

**DAISHINKU developed “smallest and thinnest TCXO”
(Temperature Compensated Crystal Oscillator)in the world, Model:DSA/DSB1612SDN**

June 17, 2015

DAISHINKU CORP. (President: Sohei Hasegawa) developed smallest and thinnest TCXO (Temperature Compensated Crystal Oscillator) in the world.

TCXO is an electronic component utilized as many applications with a communication function, such as smart phones, wearable devices, GNSS and smart meters. In recent years, many of applications have become more and more compact and low profile, while better performance and functionality are required. It is same for crystal components as well. We have been producing TCXO as smaller as 2016 size (2.0 x 1.6 mm). We now have successfully developed a further downsized model at 1612 size (1.6 x 1.2 mm), with the height of 0.55mm max., thinnest in the world.

TCXO is often produced with two discrete components, crystal resonator and IC for oscillation packaged individually, then putting them together. In this way, it remains difficulty for lower profile. However, with our own-developed technology of accurate design method and manufacturing process, we successfully developed ultra-thin TCXO in single-packaged structure. There are many of material review for IC, ceramic package and lid, crystal chip. In addition, we adopted welded metal sealing method that reduces stress given to ceramic package. Resulting, we succeeded to develop ultra-small and ultra-thin TCXO. Comparing to 2016 TCXO, the volume is reduced by 52% with better reliability.

* Source: survey by DAISHINKU CORP. valid as of June 16, 2015

<Product>

DSA1612SDN(VC-TCXO)/DSB1612SDN(TCXO)

<Features>

- Ultra miniature temperature compensated crystal oscillator (1.6×1.2×0.55mm max.)
- A ceramic package with metal lid providing high precision reliability
- Offers Frequency Stability over Temperature :
 $\pm 0.5 \times 10^{-6} / -40 \sim +85^{\circ}\text{C}$ (Option) (DSB1612SDN)
- Low phase noise
- Pb Free
- RoHS Compliant

<Main applications>

Smart phones, Wearable devices, GNSS, Smart meters

<Production status>

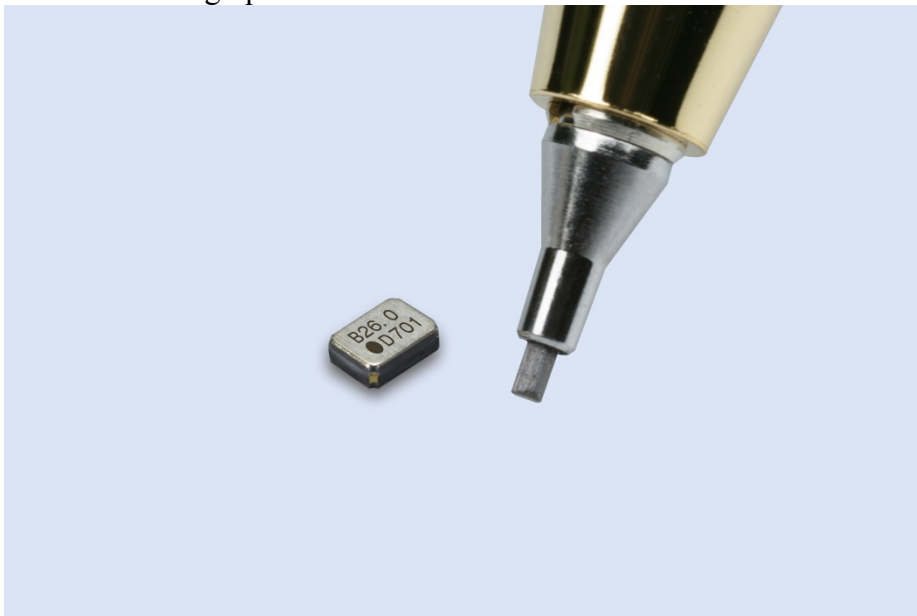
Samples are available now

<Electrical specification>

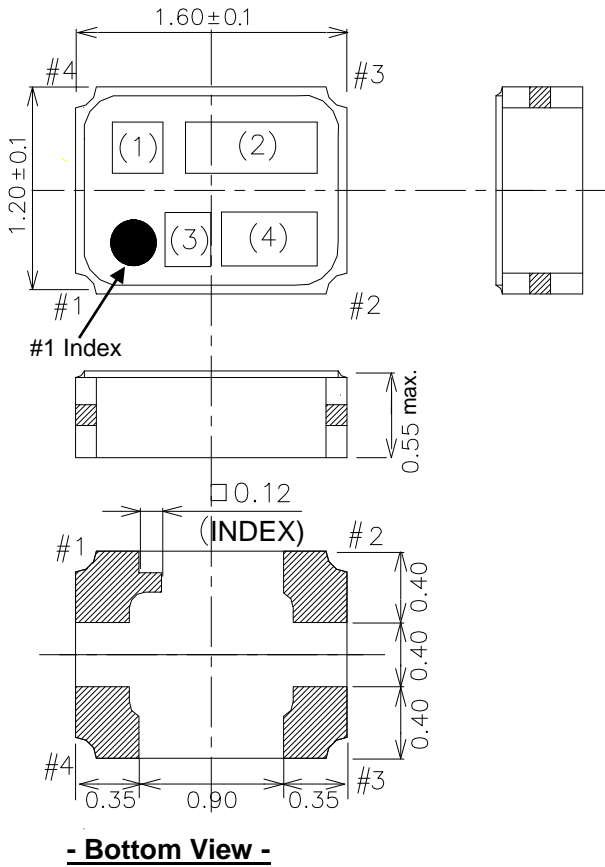
	VC-TCXO	TCXO
	DSA1612SDN	DSB1612SDN
Frequency Range	16~60 MHz	
Standard Frequency	19.2/ 26/ 38.4/ 52MHz	
Supply Voltage Range	+1.68~+3.5V	
Supply Voltage(Vcc)	+1.8V / +2.6V / +2.8 V / +3.0V / +3.3V	
Current Consumption	+1.5 mA max. (F≤26MHz)/+2.0 mA max. (F>26MHz)	
Output Level	0.8 Vp-p min. (Clipped Sinewave / DC-coupled)	
Output Load	10 kΩ/10 pF	
Frequency Stability		
Tolerance	±1.5×10 ⁻⁶ max.(After 2 reflows)	
vs. Temperature	±1.0×10 ⁻⁶ , ±2.0×10 ⁻⁶ , ±2.5×10 ⁻⁶ max. / -30~+85°C ±1.0×10 ⁻⁶ , ±2.0×10 ⁻⁶ , ±2.5×10 ⁻⁶ max. / -40~+85°C(Option)	±0.5×10 ⁻⁶ , ±2.0×10 ⁻⁶ , ±2.5×10 ⁻⁶ max. / -30~+85°C ±0.5×10 ⁻⁶ , ±2.0×10 ⁻⁶ , ±2.5×10 ⁻⁶ max. / -40~+85°C(Option)
vs. Supply Voltage	±0.2×10 ⁻⁶ max. (Vcc±5%)	
vs. Load Variation	±0.2×10 ⁻⁶ max.	
vs. Aging	±1.0×10 ⁻⁶ max. /year	
Frequency Control		
Control Sensitivity	±3.0×10 ⁻⁶ ~±5.0×10 ⁻⁶ / Vcont=+1.4V±1V @Vcc≥+2.6V ±9.0×10 ⁻⁶ ~±15.0×10 ⁻⁶ / Vcont=+1.5V±1V @Vcc≥+2.6V ±3.0×10 ⁻⁶ ~±5.0×10 ⁻⁶ / Vcont=+0.9V±0.6V @Vcc=+1.8V ±9.0×10 ⁻⁶ ~±15.0×10 ⁻⁶ / Vcont=+0.9V±0.6V @Vcc=+1.8V	-
Response Slope	Positive	
Start Up Time	2.0ms max.	
Phase Noise	[19.2MHz<f≤26MHz]	[26MHz<f≤52MHz]
Offset 100Hz	-110 dBc/Hz	-100 dBc/Hz
Offset 1kHz	-130 dBc/Hz	-120 dBc/Hz
Offset 10kHz	-140 dBc/Hz	-135 dBc/Hz
Offset 100kHz	-145 dBc/Hz	-140 dBc/Hz
Packing Unit	2000pcs./reel (φ180)	

Consult our sales representative for other specifications.

<Product Photograph>



<Dimensions>



- Bottom View -

Pin Connections

Pin No.	Connection
#1	V _{CONT} (DSA1612SDN) GND(DSB1612SDN)
#2	GND
#3	Output
#4	V _{cc}

Marking

- (1) Model Code "A"(DSA1612SDN)
"B"(DSB1612SDN)
- (2) Frequency e.g. 26.0(MHz)
- (3) Logo D
- (4) Lot No. Year (1digit) +Week (2digits)
e.g. 2015/1/1 → 501

Unit : mm

Recommended Land Pattern (Top View)

