

# CRYSTAL OSCILLATOR (SPXO)

OUTPUT : LV-PECL, LVDS

## SG3225EEN / VEN SG5032EEN / VEN SG7050EEN / VEN

- 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



Product Number

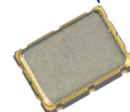
SG3225EEN: X1G005221xxxx00 (fo ≤ 200 MHz)  
X1G005511xxxx00 (fo > 200 MHz)  
SG5032EEN: X1G005531xxxx00  
SG7050EEN: X1G005131xxxx00 (fo ≤ 200 MHz)  
X1G005551xxxx00 (fo > 200 MHz)  
SG3225VEN: X1G005351xxxx00 (fo ≤ 200 MHz)  
X1G005521xxxx00 (fo > 200 MHz)  
SG5032VEN: X1G005541xxxx00  
SG7050VEN: X1G005331xxxx00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



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 SG5032EEN / SG5032VEN	Please contact us for available frequencies.
Supply voltage	VCC	200.1 MHz to 500 MHz D: 2.5 V ± 0.125 V, C: 3.3 V ± 0.165 V			
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 <sup>-6</sup> Max.		Includes initial frequency tolerance, temperature variation, supply voltage change and 5 years aging (+25 °C)	Refer to figure *1
		J: ±50 × 10 <sup>-6</sup> Max.			
		L: ±100 × 10 <sup>-6</sup> Max.		Includes initial frequency tolerance, temperature variation, supply voltage change and 10 years aging (+25 °C)	
Current consumption	ICC	60 mA Max.	25 mA Max.	OE = VCC, 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)	VOH	VCC - 1.1 V Min.	—	DC characteristics	
	VOL	VCC - 1.5 V Max.	—		
Output voltage (LVDS)	VOD	—	250 mV to 450 mV	Differential output voltage, VOD1, VOD2	DC characteristics
	dVOD	—	50 mV Max.	dVOD =   VOD1 - VOD2	
	VOS	—	1.15 V to 1.35 V	Offset voltage, VOS1, VOS2	
	dVOS	—	50 mV Max.	dVOS =   VOS1 - VOS2	
Output load condition	L_ECL	50 Ω	—	Terminated to VCC - 2.0 V	
	L_LVDS	—	100 Ω	Connected between OUT to OUT	
Input voltage	VIH	70 % VCC Min.		OE terminal	
	VIL	30 % VCC Max.			
Rise/Fall times	tr / tf	0.3 ns Max.	0.3 ns Max.	VCC = 3.3 V, 25 MHz ≤ fo ≤ 200 MHz	LV-PECL: Between 20 % and 80 % of (VOH - VOL)
		0.35 ns Max.		All other	LVDS: Between 20 % and 80 % of Differential Output peak to peak voltage
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 SG3225 EEN 156.250000MHz C D G A (⑤⑥: Unavailable code DH, DG and JH at fo > 200 MHz, Refer to figure \*1)

(Standard form) ① ② ③ ④⑤⑥⑦

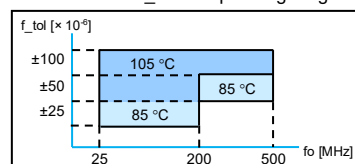
① Model ② Output (E: LV-PECL, V: LVDS) ③ Frequency ④ Supply voltage

⑤ Frequency tolerance ⑥ Operating temperature ⑦ Internal identification code("A" is default)

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

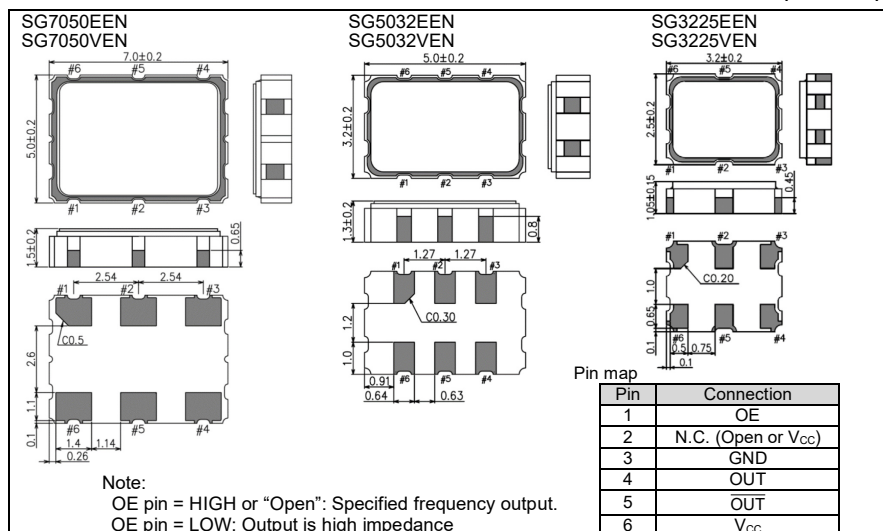
⑤ Frequency tolerance	
D	±25 × 10 <sup>-6</sup>
J	±50 × 10 <sup>-6</sup>
L	±100 × 10 <sup>-6</sup>

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



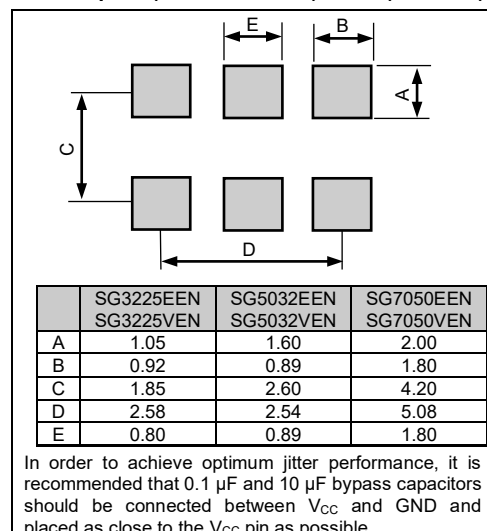
### External dimensions

(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.

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