

TFLD646E

SURFACE MOUNT 9x14mm

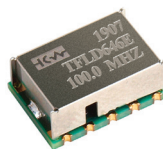
3.3V LVCMOS TCXO



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Description:

The Connor-Winfield TFLD646E is a Surface Mount Temperature Compensated Crystal Oscillator (TCXO). Operating at 3.3Vdc, the TFLD646E will maintain ± 4.6 ppm frequency tolerance over 20 years. The TFLD646E is offered in a surface mount package for automated assembly.



Features:

- 3.3V Operation with Enable/Disable
- Overall Frequency Tolerance: ± 4.6 ppm over 20 years.
- Temperature range: -40 to 85°C
- Low Jitter <1pS RMS
- Surface Mount Package
- Tape and Reel Packaging
- RoHS Compliant

Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-40	-	85	°C	
Supply Voltage (Vcc)	-0.6	-	6.0	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	12.80	-	100.0	MHz	
Frequency Calibration @ 25°C	-1.5	-	1.5	ppm	
Frequency Tolerance	-4.6	-	4.6	ppm	1
Operating Temperature Range	-40	-	85	°C	
Supply Voltage (Vcc)	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	9	12	mA	
Period Jitter	-	3	5	ps rms	
Phase Jitter (BW=12kHz to 20MHz)	-	0.5	1	ps rms	

Typical Phase Noise Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Output Frequency (Fo)	12.80	77.76	100.0	MHz	
SSB Phase Noise at 10Hz offset	-65	-60	-55	dBc/Hz	
SSB Phase Noise at 100Hz offset	-95	-90	-85	dBc/Hz	
SSB Phase Noise at 1KHz offset	-125	-120	-120	dBc/Hz	
SSB Phase Noise at 10KHz offset	-140	-140	-140	dBc/Hz	
SSB Phase Noise at 100KHz offset	-145	-145	-145	dBc/Hz	

LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
LOAD	-	-	15	pF	
Voltage (High) (Voh)	90% Vcc	-	-	Vdc	
(Low) (Vol)	-	-	10% Vcc	Vdc	
Current (High) (Ioh)	-4	-	-	mA	
(Low) (Iol)	-	-	4	mA	
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time 10% to 90%	-	3	5	ns	

Enable/Disable Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage (High)	70% Vcc	-	-	Vdc	2
Disable Voltage (Low)	-	-	30% Vcc	Vdc	2

Package Characteristics

Package Non-hermetic package consisting of an FR4 substrate with grounded metal cover.

Process Recommendations

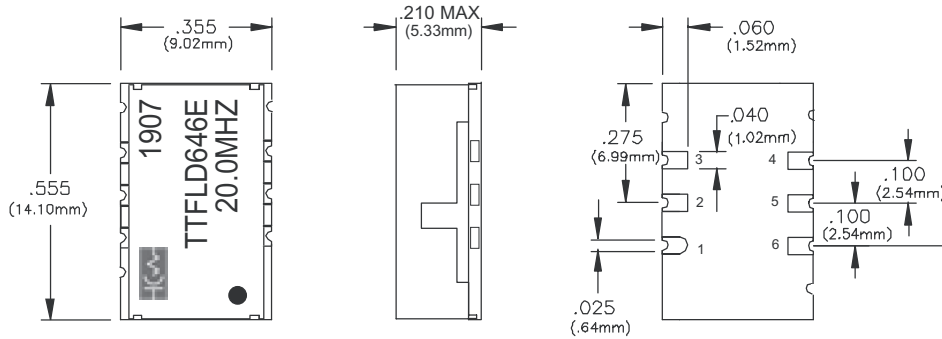
Solder Reflow RoHS compliant. See solder profile page 2.
Wash Ultrasonic cleaning is not recommended.

Notes:

- 1) Inclusive of calibration, frequency vs. temperature stability, supply voltage change, load change, shock and vibration, 20 years aging.
- 2) Oscillator output is enabled with no connection on Pad 1. Output is high impedance when disabled.

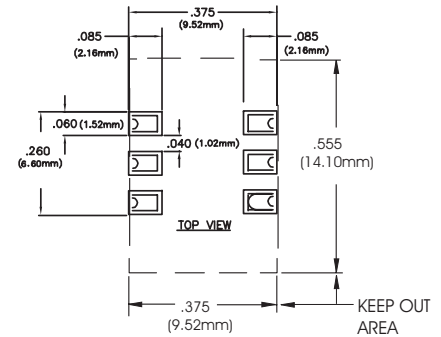


Package Layout

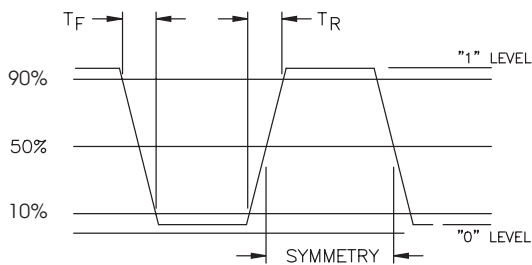


Dimensional Tolerance:
±.005 (.127mm)

Suggested Pad Layout



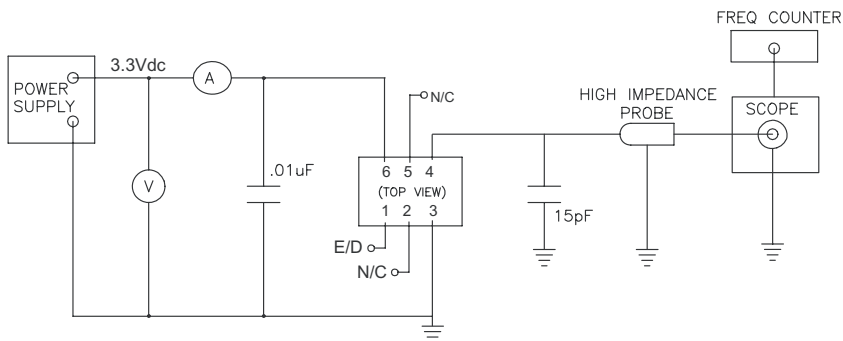
Output Waveform



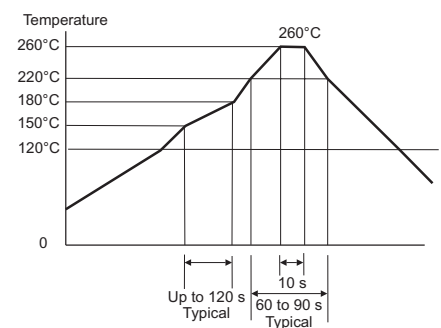
Pad Connections

Pad	Connection
1:	Enable/Disable
2:	N/C
3:	Ground
4:	Output
5:	N/C
6:	Vcc

Test Circuit

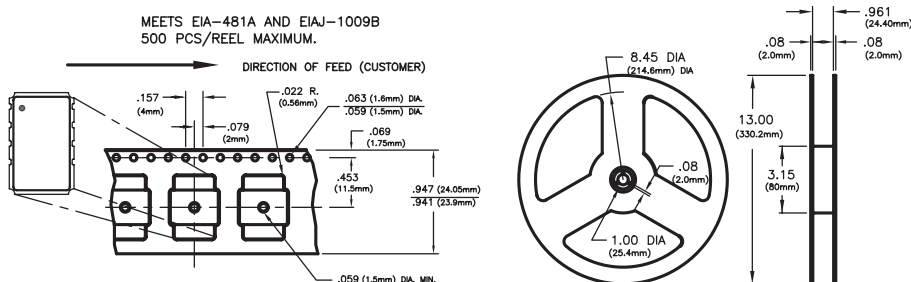


RoHS Solder Profile



Meets IPC/JEDEC J-STD-020C

Tape and Reel Dimensions



Ordering information:

TFLD646E-020.0M
TFLD646E-100.0M

Bulletin	TX139
Page	2 of 2
Revision	04
Date	15 Feb 2019