

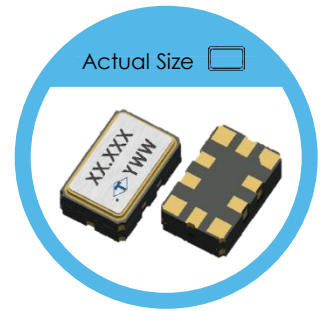
# TL-F Type Ultra Wide Temperature 5.0 x 3.2 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator

## FEATURES

- Typical 5.0 x 3.2 x 1.85 mm ceramic SMD package.
- Ultra High Temperature for -55°C ~ +105°C, ±0.2ppm, -55°C ~ +125°C, ±0.5ppm
- Frequency support from 10MHz to 52MHz

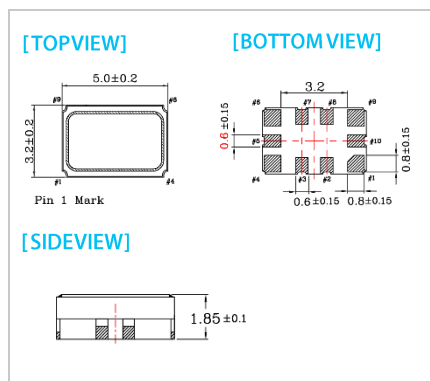
## TYPICAL APPLICATION

- Aerospace
- Industrial Equipment
- Base Stations
- Energy and Power

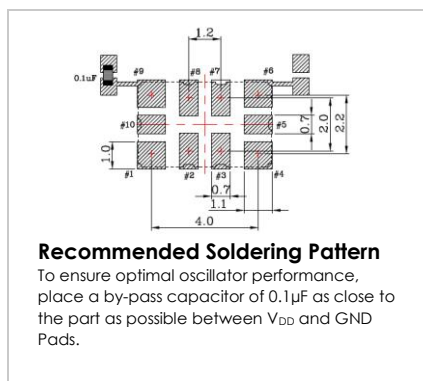


RoHS Compliant

## DIMENSION (mm)



## SOLDER PAD LAYOUT (mm)



## PIN FUNCTION (mm)

PIN#	FUNCTION
1	V <sub>CON</sub> :VC-TCXO Floating:TCXO
2	Do not Connect
3	NC
4	GND
5	Do not Connect
6	Output
7	NC
8	NC
9	V <sub>DD</sub>
10	GND

## ELECTRICAL SPECIFICATION

Parameter	3.3V				Test Condition
	Min.	Typ.	Max.	Unit	
Supply Voltage Variation (V <sub>DD</sub> )	V <sub>DD</sub> - 5%	V <sub>DD</sub>	V <sub>DD</sub> + 5%	V	
Frequency Range	10	-	52	MHz	
Frequency Tolerance (25°C)	-	-	±1.0	ppm	
Frequency Stability	vs Supply Voltage (±5%) Change	-	±0.1	ppm	
	vs Load (±10%) Change	-	±0.1	ppm	
	vs Aging (@1 <sup>st</sup> Year)	-	±1.0	ppm	
Supply Current	CMOS	10MHz ≤ F <sub>0</sub> ≤ 38MHz	-	5.0	mA
		38MHz < F <sub>0</sub> ≤ 52MHz	-	8.0	mA
	Clipped Sine Wave	10MHz ≤ F <sub>0</sub> ≤ 38MHz	-	4.5	mA
		38MHz < F <sub>0</sub> ≤ 52MHz	-	5.0	mA
Output Level	CMOS	Output High	90%V <sub>DD</sub>	-	V
		Output Low	-	10%V <sub>DD</sub>	V
	Clipped Sine Wave	0.8	-	-	V <sub>p-p</sub>
Load	CMOS	-	-	15	pF
	Clipped Sine Wave	-	10 KΩ // 10pF	-	
Transition Time (10% ~ 90%)	Rise Time	-	-	3.0	nSec
	Fall Time	-	-	3.0	nSec
Duty Cycle	45	-	55	%	
Tri-State Control	Enable	80%V <sub>DD</sub>	-	-	V
	Disable	-	-	20% V <sub>DD</sub>	V
Start Time	-	-	5	mSec	
Control Voltage Range (VCTCXO)	0.5	-	2.5	V	
Pulling Range (VCTCXO)	±5.0	-	-	ppm	
Vc Input Impedance (VCTCXO)	100	-	-	KΩ	

Note: not all combination of options are available. Other specifications may be available upon request.

Specifications subject to change without notice.

Parameter		3.3V				Test Condition
		Min.	Typ.	Max.	Unit	
Phase Noise @ TCXO V <sub>DD</sub> =3.3V, F <sub>out</sub> =10MHz Please add filter capacitor as suggested, and 33nF at pin7	100Hz offset	-	-116	-	dBc/Hz	
	1KHz offset	-	-140	-	dBc/Hz	
	10KHz offset	-	-147	-	dBc/Hz	
	100KHz offset	-	-150	-	dBc/Hz	

### FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	±0.2	±0.28	±0.5
		-55 ~ +95	△	○
-55 ~ +105	△	○	○	
-55 ~ +125	X	X	○	

○: Available △:Conditional x: Not Available  
 Inclusive of calibration @ 25°C ,operating temperature range,input  
 Voltage variation,load variation,aging (1<sup>st</sup> year),shock,and vibration

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