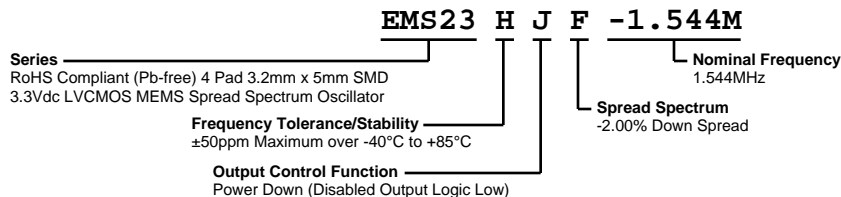


EMS23HJF-1.544M



ECLIPTEK
CORPORATION



ELECTRICAL SPECIFICATIONS

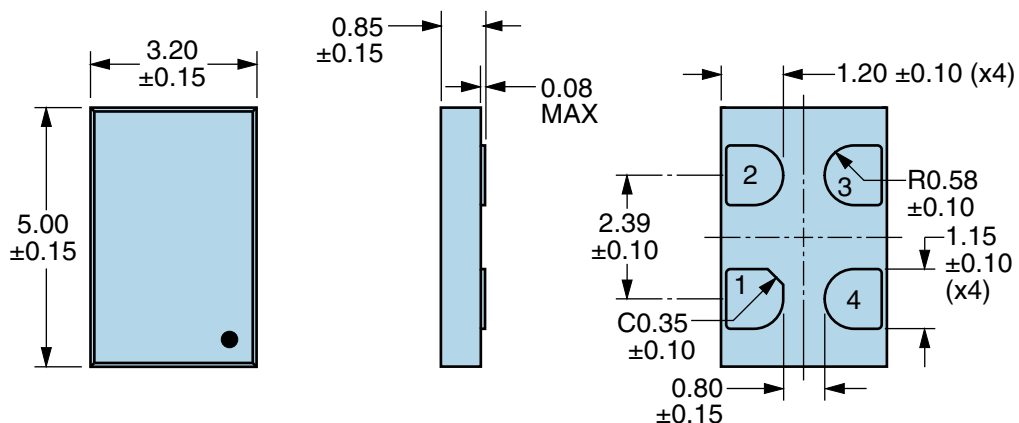
Nominal Frequency	1.544MHz
Frequency Tolerance/Stability	±50ppm Maximum over -40°C to +85°C (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, 260°C Reflow, Shock, and Vibration)
Aging at 25°C	±1ppm Maximum First Year
Supply Voltage	3.3Vdc ±10%
Maximum Supply Voltage	-0.5Vdc to +3.65Vdc
Input Current	30mA Maximum (Unloaded; Nominal Vdd)
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	2nSec Maximum (Measured from 20% to 80% of waveform)
Duty Cycle	50 ±5% (Measured at 50% of waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Output Control Function	Power Down (Disabled Output Logic Low)
Power Down Input Voltage (Vih and Vil)	70% of Vdd Minimum or No Connection to Enable Output, 30% of Vdd Maximum to Disable Output
Standby Current	50µA Maximum (Disabled Output: Logic Low) (Pad 1=Ground)
Spread Spectrum	-2.00% Down Spread
Modulation Frequency	30kHz Minimum, 32kHz Typical, 35kHz Maximum
Period Jitter	30pSec Maximum (Cycle to Cycle; Spread Spectrum-On; Fo=133.333M, Vdd=3.3Vdc)
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

ESD Susceptibility	MIL-STD-883, Method 3015, Class 2, HBM 2000V
Flammability	UL94-V0
Mechanical Shock	MIL-STD-883, Method 2002, Condition G, 30,000G
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity Level	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 (Pads on bottom of package only)
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Thermal Shock	MIL-STD-883, Method 1011, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A, 20G

EMS23HJF-1.544M

MECHANICAL DIMENSIONS (all dimensions in millimeters)

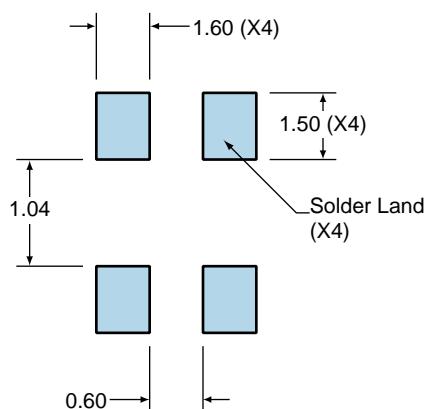


PIN	CONNECTION
1	Power Down (Logic Low)
2	Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	XXXX or XXXXX XXXX or XXXXX=Ecliptek Manufacturing Lot Code

Suggested Solder Pad Layout

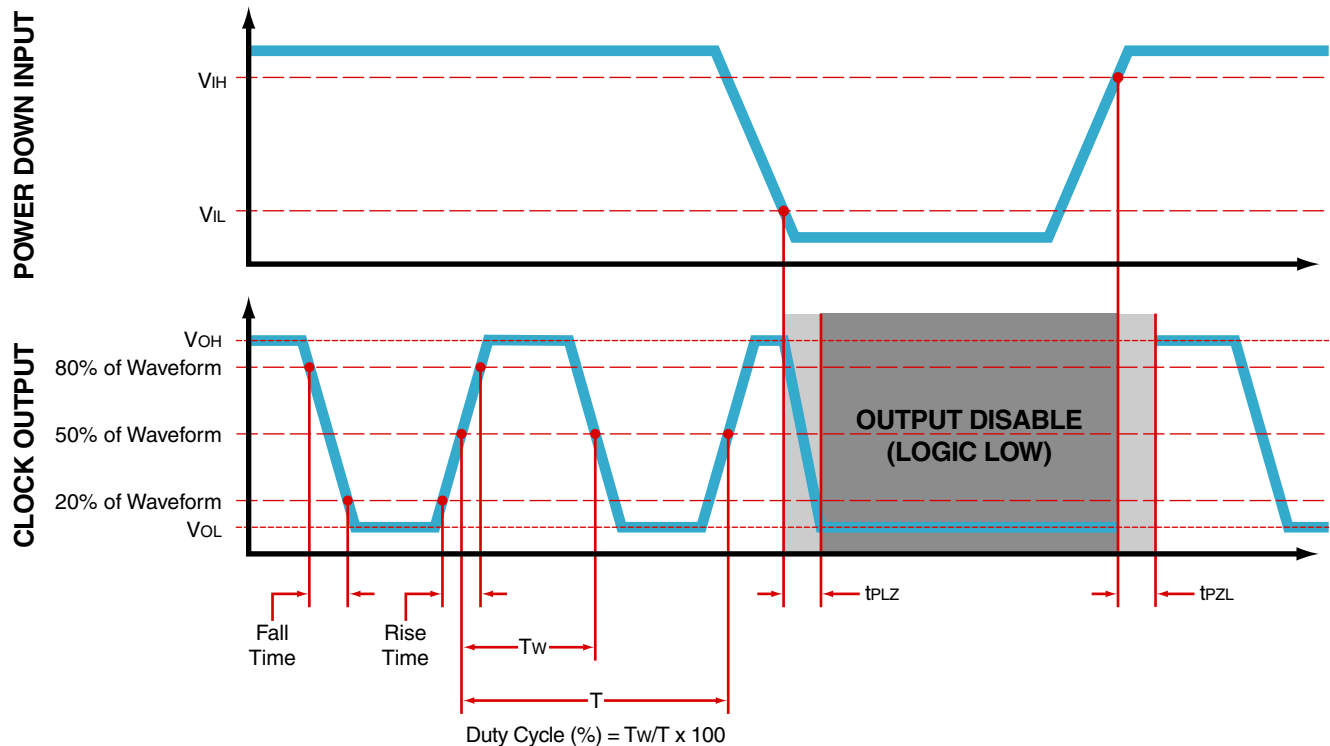
All Dimensions in Millimeters



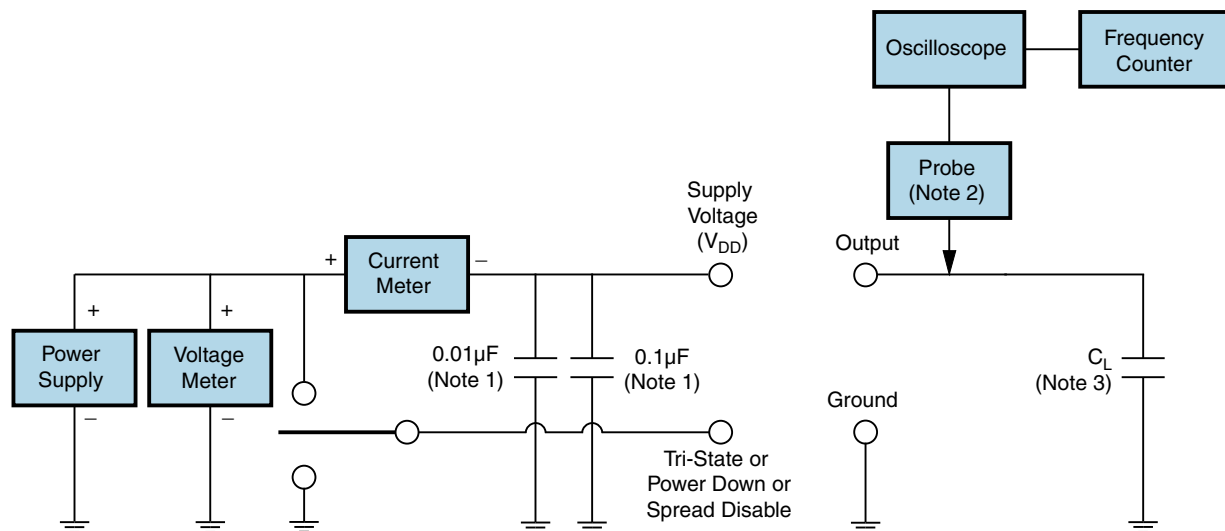
All Tolerances are ± 0.1

EMS23HJF-1.544M

OUTPUT WAVEFORM & TIMING DIAGRAM



Test Circuit for CMOS Output



Note 1: An external 0.1 μF low frequency tantalum bypass capacitor in parallel with a 0.01 μF high frequency ceramic bypass capacitor close to the package ground and V_{DD} 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.

Recommended Solder Reflow Methods



High Temperature Infrared/Convection

$T_s \text{ MAX}$ to T_L (Ramp-up Rate)	3°C/second Maximum
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Preheat

- Temperature Minimum ($T_s \text{ MIN}$)	150°C
- Temperature Typical ($T_s \text{ TYP}$)	175°C
- Temperature Maximum ($T_s \text{ MAX}$)	200°C
- Time ($t_s \text{ MIN}$)	60 - 180 Seconds

Ramp-up Rate (T_L to T_p)	3°C/second Maximum
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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
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Target Peak Temperature ($T_p \text{ Target}$)	250°C +0/-5°C
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Time within 5°C of actual peak (t_p)	20 - 40 seconds
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Ramp-down Rate	6°C/second Maximum
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Time 25°C to Peak Temperature (t)	8 minutes Maximum
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Moisture Sensitivity Level	Level 1
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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 240°C

Ts MAX to TL (Ramp-up Rate) 5°C/second Maximum

Preheat

- Temperature Minimum (Ts MIN) N/A
- Temperature Typical (Ts TYP) 150°C
- Temperature Maximum (Ts MAX) N/A
- Time (ts MIN) 60 - 120 Seconds

Ramp-up Rate (TL to Tp) 5°C/second Maximum

Time Maintained Above:

- Temperature (TL) 150°C
- Time (tL) 200 Seconds Maximum

Peak Temperature (Tp) 240°C Maximum

Target Peak Temperature (Tp Target) 240°C Maximum 1 Time / 230°C Maximum 2 Times

Time within 5°C of actual peak (tp) 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

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.