

# 5x7mm Surface Mount High Precision TCXO

In Stock at Digi-Key

# CONNOR WINFIELD



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## Description

The Connor-Winfield's D75AS is a 5x7mm Surface Mount Temperature Compensated Crystal Controlled Oscillators (TCXO) with a clipped sinewave output. Through the use of Analog Temperature Compensation, the D75AS is capable of holding sub 0.25-ppm stabilities over the 0 to 70°C temperature range.



## Features

### Model D75AS

TCXO  
3.3V Operation  
Clipped Sinewave Output  
Frequency Stability:  $\pm 0.25$ ppm  
Temperature Range: 0 to 70°C  
Low Jitter < 1ps RMS  
Tri-State Enable/Disable Function  
5x7mm Surface Mount Package  
Tape and Reel Packaging  
RoHS Compliant / Lead Free

## Specifications

### Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Note
Storage Temperature	-55	-	85	°C	
Supply Voltage (Vcc)	-0.5	-	6.0	Vdc	
Input Voltage	-0.5	-	Vcc+0.5	Vdc	

### Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Note
Center Frequency (Fo)		20.0		MHz	
Frequency Calibration @ 25°C	-1.00	-	1.00	ppm	1
Frequency Stability [ $\pm(F_{max} - F_{min})/2.F_o$ ]	-0.25	-	0.25	ppm	2
Supply Voltage Variation (Vcc $\pm 5\%$ )	-0.025	-	0.025	ppm	
Load Coefficient ( $\pm 5\%$ )	-0.025	-	0.025	ppm	
Static Temperature Hysteresis	-	-	0.40	ppm	Absolute, 3
Frequency shift after reflow soldering	-1.00	-	1.00	ppm	4
Aging 1 <sup>st</sup> year	-1.00	-	1.00	ppm	
Total Frequency Tolerance	-4.60	-	4.60	ppm	5
Temperature Range	0	-	70	°C	
Supply Voltage (Vcc)	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	-	10	mA	
Period Jitter	-	3	5	ps rms	
Phase Jitter (BW=12kHz to 20MHz)	-	0.5	1	ps rms	
SSB Phase Noise at 10Hz offset	-	-80		dBc/Hz	
SSB Phase Noise at 100Hz offset	-	-110		dBc/Hz	
SSB Phase Noise at 1KHz offset	-	-135		dBc/Hz	
SSB Phase Noise at $\geq 10$ KHz offset	-	-150		dBc/Hz	

### Input Characteristics For Enable / Disable Function (Pin 8)

Parameter	Minimum	Nominal	Maximum	Units	Note
Enable Voltage (High) or open circuit (Vih)	70%Vcc	-	-	Vdc	6
Disable Voltage (Low) Output Disabled (Vil)	-	-	30%Vcc	Vdc	

### Clipped Sinewave Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Note
Output Voltage	1.00	-	-	V pk-pk	7
Output Load Resistance	-	10K	-	Ohms	
Output Load Capacitance	-	10	-	pF	8

#### Note:

- 1) Initial calibration @ 25°C. Specifications at time of shipment after 48 hours of operation
- 2) Frequency stability vs. change in temperature.
- 3) Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C.
- 4) Within two hours after reflow.
- 5) Inclusive of calibration @ 25°C, frequency vs. change in temperature, change in supply voltage ( $\pm 5\%$ ), load change ( $\pm 5\%$ ), reflow soldering process and 20 years aging, referenced to Fo.
- 6) Leave Pad 8 unconnected if enable / disable function is not required. When tri-stated, the output stage is disabled but the oscillator and compensation circuit are still active (current consumption  $\leq 1$  mA).
- 7) Output is AC coupled.
- 8) For best performance it is recommended that the circuit connected to this output should have an equivalent input capacitance of 10pF.



Bulletin Tx243

Page 1 of 2

Revision 01

Date 01 May 2009

## Package Characteristics

Package Ceramic Surface Mount Package.

## Environmental Characteristics

Vibration:	Vibration per Mil Std 883E Method 2007.3 Test Condition A
Shock:	Mechanical Shock per Mil Std 883E Method 2002.4 Test Condition B.
Soldering:	SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 seconds.
Solderability	Solderability per Mil Std 883E Method 2003

## Design Recommendations

Vcc should have a large copper area for reduced inductance. Connect a 0.01 uF bypass capacitor <math>< 0.1 (2.54\text{mm})</math> from the pad.

0.010" (0.254mm) Recommended clearance inductance for internal copper flood.

Ground should have a large copper area for reduced inductance.

Buffer input load should be equivalent to 15pF.

50 Ohm trace <math>< 1''</math> by design

Do not route any traces in the keep out area. It is recommended the next layer under the keep out area is to be ground plane.

## Ordering Information

D75AS - 020.0MHZ \*

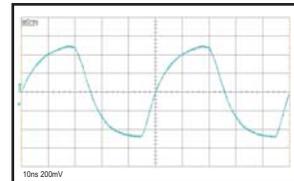
TCXO SERIES CENTER FREQUENCY

\* For the tape and reel option, add -T to the end of the part number. Example: D75AS-020.0 MHZ -T

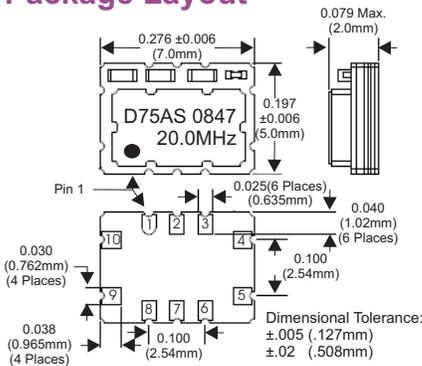
## Pad Connections

Pad	Connection
1	Do not connect
2	Do not connect
3	Do not connect
4	Ground
5	Output
6	Do not connect
7	Do not connect
8	Enable / Disable
9	Supply, Vcc
10	Do not connect

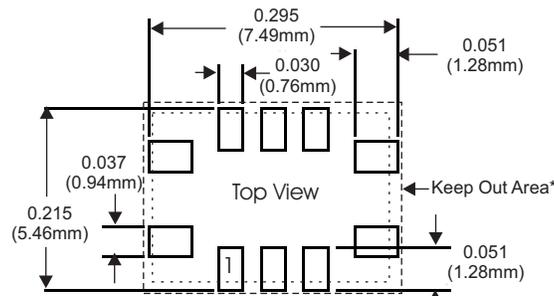
## Output Waveform



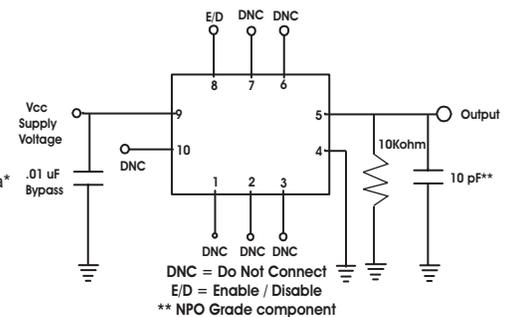
## Package Layout



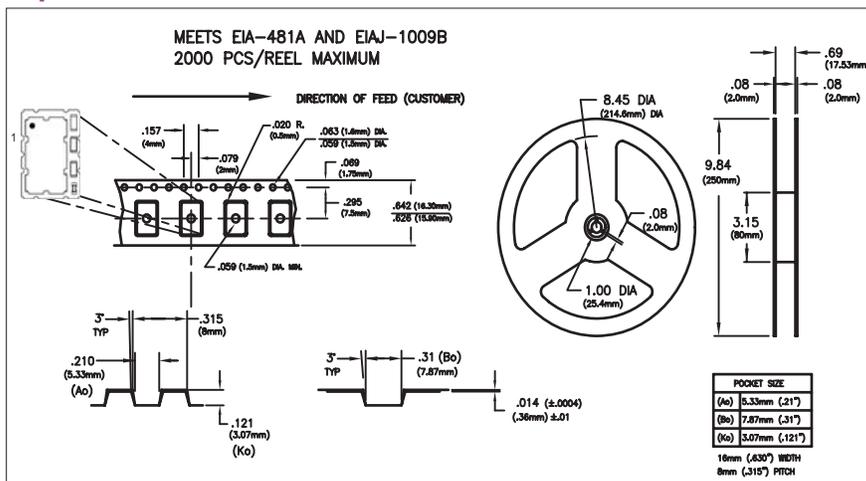
## Suggested Pad Layout



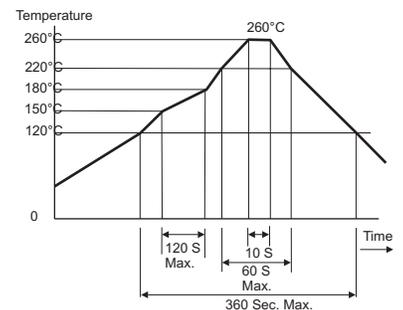
## Test Circuit



## Tape and Reel Information



## Solder Profile



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Bulletin	Tx243
Page	2 of 2
Revision	01
Date	01 May 2009