

# CRYSTAL OSCILLATOR (SPXO)

## OUTPUT : CMOS

# SG5032CAN / CBN / CCN

# SG7050CAN / CBN / CCN

- Frequency range : CAN 1 to 75 MHz (Fundamental mode)  
: CBN 80 to 170 MHz (Fundamental mode)  
: CCN 2.5 to 50 MHz (Fundamental mode)
- Supply voltage : CAN / CBN 1.8 V to 3.6 V Typ.  
: CCN 5.0 V Typ.
- Function : CAN / CBN Standby( $\overline{ST}$ )  
: CCN Output enable(OE)
- Output : CMOS



Product Number (please contact us)  
 SG5032CAN: X1G004451xxxx00  
 SG5032CBN: X1G004461xxxx00  
 SG5032CCN: X1G004471xxxx00  
 SG7050CAN: X1G004481xxxx00  
 SG7050CBN: X1G004491xxxx00  
 SG7050CCN: X1G004501xxxx00



SG5032CAN/CBN/CCN  
(5.0 × 3.2 × 1.1 mm)



SG7050CAN/CBN/CCN  
(7.0 × 5.0 × 1.3 mm)

Actual size

SG5032CAN /CBN/CCN

SG7050CAN /CBN/CCN

### Specifications (characteristics)

| Item                   | Symbol      | Specifications  |   |  | Conditions / Remarks  |
|------------------------|-------------|---|---|--|---|
|                        |             | SG5032CAN<br>SG7050CAN  | SG5032CBN<br>SG7050CBN                  | SG5032CCN<br>SG7050CCN                 |   |
| Output frequency range | $f_o$       | 1 MHz to 75 MHz<br>T: 1.6 V to 3.63 V<br>T: 1.71 V to 3.63 V<br>K: 2.25 V to 3.63 V | 80 MHz to 170 MHz<br>T: 1.6 V to 3.63 V | 2.5 MHz to 50 MHz<br>H: 4.5 V to 5.5 V | Please contact us about available frequencies.<br>1 MHz ≤ $f_o$ ≤ 60 MHz<br>60 MHz < $f_o$ ≤ 75 MHz, +85 °C Max.<br>60 MHz < $f_o$ ≤ 75 MHz, +105 °C Max.<br>See *1 (CAN) |
| Supply voltage         | $V_{cc}$    |   |   |  |   |
| 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<br>H: -40 °C to +105 °C                    |   |  | See of figure *1 (CAN)  |
| Frequency tolerance    | $f_{tol}$   | D ( Only CAN type ) : ±25 × 10 <sup>-6</sup> , J : ±50 × 10 <sup>-6</sup>           |   |  | -20 °C to +70 °C  |
|                        |             | J : ±50 × 10 <sup>-6</sup>  |   |  | -40 °C to +85 °C  |
|                        |             | L : ±100 × 10 <sup>-6</sup>   |   |  | -40 °C to +105 °C   |
|                        |             |   |   |  |   |
| Current consumption    | $I_{cc}$    | 3.0 mA Max.   | 11 mA Max.                              | 20 mA Max.                             | No load condition Maximum frequency.  |
| Stand-by current       | $I_{std}$   | 2.7 µA Max.   | 10 µA Max.                              | -                                      | $\overline{ST}$ = GND   |
| Disable current        | $I_{dis}$   | -   | -                                       | 10 mA Max.                             | OE = GND  |
| Symmetry               | SYM         | 45 % to 55 %  |   | 40 % to 60 %                           | 50 % $V_{cc}$ level, $L_{CMOS}$ ≤ 15 pF   |
| Output voltage         | $V_{OH}$    | $V_{cc}$ -0.4 Min.  |   |  |   |
|                        | $V_{OL}$    | 0.4 V Max.  |   |  |   |
| Output load condition  | $L_{CMOS}$  | 15 pF Max.  |   | 50 pF Max.                             | CMOS load   |
| Input voltage          | $V_{IH}$    | 80 % $V_{cc}$ Min.  |   |  | $\overline{ST}$ , OE terminal   |
|                        | $V_{IL}$    | 20 % $V_{cc}$ Max.  |   |  |   |
| Rise time / Fall time  | $t_r / t_f$ | 3 ns Max.<br>3.5nsMax.(@1.8V±10%)   | 3 ns Max.                               | 5 ns Max.                              | 20 % $V_{cc}$ to 80 % $V_{cc}$ level, $L_{CMOS}$ = 15 pF  |
|                        | $t_{str}$   | 3 ms Max.   | 5 ms Max.                               |  | $t=0$ at 90 % $V_{cc}$ +85°C,(+105°C)   |
| Frequency aging        | $f_{aging}$ | ±3 × 10 <sup>-6</sup> / year Max.   | ±5 × 10 <sup>-6</sup> / year Max.       |  | +25 °C, First year.   |

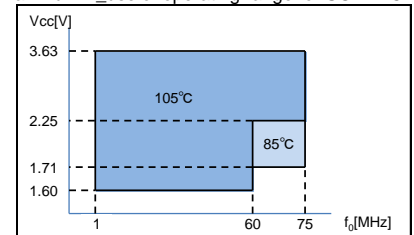
\*1 : Maximum  $T_{use}$  of operating range for SGxxxxCAN

Product Nam SG5032 C AN 25.000000MHz T J G A (ⓈⓈ: Available code DB,JB,JG,JH,LG,LH)  
 (Standard form) ① ② ③ ④⑤⑥⑦  
 ①Model ②Output (C:CMOS) ③Frequency  
 ④Supply voltage ⑤Frequency tolerance  
 ⑥Operating temperature range ⑦Internal identification code ("A" is default)

| ④Supply voltage |                      |
|-----------------|----------------------|
| T               | 1.6 to 3.63 V        |
|                 | 1.71 ~ 3.63 V See *1 |
| K               | 2.25 ~ 3.63 V (CAN)  |
| H               | 4.5 ~ 5.5 V          |

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

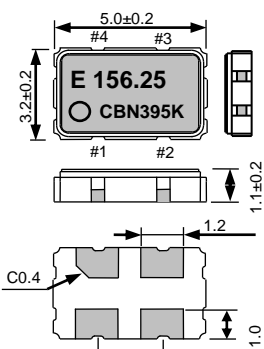
| ⑥Operating temperature range |               |
|------------------------------|---------------|
| B                            | -20 to +70°C  |
| G                            | -40 to +85°C  |
| H                            | -40 to +105°C |



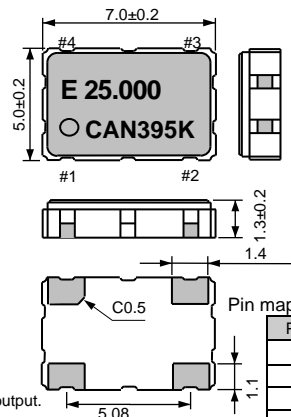
### External dimensions

(Unit:mm)

#### •SG5032 type



#### •SG7050 type



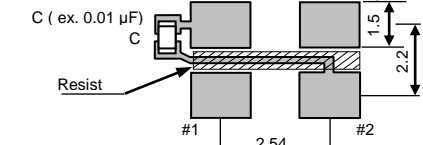
Note.  
 OE pin = "H" or "open" : Specified frequency output.  
 OE pin = "L" : Output is high impedance.  
 $\overline{ST}$  pin = "H" or "open" : Specified frequency output.  
 $\overline{ST}$  pin = "L" : Output is high impedance, oscillation stops.

\*OE function is only available SGxxxxCCN

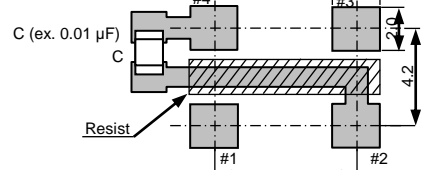
### Footprint (Recommended)

(Unit:mm)

#### •SG5032 type



#### •SG7050 type



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  $V_{cc}$  - 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.

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ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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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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