VC-TCXO/TCXO
HIGH STABILITY

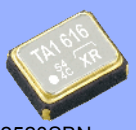
TG2016SBN / TG2520SBN

- 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
  : ±0.5 × 10^{-6} Max. (-40 °C to +85 °C)
  : ±2.0 × 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

Pb Free RoHS Compliant

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

TG2016SBN
(2.0 × 1.6 × 0.73 mm)



TG2520SBN
(2.5 × 2.0 × 0.8 mm)

Actual size

TG2016SBN	TG2520SBN
	

Specifications (characteristics)

Item	Symbol	VC-TCXO	TCXO	Conditions / Remarks
Output frequency range	f0	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	Vcc	1.8 V ±0.1 V / 2.8 V ±5 % / 3.0 V ±5 % / 3.3 V ±5 %		Supply voltage range :1.7 V to 3.63 V
Storage temperature	T_stg	-40 °C to +90 °C		Storage as single product.
Operating temperature	T_use	G: -40 °C to +85 °C		
Frequency tolerance	f_tol	±1.5 × 10^{-6} Max.		After reflow, +25 °C
Frequency/temperature characteristics	f0-Tc	C: ±0.5 × 10^{-6} Max. / G: -40 °C to +85 °C F: ±2.0 × 10^{-6} Max. / G: -40 °C to +85 °C		Standard stability version
Frequency/load coefficient	f0-Load	±0.1 × 10^{-6} Max.		10 kΩ // 10 pF ±10 %
Frequency/voltage coefficient	f0-Vcc	±0.1 × 10^{-6} Max.		Vcc ± 5 %
Frequency aging	f_age	±0.5 × 10^{-6} Max.		+25 °C, First year, 13 MHz≤ f0 ≤20 MHz, 26 MHz≤ f0 ≤40 MHz
		±1.5 × 10^{-6} Max.		+25 °C ,First year, 20 MHz< f0 <26 MHz 40 MHz< f0 ≤55 MHz
Current consumption	Icc	1.2 mA Max.		13 MHz≤ f0 <16 MHz
		1.4 mA Max.		16 MHz≤ f0 ≤27 MHz
		1.5 mA Max.		27 MHz< f0 ≤36 MHz
		1.8 mA Max.		36 MHz< f0 ≤40 MHz
		2.0 mA Max.		40 MHz< f0 ≤52 MHz
		2.2 mA Max.		52 MHz< f0 ≤55 MHz
Input resistance	Rin	500 kΩ Min.	-	Vc - GND (DC)
Frequency control range	f_cont	±8.0 × 10^{-6} to ±12.0 × 10^{-6}	-	B: Vc =0.9 V ±0.6 V (Vcc =1.8 V) or C: Vc =1.4 V ±1.0 V (Vcc =2.8 V) or D: Vc =1.5 V ±1.0 V (Vcc =3.0 V) or E: Vc =1.65 V ±1.0 V (Vcc =3.3 V)
Frequency change polarity	-	Positive polarity	-	
Symmetry	SYM	45 % to 55 %		GND level (DC cut)
Output voltage	Vpp	0.8 V Min.		Peak to Peak
Start-up time	t_str	1.0 ms Max.		T=0 at 90% Vcc
Output load condition	Load_R	10 kΩ		DC cut capacitor = 0.01 μF
	Load_C	10 pF		

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

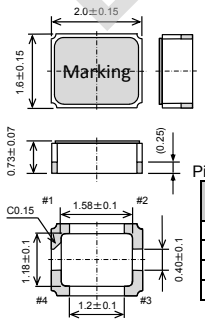
④Supply voltage[Vcc] ,⑧Vc function[Vc] (Symbol table)					
Voltage [V]	TCXO	VC-TCXO			
④Vcc (Typ.)	T: 1.8 to 3.3	T: 1.8 to 3.3	K: 2.5 to 3.3	P: 2.6 to 3.3	M: 2.8 to 3.3
⑧Vc (Typ.)	N: Non	B: 0.9	C: 1.4	D: 1.5	E: 1.65

Product Name (Standard form): TG2016 SBN 26.000000MHz T C G N N M
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

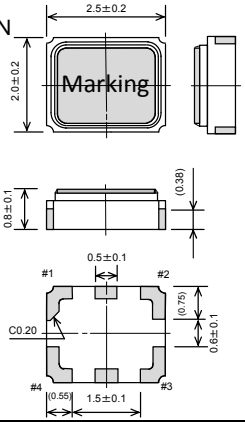
①Model(TG2016, TG2520)
②Output (S: Clipped sine wave) ③Frequency
④Supply voltage (Refer to symbol table) ⑤Frequency / temperature characteristics (C: ±0.5 × 10^{-6} Max., F: ±2.0 × 10^{-6} Max.)
⑥Operating temperature (G: -40 °C to +85 °C) ⑦OE function (N: Non) ⑧Vc function(Refer to symbol table , A: Vc =any)
⑨Internal identification code ("L", "M", "H" is default)

External dimensions (Unit:mm)

TG2016SBN



TG2520SBN

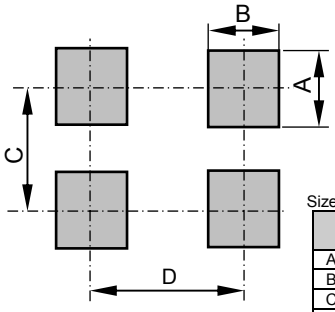


Pin map

Pin	Connection	
	VC-TCXO	TCXO
1	Vc	N.C.*1
2	GND	
3	OUT	
4	Vcc	

*1) Please keep "N.C." pin OPEN condition or GND connection. "N.C." pin doesn't work as a ground pin.

Footprint (Recommended) (Unit:mm)



Size

	TG2016SBN (2.0x1.6mm)	TG2520SBN (2.5x2.0mm)
A	0.75	1.0
B	0.6	0.8
C	1.13	1.4
D	1.65	2.1

For stable operation, please add a bypass capacitor (0.01uF to 0.1uF) between Vcc and GND.
Please place it as close to TCXO as possible.

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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RoHS Compliant	►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.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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