

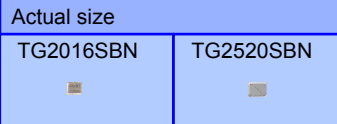
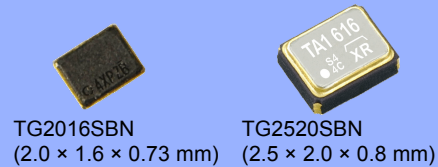
**VC-TCXO/TCXO  
HIGH STABILITY**



Product Number (Please contact us)  
**TG2016SBN : X1G004691xxxxxx**  
**TG2520SBN : X1G005151xxxxxx**

**TG2016SBN / TG2520SBN**

- Output frequency : 13 MHz to 55MHz
- Supply voltage : 1.8 V Typ./ 2.8 V Typ./ 3.0 V Typ./ 3.3 V Typ.
- Frequency / temperature characteristics
  - :  $\pm 0.5 \times 10^{-6}$  Max. (-40 °C to +85 °C)
  - :  $\pm 2.0 \times 10^{-6}$  Max. (-40 °C to +85 °C)
- External dimensions: 2.0 × 1.6 × 0.73 mm / 2.5 × 2.0 × 0.8 mm
- Applications : GPS, RF  
Wireless communication devices  
(CDMA, WCDMA, LTE, WiMAX, other)
- Features : High stability, Low noise



**Specifications (characteristics)**

Item	Symbol	VC-TCXO	TCXO	Conditions / Remarks
Output frequency range	$f_0$	13 MHz to 55MHz 16 MHz, 16.368 MHz, 16.369 MHz, 16.384 MHz, 16.8 MHz, 19.2 MHz, 20 MHz, 26 MHz, 27MHz, 28.974 MHz, 30 MHz, 32 MHz, 37.4 MHz, 38.4 MHz, 39 MHz and 40 MHz		Standard frequency
Supply voltage	V <sub>cc</sub>	1.8 V $\pm 0.1$ V / 2.8 V $\pm 5\%$ / 3.0 V $\pm 5\%$ / 3.3 V $\pm 5\%$		Supply voltage range :1.7 V to 3.63 V
Storage temperature	T <sub>stg</sub>	-40 °C to +90 °C		Storage as single product.
Operating temperature	T <sub>use</sub>	G: -40 °C to +85 °C		
Frequency tolerance	f <sub>tol</sub>	$\pm 1.5 \times 10^{-6}$ Max.		After reflow, +25 °C
Frequency/temperature characteristics	$f_0$ -Tc	C: $\pm 0.5 \times 10^{-6}$ Max. / G: -40 °C to +85 °C F: $\pm 2.0 \times 10^{-6}$ Max. / G: -40 °C to +85 °C		Standard stability version
Frequency/load coefficient	$f_0$ -Load	$\pm 0.1 \times 10^{-6}$ Max.		10 k $\Omega$ // 10 pF $\pm 10\%$
Frequency/voltage coefficient	$f_0$ -V <sub>cc</sub>	$\pm 0.1 \times 10^{-6}$ Max.		V <sub>cc</sub> $\pm 5\%$
Frequency aging	f <sub>age</sub>	$\pm 0.5 \times 10^{-6}$ Max.		+25 °C, First year, 13 MHz $\leq f_0 \leq 20$ MHz, 26 MHz $\leq f_0 \leq 40$ MHz
		$\pm 1.5 \times 10^{-6}$ Max.		+25 °C, First year, 20 MHz $< f_0 < 26$ MHz 40 MHz $< f_0 \leq 55$ MHz
Current consumption	I <sub>cc</sub>	1.2 mA Max.		13 MHz $\leq f_0 < 16$ MHz
		1.4 mA Max.		16 MHz $\leq f_0 \leq 27$ MHz
		1.5 mA Max.		27 MHz $< f_0 \leq 36$ MHz
		1.8 mA Max.		36 MHz $< f_0 \leq 40$ MHz
		2.0 mA Max.		40 MHz $< f_0 \leq 52$ MHz
Input resistance	R <sub>in</sub>	500 k $\Omega$ Min.		V <sub>c</sub> - GND (DC)
		-		B: V <sub>c</sub> = 0.9 V $\pm 0.6$ V (V <sub>cc</sub> = 1.8 V) or C: V <sub>c</sub> = 1.4 V $\pm 1.0$ V (V <sub>cc</sub> = 2.8 V) or D: V <sub>c</sub> = 1.5 V $\pm 1.0$ V (V <sub>cc</sub> = 3.0 V) or E: V <sub>c</sub> = 1.65 V $\pm 1.0$ V (V <sub>cc</sub> = 3.3 V)
Frequency control range	f <sub>cont</sub>	$\pm 8.0 \times 10^{-6}$ to $\pm 12.0 \times 10^{-6}$		
Frequency change polarity	-	Positive polarity		
Symmetry	SYM	45 % to 55 %		GND level (DC cut)
Output voltage	V <sub>pp</sub>	0.8 V Min.		Peak to Peak
Start-up time	t <sub>str</sub>	1.0 ms Max.		T=0 at 90% V <sub>cc</sub>
Output load condition	Load <sub>R</sub>	10 k $\Omega$		DC cut capacitor = 0.01 $\mu$ F
	Load <sub>C</sub>	10 pF		

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

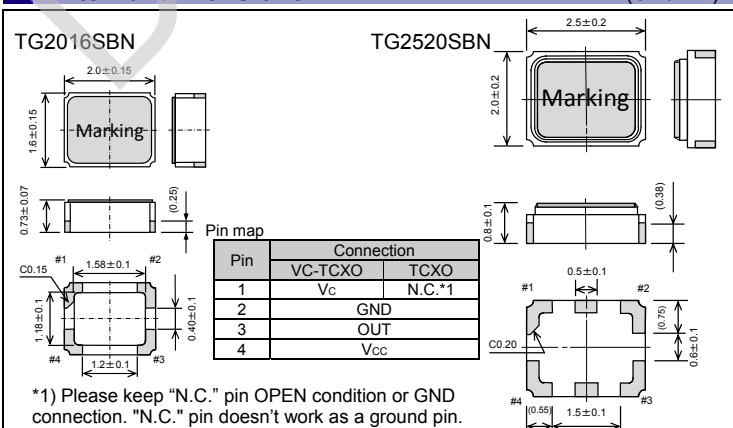
Product Name **TG2016SBN 26.000000MHz** I C G N N M  
 (Standard form) ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Model(TG2016, TG2520)  
 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., F:  $\pm 2.0 \times 10^{-6}$  Max.)  
 ⑥ Operating temperature (G: -40 °C to +85 °C) ⑦ OE function (N: Non) ⑧ Vc function(Refer to symbol table , A: Vc =any)  
 ⑨ Internal identification code ("L", "M", "H" is default)

④ Supply voltage[V <sub>cc</sub> ], ⑧ Vc function[V <sub>c</sub> ] (Symbol table)		VC-TCXO				
Voltage [V]	TCXO	T: 1.8	T: 1.8	K: 2.5	P: 2.6	M: 2.8
⑤ V <sub>cc</sub> (Typ.)	to 3.3	to 3.3	to 3.3	to 3.3	to 3.3	to 3.3
⑧ V <sub>c</sub> (Typ.)	N: Non	B: 0.9	C: 1.4	D: 1.5	E: 1.65	

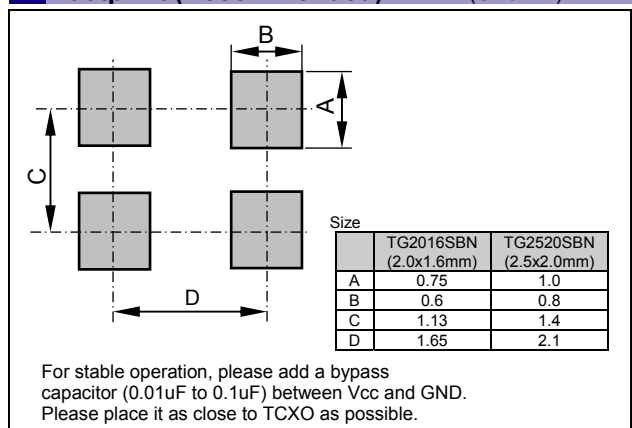
**External dimensions**

(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.





## 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 ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 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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