



## CRYSTAL OSCILLATOR (SPXO)

OUTPUT : LV-PECL, LVDS

**NEW**

Product Number (please contact us)

SG3225EAN: X1G004251xxxx00

SG3225VAN: X1G004241xxxx00

SG5032EAN: X1G004271xxxx00

SG5032VAN: X1G004261xxxx00

SG7050EAN: X1G004291xxxx00

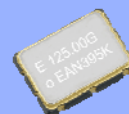
SG7050VAN: X1G004281xxxx00

# SG3225EAN / VAN

# SG5032EAN / VAN

# SG7050EAN / VAN

- 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

SG3225EAN/VAN  
(3.2 × 2.5 × 1.05 mm)  
Actual sizeSG5032EAN/VAN  
(5.0 × 3.2 × 1.0 mm)SG7050EAN/VAN  
(7.0 × 5.0 × 1.4 mm)

SG3225EAN/VAN



SG5032EAN/VAN



SG7050EAN/VAN



## Specifications (characteristics)

| Item                                 | Symbol                          | Specifications                                                                       |                                   | Conditions / Remarks                                                                                                               |                    |
|--------------------------------------|---------------------------------|--------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|                                      |                                 | LV-PECL                                                                              | LVDS                              |                                                                                                                                    |                    |
|                                      |                                 | SG3225EAN / SG5032EAN / SG7050EAN                                                    | SG3225VAN / SG5032VAN / SG7050VAN |                                                                                                                                    |                    |
| Output frequency range               | f <sub>o</sub>                  | 73.5MHz to 700 MHz                                                                   |                                   | Please contact us about available frequencies.                                                                                     |                    |
| Supply voltage                       | V <sub>cc</sub>                 | K: 2.5V to 3.3V                                                                      |                                   | V <sub>cc</sub> =± 10%                                                                                                             |                    |
| Storage temperature                  | T <sub>stg</sub>                | -40 °C to +125 °C                                                                    |                                   | Storage as single product.                                                                                                         |                    |
| Operating temperature                | T <sub>use</sub>                | B: -20 °C to +70 °C, G: -40 °C to +85 °C                                             |                                   |                                                                                                                                    |                    |
| Frequency tolerance                  | f <sub>tol</sub>                | J: ± 50 × 10 <sup>-6</sup> , E: ± 30 × 10 <sup>-6</sup> , C: ± 20 × 10 <sup>-6</sup> |                                   |                                                                                                                                    |                    |
| Current consumption                  | I <sub>cc</sub>                 | 65 mA Max.                                                                           | 30 mA Max.                        | OE=V <sub>cc</sub> , L <sub>ECL</sub> =50 Ω or L <sub>LVDS</sub> =100 Ω                                                            |                    |
| Disable current                      | I <sub>dis</sub>                | 20 mA Max.                                                                           |                                   | OE=GND                                                                                                                             |                    |
| Symmetry                             | SYM                             | 45 % to 55 %                                                                         |                                   | At outputs crossing point                                                                                                          |                    |
| Output voltage (LV-PECL)             | V <sub>OH</sub>                 | V <sub>cc</sub> -1.0 V to V <sub>cc</sub> -0.8 V                                     | —                                 | DC characteristics                                                                                                                 |                    |
|                                      | V <sub>OL</sub>                 | V <sub>cc</sub> -1.78 V to V <sub>cc</sub> -1.62 V                                   | —                                 |                                                                                                                                    |                    |
| Output voltage (LVDS)                | V <sub>OD</sub>                 | —                                                                                    | 250 mV to 450mV                   | V <sub>OD1</sub> , V <sub>OD2</sub>                                                                                                | DC characteristics |
|                                      | 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                  | V <sub>OS1</sub> , V <sub>OS2</sub>                                                                                                |                    |
|                                      | dV <sub>OS</sub>                | —                                                                                    | 150 mV Max.                       | dV <sub>OS</sub> =   V <sub>OS1</sub> -V <sub>OS2</sub>                                                                            |                    |
| Output load condition (ECL) / (LVDS) | L <sub>ECL</sub>                | 50 Ω                                                                                 | —                                 | Terminated to V <sub>cc</sub> -2.0 V                                                                                               |                    |
|                                      | L <sub>LVDS</sub>               | —                                                                                    | 100 Ω                             | Connected between OUT to $\overline{\text{OUT}}$                                                                                   |                    |
| Input voltage                        | V <sub>IH</sub>                 | 70 % V <sub>cc</sub> Min.                                                            |                                   | OE terminal                                                                                                                        |                    |
|                                      | V <sub>IL</sub>                 | 30 % V <sub>cc</sub> Max.                                                            |                                   |                                                                                                                                    |                    |
| Rise time / Fall time                | t <sub>r</sub> / t <sub>f</sub> | 350 ps Max.                                                                          | 300 ps Max.                       | Between 20 % and 80 % of (V <sub>OH</sub> -V <sub>OL</sub> ).<br>Between 20 % and 80 % of Differential Output peak to peak voltage |                    |
| Start-up time                        | t <sub>str</sub>                | 3 ms Max.                                                                            |                                   | Time at minimum supply voltage to be 0 s                                                                                           |                    |
| Phase Jitter                         | tp <sub>J</sub>                 | 0.6 ps Max. <sup>*1</sup>                                                            |                                   | Offset frequency: 12 kHz to 20 MHz                                                                                                 |                    |
| Frequency aging                      | f <sub>aging</sub>              | ± 5 × 10 <sup>-6</sup> / year Max.                                                   |                                   | +25 °C, First year, V <sub>cc</sub> =2.5 V,3.3 V                                                                                   |                    |

<sup>\*1</sup> f<sub>o</sub>=243MHz to 250MHz, 486MHz to 500MHz are 0.9ps Max.Product Name SG3225 E AN 156.250000MHz K J G A (⑤⑥: CG is not available)

(Standard form)

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)

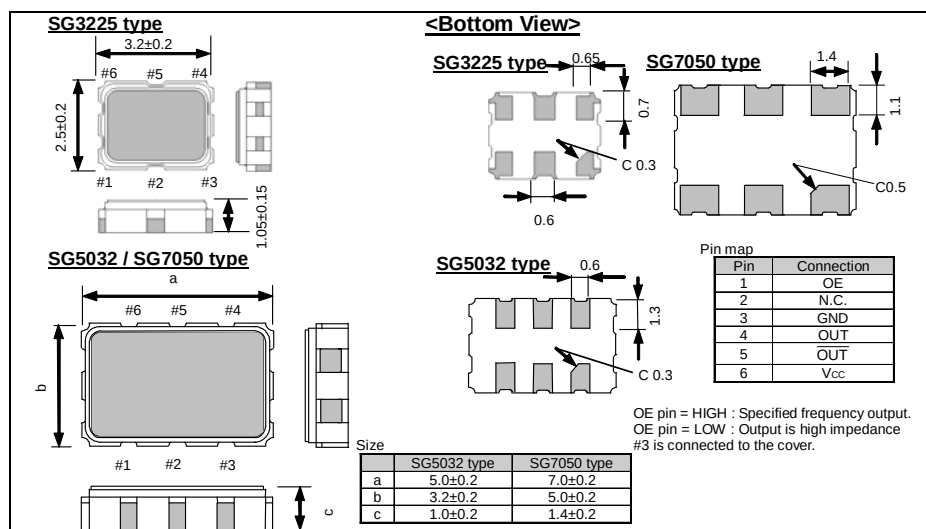
| ④ Supply voltage |              |
|------------------|--------------|
| K                | 2.5 to 3.3 V |

| ⑤ Frequency tolerance |                        |
|-----------------------|------------------------|
| J                     | ±50 × 10 <sup>-6</sup> |
| E                     | ±30 × 10 <sup>-6</sup> |
| C                     | ±20 × 10 <sup>-6</sup> |

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

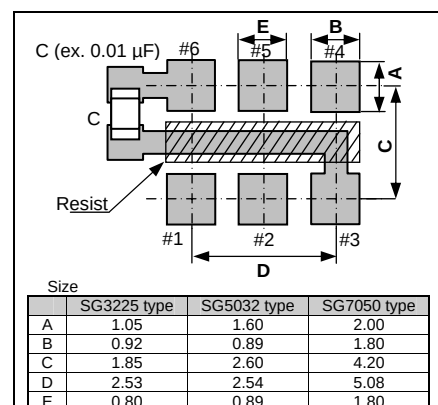
## External dimensions

(Unit:mm)



## Footprint (Recommended)

(Unit:mm)



To maintain stable operation, provide a 0.01μF to 0.1μF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between V<sub>cc</sub> - 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.

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|                                                                                     |                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | ► Pb free.                                                                                                                                                                                                                      |
|  | ► Complies with EU RoHS directive.<br>*About the products without the Pb-free mark.<br>Contains Pb in products exempted by EU RoHS directive.<br>(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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