EH2720TTS-18.432M

ECLIPTEK® CORPORATION

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EH27  20    T TS  -18.432M
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Series
RoHS Compliant (Pb-free) 2.5V 4 Pad 5mm x 7mm
Ceramic SMD LVCMOS Oscillator

Frequency Tolerance/Stability
±20ppm Maximum

Operating Temperature Range
0°C to +70°C

Duty Cycle
50 ±5(%)

Pin 1 Connection
Tri-State (High Impedance)

Nominal Frequency
18.432MHz
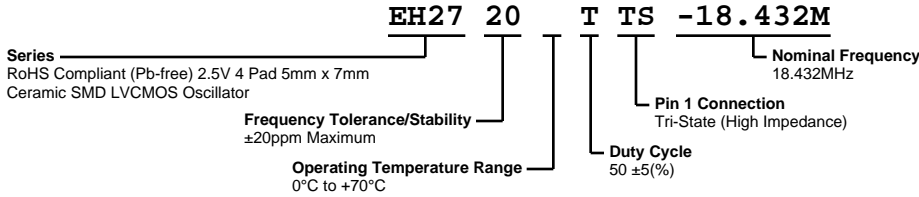
ELECTRICAL SPECIFICATIONS

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Nominal Frequency	18.432MHz
Frequency Tolerance/Stability	±20ppm Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°, 260°C Reflow, Shock, and Vibration)
Aging at 25°C	±5ppm/Year Maximum
Operating Temperature Range	0°C to +70°C
Supply Voltage	2.5Vdc ±5%
Input Current	6mA Maximum (No Load)
Output Voltage Logic High (Voh)	90% of Vdd Minimum (IOH = -8mA)
Output Voltage Logic Low (Vol)	10% of Vdd Maximum (IOL = +8mA)
Rise/Fall Time	6nSec Maximum (Measured at 20% to 80% of waveform)
Duty Cycle	50 ±5(%) (Measured at 50% of waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (High Impedance)
Tri-State Input Voltage (Vih and Vil)	90% of Vdd Minimum or No Connect to Enable Output, 10% of Vdd Maximum to Disable Output (High Impedance)
Standby Current	10µA Maximum (Pin 1 = Ground)
Absolute Clock Jitter	±100pSec Maximum
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: 1500V
Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Flammability	UL94-V0
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

7.00 ±0.15

5.00 ±0.15

MARKING ORIENTATION

1.60 ±0.20

5.08 ±0.15

3

4

2.60 ±0.15

2

1

1.4 ±0.1

3.68 ±0.15

1.2 ±0.2

PIN	CONNECTION
1	Tri-State
2	Case Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	**ECLIPTEK**
2	**18.432M**
3	**XXXXXX** *XXXXXX=Ecliptek Manufacturing Identifier*

Suggested Solder Pad Layout

All Dimensions in Millimeters

2.0 (X4)

2.2 (X4)

Solder Land (X4)

2.88

1.81

All Tolerances are ±0.1

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OUTPUT WAVEFORM & TIMING DIAGRAM

TRI-STATE INPUT

V_{IH}

V_{IL}

CLOCK OUTPUT

V_{OH}
80% of Waveform
50% of Waveform
20% of Waveform
V_{OL}

OUTPUT DISABLE
(HIGH IMPEDANCE
STATE)

t_{PLZ}

t_{PZL}

Fall
Time

Rise
Time

T_W

T

Duty Cycle (%) = T_W/T x 100

Test Circuit for CMOS Output

Oscilloscope

Frequency
Counter

Probe
(Note 2)

Output

Supply
Voltage
(V_{DD})

+ Current
Meter −

+

+

Power
Supply

Voltage
Meter

0.01µF
(Note 1)

0.1µF
(Note 1)

−

−

Tri-State

Ground

C_L
(Note 3)
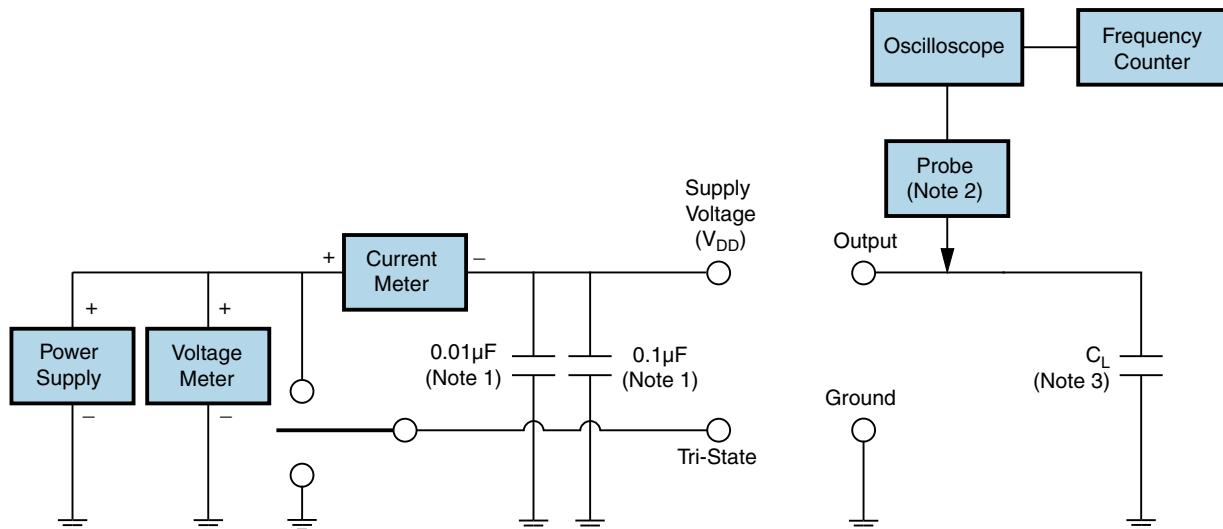
Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency
ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage
pin is required.
Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth
(>300MHz) passive probe is recommended.
Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

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Recommended Solder Reflow Methods

High Temperature Infrared/Convection

T_S MAX to T_L (Ramp-up Rate)	3°C/second Maximum
Preheat	
- Temperature Minimum (T_S MIN)	150°C
- Temperature Typical (T_S TYP)	175°C
- Temperature Maximum (T_S MAX)	200°C
- Time (t_S MIN)	60 - 180 Seconds
Ramp-up Rate (T_L to T_P)	3°C/second Maximum
Time Maintained Above:	
- Temperature (T_L)	217°C
- Time (t_L)	60 - 150 Seconds
Peak Temperature (T_P)	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (T_P Target)	250°C +0/-5°C
Time within 5°C of actual peak (t_p)	20 - 40 seconds
Ramp-down Rate	6°C/second Maximum
Time 25°C to Peak Temperature (t)	8 minutes Maximum
Moisture Sensitivity Level	Level 1
Additional Notes	Temperatures shown are applied to body of device.

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Recommended Solder Reflow Methods

Low Temperature Infrared/Convection 240°C

T_S MAX to T_L (Ramp-up Rate)	5°C/second Maximum
Preheat	
- 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)	60 - 120 Seconds
Ramp-up Rate (T_L to T_P)	5°C/second Maximum
Time Maintained Above:	
- Temperature (T_L)	150°C
- Time (t_L)	200 Seconds Maximum
Peak Temperature (T_P)	240°C Maximum
Target Peak Temperature (T_P Target)	240°C Maximum 1 Time / 230°C Maximum 2 Times
Time within 5°C of actual peak (t_p)	10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time
Ramp-down Rate	5°C/second Maximum
Time 25°C to Peak Temperature (t)	N/A
Moisture Sensitivity Level	Level 1
Additional Notes	Temperatures shown are applied to body of device.

Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)

High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)