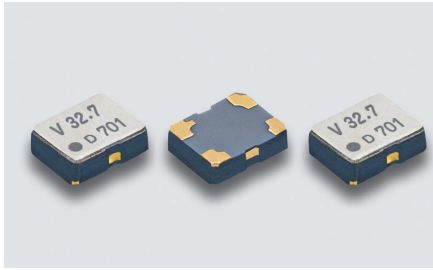


# SMD TCXO (For Automotive)

## DSK1612ATD



Actual size □

### ■ Features

- Digital temperature compensated type
- High precision:  $\pm 5.0 \times 10^{-6}$  ( $-40$  to  $+85^\circ\text{C}$ )
- Low current consumption
- CMOS level output
- AEC-Q200 Compliant

### ■ Applications

- High precision clock source
- High precision clock source for RTC



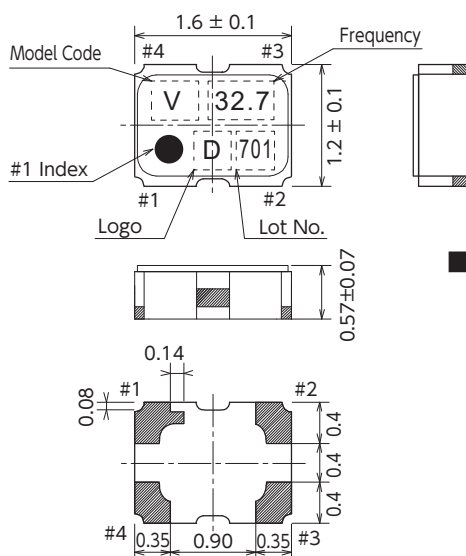
### ■ Standard Specification

Item	Legend	Spec.				Condition
		min.	typ.	max.	Unit	
Output Frequency	$f_0$	–	32.768	–	kHz	
Supply Voltage Range	$V_{CC}$	+1.5	–	3.63	V	Temperature Compensated Operating
Frequency Tolerance	$f_{tol}$	–5.0	–	+5.0	$\times 10^{-6}$	$V_{CC}=+1.8\text{V}$ or $+3.3\text{V}$ , $T_A=-40$ to $+85^\circ\text{C}$ (Standard operating temperature range, Referenced to 32.768kHz)
Current Consumption	$I_{CC1}$	–	0.90	1.90	$\mu\text{A}$	$V_{CC}=+1.8\text{V}$ , $T_A=-40$ to $+85^\circ\text{C}$ , at No Load (1)
		–	1.23	2.60		$V_{CC}=+3.3\text{V}$ , $T_A=-40$ to $+85^\circ\text{C}$ , at No Load (1)
	–	1.26	2.43	$V_{CC}=+1.8\text{V}$ , $T_A=-40$ to $+85^\circ\text{C}$ , at No Load Temperature Compensation Interval: 0.5s (standard specification) (2)		
				$V_{CC}=+3.3\text{V}$ , $T_A=-40$ to $+85^\circ\text{C}$ , at No Load Temperature Compensation Interval: 0.5s (standard specification) (2)		
Symmetry	SYM	40	50	60	%	at 50% $V_{CC}$
0 Level Output Voltage	$V_{OL}$	–	–	$V_{CC} \times 0.1$	V	
1 Level Output Voltage	$V_{OH}$	$V_{CC} \times 0.9$	–	–	V	
Rise and Fall Time	$t_r, t_f$	–	–	40	ns	10 to 90% $V_{CC}$ Level
Load Condition	$L_{CMOS}$	–	–	15	pF	
Start Up Time	$T_{start}$	–	–	0.5	s	
Reliability		AEC-Q200				
Packing Unit (3)		3000pcs./reel ( $\phi 180$ )				

- (1)  $I_{CC1}$  is the current value when the temperature compensation circuit is not operating. Consult our sales representative for other specifications.  
 (2)  $I_{CC2}$  is the average current value when the temperature compensation circuit is operating and non-operating.  
 (3) Moisture prevention packing is unnecessary. Moisture Sensitivity Level: Level1 (IPC/JEDEC J-STD-033)

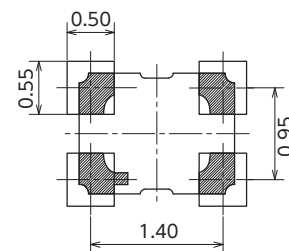
[mm]

### ■ Dimensions



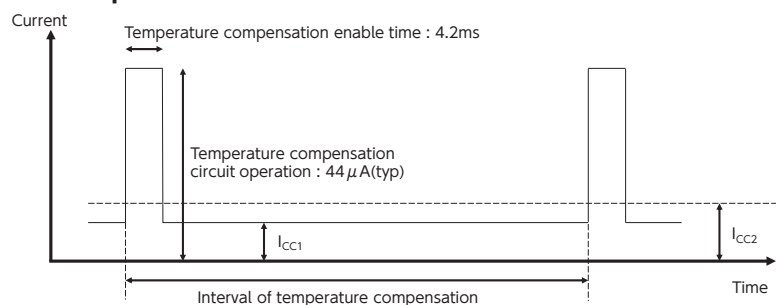
### ■ Recommended Land Pattern

<Top View>



Pin No.	Connection
#1	GND
#2	Output
#3	$V_{CC}$
#4	GND

### ■ Current profile



$$I_{CC2}(\text{typ}) = 0.90 \mu\text{A} \times (0.5\text{s} - 4.2\text{ms}) / 0.5\text{s} + 44 \mu\text{A} \times 4.2\text{ms} / 0.5\text{s} = 1.26 \quad (V_{CC}=1.8\text{V})$$

$$I_{CC2}(\text{typ}) = 1.23 \mu\text{A} \times (0.5\text{s} - 4.2\text{ms}) / 0.5\text{s} + 44 \mu\text{A} \times 4.2\text{ms} / 0.5\text{s} = 1.59 \quad (V_{CC}=3.3\text{V})$$