



TCXO / VC-TCXO

For Automotive

105 °C High temperature range

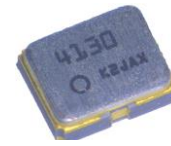


Product Number (Please contact us)
TG2016SKA : X1G005371xxxx16

TG2016SKA

- Output frequency : 13 MHz to 55 MHz
- Supply voltage : 1.8 V Typ. / 3.3 V Typ.
- Frequency / temperature characteristics : $\pm 0.5 \times 10^{-6}$ Max. (-40 °C to +105 °C)
- External dimensions: 2.0 × 1.6 × 0.7 mm Max.
- Applications : GNSS for Automotive, V2X (TCU, DSRC)*
- Features : Low noise, 105 °C High temp, Stand-by function (\overline{ST})
- AEC-Q100 compliant

* GNSS: Global Navigation Satellite System V2X: Vehicle to Everything TCU: Telematics control unit DSRC: Dedicated Short Range Communication



TG2016SKA

(2.0 × 1.6 × 0.7 mm)

Specifications (characteristics)

| Item | Symbol | TCXO | VC-TCXO | Conditions / Remarks |
|---------------------------------------|------------------|---------------------------------------|-------------------------------|--|
| Output frequency range | f_o | 13 MHz to 55 MHz 26 MHz, 49.58 MHz | | Standard frequency |
| Supply voltage | V_{CC} | 1.8 V \pm 0.1 V / 3.3 V \pm 5 % | | Supply voltage range: 1.7 V to 3.63 V |
| Storage temperature range | T_{stg} | -55 °C to +125 °C | | Storage as single product. |
| Operating temperature range | T_{use} | H: -40 °C to +105 °C | | Standard |
| Frequency tolerance | f_{tol} | $\pm 2.0 \times 10^{-6}$ Max. | | After 2 times reflow, +25 °C |
| Frequency/temperature Characteristics | f_o -Tc | C: $\pm 0.5 \times 10^{-6}$ Max. | | Standard stability version |
| Frequency/load coefficient | f_o -Load | $\pm 0.2 \times 10^{-6}$ Max. | | 10 k Ω // 10 pF \pm 10 % |
| Frequency/voltage coefficient | f_o - V_{CC} | $\pm 0.2 \times 10^{-6}$ Max. | | $V_{CC} \pm 5$ % |
| Frequency aging | f_{age} | $\pm 1.0 \times 10^{-6}$ Max. | | +25 °C, First year, 13 MHz $\leq f_o \leq$ 20 MHz, 26 MHz $\leq f_o \leq$ 40 MHz |
| | | $\pm 1.5 \times 10^{-6}$ Max. | | +25 °C, First year, 20 MHz < f_o < 26 MHz 40 MHz < $f_o \leq$ 55 MHz |
| Current consumption | I_{CC} | 2.0 mA Max. 2.5 mA Max. | | 13 MHz $\leq f_o \leq$ 40 MHz 40 MHz < $f_o \leq$ 55 MHz |
| Input resistance | Z_{in} | - | 500 k Ω Min. | V_c - GND (DC) |
| Frequency control range | f_{cont} | - | $\pm 5.0 \times 10^{-6}$ Min. | B: $V_c = 0.9$ V \pm 0.6 V ($V_{CC} = 1.8$ V) or E: $V_c = 1.65$ V \pm 1.0 V ($V_{CC} = 3.3$ V) |
| Frequency change polarity | f_{cp} | - | Positive polarity | |
| Stand-by current | I_{std} | 10 μ A Max. | - | \overline{ST} = GND, in Stand-by |
| Input voltage | V_{IH} | 80 % V_{CC} Min. | - | \overline{ST} terminal, in Stand-by |
| | V_{IL} | 20 % V_{CC} Max. | - | |
| Symmetry | SYM | 40 % to 60 % | | GND level (DC cut) |
| Output voltage | V_{pp} | 0.8 V Min. | | Peak to Peak |
| Start-up time | t_{str} | 2.0 ms Max. | | $t = 0$ at 90 % V_{CC} |
| Output load | Load_R | 10 k Ω | | DC cut capacitor = 0.01 μ F |
| | Load_C | 10 pF | | |
| G-sensitivity | Gs | 1.5×10^{-9} / G Max. | | 30 Hz to 3 kHz, sinewave, 3 axes |

Note: Please contact us for requirements not listed in this specification.

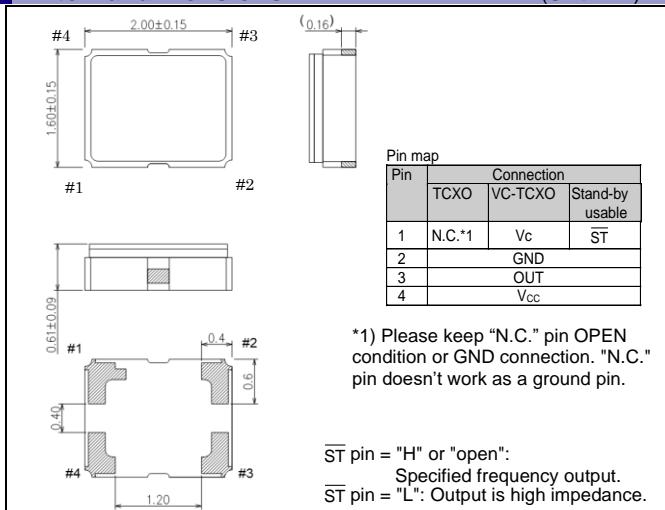
Product Name **TG2016 SKA** **26.000000MHz** **E** **C** **H** **N** **N** **M**
 (Standard form) ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ① Model (TG2016) ② Output (S: Clipped sine wave)
 ③ Frequency ④ Supply voltage (Refer to symbol table)
 ⑤ Frequency / temperature characteristics (C: $\pm 0.5 \times 10^{-6}$ Max.)
 ⑥ Operating temperature (H: -40 °C to +105 °C) ⑦ ST function (N: Non, S: Stand-by usable)
 ⑧ Vc function (Refer to symbol table) ⑨ Internal identification code

| ④ Supply voltage [V_{CC}] ⑧ Vc function [V_c] (Symbol table) | | | |
|--|------------------|---------|---------|
| Voltage [V] | TCXO | VC-TCXO | |
| ④ V_{CC} (Typ.) | E: 1.8 C: 3.3 | E: 1.8 | C: 3.3 |
| ⑧ V_c (Typ.) | N: Non | B: 0.9 | E: 1.65 |

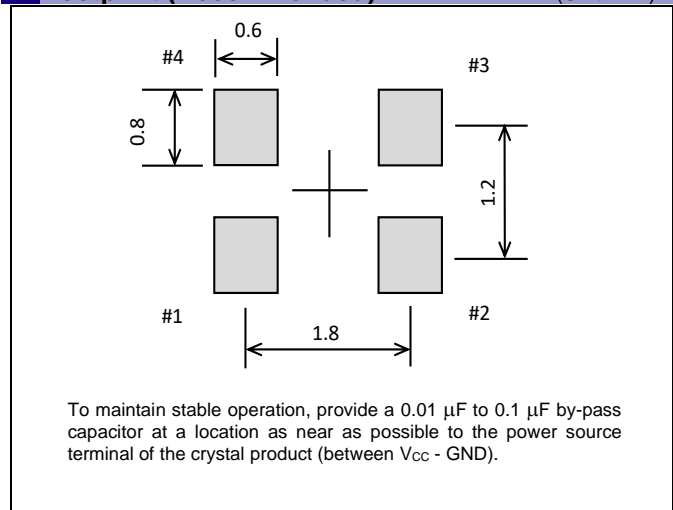
External dimensions

(Unit: mm)



Footprint (Recommended)

(Unit: mm)



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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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). |

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|---|---|---|
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| <u>TG2016SKA 26.0000M-ECHNNMB</u> | <u>TG2016SKA 26.0000M-ECHNNN5</u> | <u>TG2016SKA 38.4000M-ECHNNM5</u> |
| <u>TG2016SKA 26.0000M-ECHNNNB</u> | <u>TG2016SKA 49.5800M-ECHNNMB</u> | <u>TG2016SKA 26.0000M-ECHNNM5</u> |