

# EQTB73E1F-77.760M-CB

[Click part number to visit Part Number Details page](#)

## REGULATORY COMPLIANCE (Data Sheet downloaded on Jun 1, 2020)


[Click badges to download compliance docs](#)

Regulatory Compliance standards are subject to updates by governing bodies. Click the badges to download the latest compliance docs for this part number directly from Ecliptek.



## ITEM DESCRIPTION

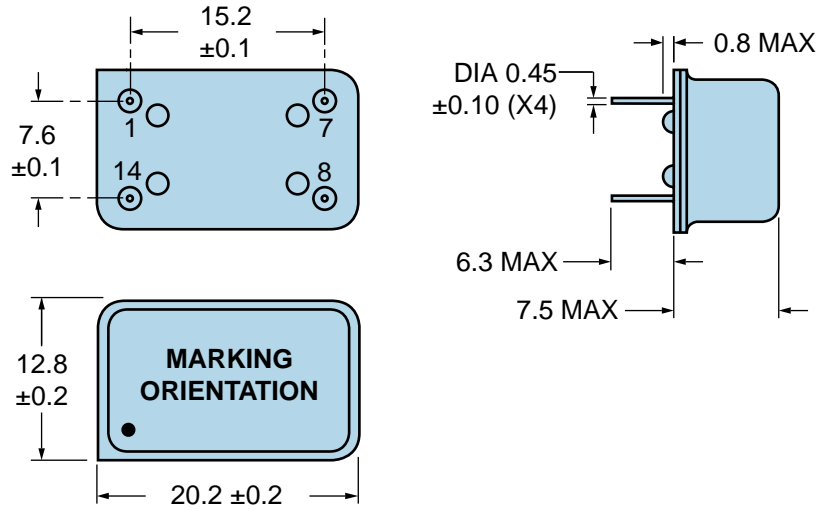
Temperature Compensated Quartz Crystal Clock Oscillators TCXO LVCMOS (CMOS) 3.3Vdc 14-Pin DIP Metal Thru-Hole 77.760MHz 0°C to +50°C

## ELECTRICAL SPECIFICATIONS

Nominal Frequency	77.760MHz
Frequency Stability	±2.5ppm Maximum (Inclusive of Operating Temperature Range, at Vdd=3.3Vdc)
Frequency Stability vs. Frequency Tolerance	±2.0ppm Maximum (At 25°C ±2°C, at Vdd=3.3Vdc)
Frequency Stability vs. Input Voltage	±0.3ppm Maximum (±5%)
Frequency Stability vs. Load	±0.3ppm Maximum (±2pF)
Frequency Stability vs. Reflow	±1.0ppm Maximum (at 25°C, 1 hour after reflow, 1 times)
Aging at 25°C	±1ppm/Year Maximum
Operating Temperature Range	0°C to +50°C
Supply Voltage	3.3Vdc ±5%
Input Current	25mA Maximum
Output Voltage Logic High (Voh)	90% of Vdd Minimum IOL=-4mA
Output Voltage Logic Low (Vol)	10% of Vdd Maximum IOL=+4mA
Rise/Fall Time	10nSec Maximum (Measured at 20% to 80% of waveform)
Duty Cycle	50 ±10(%) (Measured at 50% of waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Phase Noise	-74dBc at 10Hz Offset, -105dBc at 100Hz Offset, -120dBc at 1kHz Offset, -124dBc at 10kHz Offset, -120dBc at 100kHz Offset (Typical Values)
Storage Temperature Range	-40°C to +85°C

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014 Condition A
Gross Leak Test	MIL-STD-883, Method 1014 Condition C
Lead Integrity	MIL-STD-883, Method 2004
Mechanical Shock	MIL-STD-202, Method 213 Condition C
Resistance to Soldering Heat	MIL-STD-202, Method 210
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010
Vibration	MIL-STD-883, Method 2007 Condition A

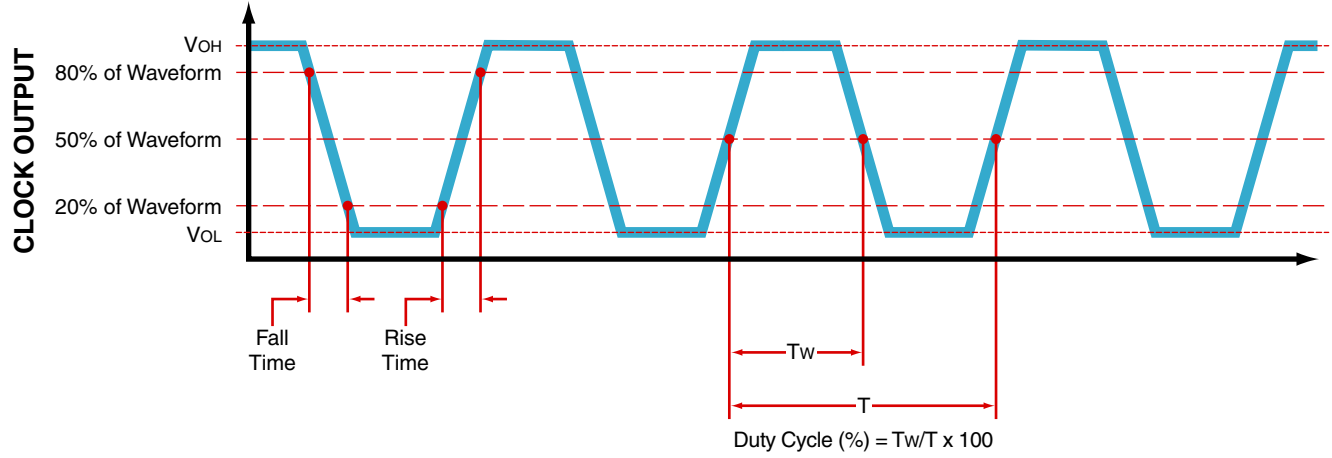
**EQTB73E1F-77.760M-CB** [Click part number to visit Part Number Details page](#)
**MECHANICAL DIMENSIONS (all dimensions in millimeters)**


PIN	CONNECTION
1	No Connect
7	Case/Ground
8	Output
14	Supply Voltage

LINE	MARKING
1	<b>ECLIPTEK</b>
2	<b>77.760M</b>
3	<b>XXXXX</b> XXXXX=Ecliptek Manufacturing Identifier

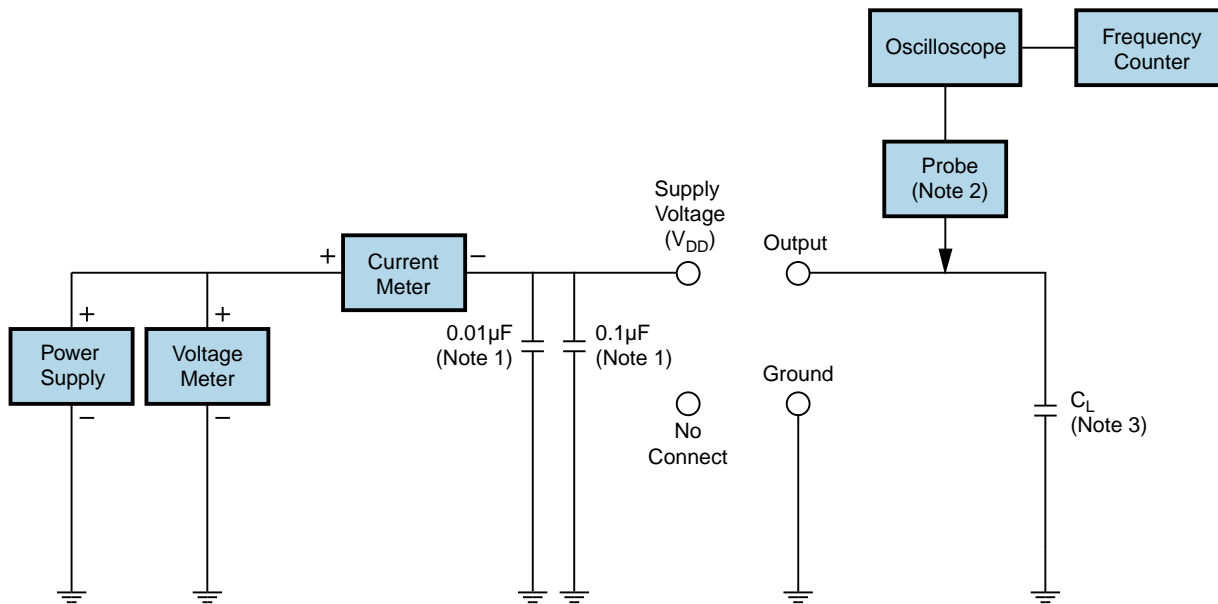
# EQTB73E1F-77.760M-CB [Click part number to visit Part Number Details page](#)

## OUTPUT WAVEFORM



# EQTB73E1F-77.760M-CB [Click part number to visit Part Number Details page](#)

## Test Circuit for No Connect Option

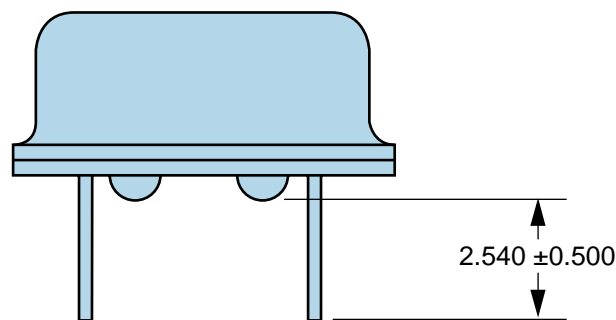


Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

## Value Added Option - Cut Leads



All dimensions are in millimeters

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[Click part number to visit Part Number Details page](#)

## Recommended Solder Reflow Methods



### Low Temperature Solder Bath (Wave Solder)

<b><math>T_s</math> MAX to <math>T_L</math> (Ramp-up Rate)</b>	5°C/Second Maximum
<b>Preheat</b>	
- Temperature Minimum ( $T_s$ MIN)	N/A
- Temperature Typical ( $T_s$ TYP)	150°C
- Temperature Maximum ( $T_s$ MAX)	N/A
- Time ( $t_s$ MIN)	30 - 60 Seconds
<b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>	5°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature ( $T_L$ )	150°C
- Time ( $t_L$ )	200 Seconds Maximum
<b>Peak Temperature (<math>T_P</math>)</b>	245°C Maximum
<b>Target Peak Temperature (<math>T_P</math> Target)</b>	245°C Maximum 1 Time / 235°C Maximum 2 Times
<b>Time within 5°C of actual peak (<math>t_p</math>)</b>	5 Seconds Maximum 1 Time / 15 Seconds Maximum 2 Times
<b>Ramp-down Rate</b>	5°C/Second Maximum
<b>Time 25°C to Peak Temperature (t)</b>	N/A
<b>Moisture Sensitivity Level</b>	Level 1

### Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum.

### High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum.