OD} = | V_{OD1} - V_{OD2} |	
	V_{OS}	–	1.15 V to 1.35 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 to $\overline{OUT}$	
Input voltage	V_{IH}	70 % V_{CC} Min.		OE terminal	
	V_{IL}	30 % V_{CC} Max.			
Rise/Fall times	tr / tf	0.3 ns Max.	0.3 ns Max.	V_{CC} = 3.3 V, 25 MHz ≤ fo ≤ 200 MHz	LV-PECL: Between 20 % and 80 % of (V_{OH} - V_{OL}) LVDS: Between 20 % and 80 % of Differential Output peak to peak voltage
		0.35 ns Max.		All other	
Startup time	t_str	10 ms Max.		Time at minimum supply voltage to be 0 s	

Phase Jitter

Product Name	100 MHz	125 MHz	156.25 MHz	200 MHz	312.5 MHz	491.52 MHz	Conditions
SG3225EEN / SG5032EEN / SG7050EEN	75 fs Typ.	60 fs Typ.	50 fs Typ.	40 fs Typ.	30 fs Typ.	20 fs Typ.	Offset frequency:
SG3225VEN / SG5032VEN / SG7050VEN	90 fs Typ.	70 fs Typ.	60 fs Typ.	50 fs Typ.	40 fs Typ.	30 fs Typ.	12 kHz to 20 MHz

Product Name (Standard form): SG3225 EEN 156.250000MHz C D G A (⑤⑥: Unavailable code DH, DG and JH at fo > 200 MHz, Refer to figure *1)
① ② ③ ④⑤⑥⑦
①Model ②Output (E: LV-PECL, V: LVDS) ③Frequency ④Supply voltage
⑤Frequency tolerance ⑥Operating temperature ⑦Internal identification code("A" is default)

*1 : Maximum T_use of operating range



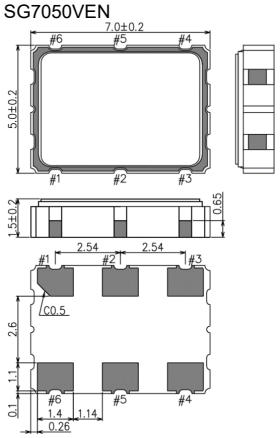
④Supply voltage	
C	3.3 V Typ.
D	2.5 V Typ.

⑤Frequency tolerance	
D	±25 × 10^{-6}
J	±50 × 10^{-6}
L	±100 × 10^{-6}

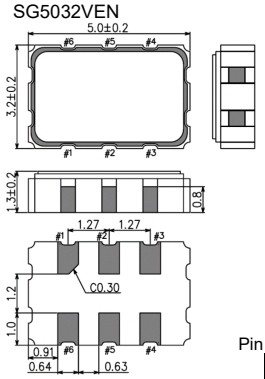
⑥Operating temperature	
G	-40 to +85 °C
H	-40 to +105 °C

External dimensions (Unit:mm)

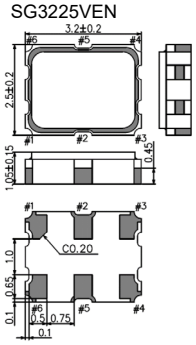
SG7050EEN
SG7050VEN



SG5032EEN
SG5032VEN



SG3225EEN
SG3225VEN

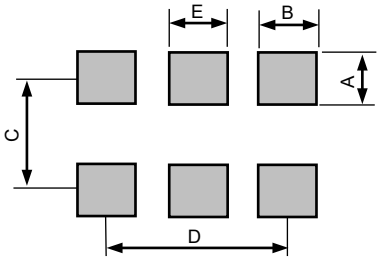


Pin map

Pin	Connection
1	OE
2	N.C. (Open or V_{CC})
3	GND
4	OUT
5	$\overline{OUT}$
6	V_{CC}

Note:
OE pin = HIGH or "Open": Specified frequency output.
OE pin = LOW: Output is high impedance

Footprint (Recommended) (Unit:mm)



	SG3225EEN SG3225VEN	SG5032EEN SG5032VEN	SG7050EEN SG7050VEN
A	1.05	1.60	2.00
B	0.92	0.89	1.80
C	1.85	2.60	4.20
D	2.58	2.54	5.08
E	0.80	0.89	1.80

In order to achieve optimum jitter performance, it is recommended that 0.1 µF and 10 µF bypass capacitors should be connected between V_{CC} and GND and placed as close to the V_{CC} pin as possible.

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.
	►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).