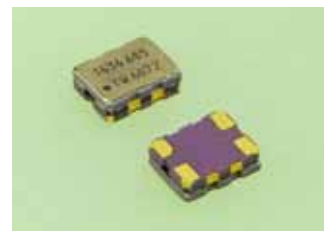


# TTS18NSE / VSE

## Temperature Compensated Crystal Oscillator (TCXO)

### ◆ Feature

Reflow solderable, Ceramic SMD package base offers superior flatness.  
 Ultra-compact (3.2×2.5), lowest height, light weight,  
 and low Current consumption type.  
 Low Frequency available using built in 1/2 frequency divide down function.  
 Suitable for Cell phone, Base station and mobile radio application.  
 RoHS compliant.



### ◆ Specifications

Item	Symbol	Specifications		Conditions
		TTS18NSE (TCXO)	TTS18VSE(VC-TCXO)	
Output frequency	$f_0$	10.0 MHz to 40.0 MHz		
Supply voltage	Vcc	+2.3V to +3.6V		
Current consumption	Icc	NOTE 2) 2.0 mA max.		at Vcc=+3.0V, 10 kOhm//10 pF
Output voltage	Vpp	0.8 V min.		NOTE 1) DC coupling
Load	Load_R,C	10 kOhm // 10 pF		
Frequency Stability				
/Frequency tolerance	$f_{tol}$	$\pm 1.0 \times 10^{-6}$ max.		After reflow, at +25 °C
/ temperature characteristics	$f_{0\_TC}$	$\pm 2.0 \times 10^{-6}$ max.		-30 °C to +85 °C, at Vc=+1.5V
/ voltage coefficient	$f_{0\_Vcc}$	$\pm 0.2 \times 10^{-6}$ max.		at Vcc=+3.0 ± 5%
/ load coefficient	$f_{0\_Load}$	$\pm 0.2 \times 10^{-6}$ max.		at (10kOhm // 10pF) ± 10%
/ Frequency ageing	$f_{age}$	NOTE 2) $\pm 1.0 \times 10^{-6}$ max.		1 year, at +25 °C
Frequency controlled range	$f_{cont}$	---	$\pm 5$ to $\pm 15 \times 10^{-6}$	Vc=+1.5V±1.0V, Positive polarity

NOTE 1) DC-cut capacitor of output is not put in TCXO. Please add DC-cut capacitor (1,000pF) in oscillator output line.

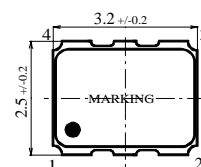
NOTE 2) at  $f_0=26.000\text{MHz}$

### ◆ Phase Noise

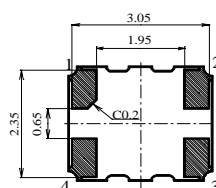
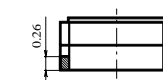
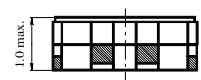
Frequency Offset (Hz)	Phase Noise (dBc/Hz)
100	-110 typ.
1k	-130 typ.
10k	-148 typ.
100k	-148 typ.

at  $f_0=26.000\text{MHz}$  (25±2°C)

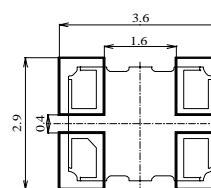
### ◆ Outline



Pin Connections  
 1. Vc (VSE)  
 GND (NSE)  
 2. GND  
 3. OUTPUT  
 4. Vcc



Recommended land pattern (Top View)



unit : mm

Products with specific requirements are available upon request.