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EMK43 Series Oscillator

MEMS Clock Oscillators LVCMOS (CMOS) 3.3Vdc 4 Pad 2.0mm x 2.5mm Plastic Surface Mount (SMD)



Revision L 09/10/2014

Electrical Specifications

Nominal Frequency	1.000MHz to 125.000MHz <i>Some frequencies within this range may not be available.</i>
Frequency Tolerance/Stability	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 ±100ppm Maximum ±50ppm Maximum ±25ppm Maximum ±20ppm Maximum
Operating Temperature Range	0°C to +70°C -20°C to +70°C -40°C to +85°C
Aging at 25°C	±1ppm Maximum First Year
Supply Voltage	3.3V _{DC} ±10%
Input Current	20mA Maximum over Nominal Frequency of 1MHz to 25MHz 25mA Maximum over Nominal Frequency of 25.000001MHz to 125MHz
Output Voltage Logic High (V_{OH})	I _{OH} = -8mA 90% of V _{DD} Minimum
Output Voltage Logic Low (V_{OL})	I _{OL} = +8mA 10% of V _{DD} Maximum
Duty Cycle	Measured at 50% of Waveform 50 ±5(%) 50 ±10(%)
Rise Time/Fall Time	Measured at 20% to 80% of Waveform 2nSec Maximum
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Output Control Function	Tri-State (Disabled Output: High Impedance) Power Down (Disabled Output: Logic Low)
Output Control Input Voltage	+0.7V _{DD} Minimum or No Connect to Enable Output +0.3V _{DD} Maximum to Disable Output
Standby Current	50µA Maximum (Disabled Output: Logic Low) at Output Control Function of Power Down
Peak to Peak Jitter	500pSec Maximum, 200pSec Typical over Nominal Frequency of 1MHz to 12.287999MHz 250pSec Maximum, 100pSec Typical over Nominal Frequency of 12.288MHz to 125MHz

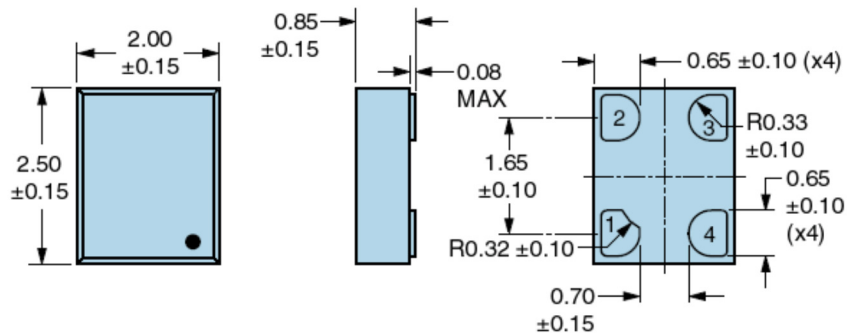
Start Up Time

50mSec Maximum

Storage Temperature

-55°C to +125°C

Mechanical Dimensions



All Dimensions in Millimeters

Pin 1: Power Down Or Tri-State

Pin 2: Ground

Pin 3: Output

Pin 4: Supply Voltage

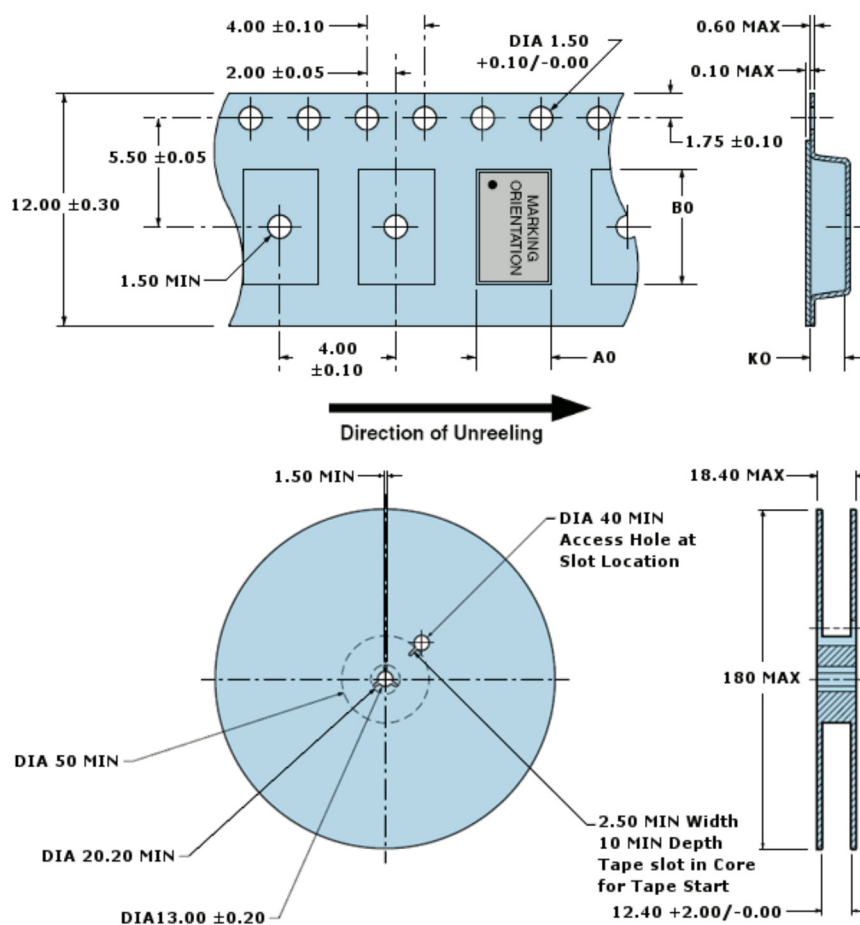
Marking Specifications

Line 1: **XXXX or XXXXX**
• XXXX or XXXXX = Ecliptek Manufacturing Lot Code

Environmental and Mechanical Specifications

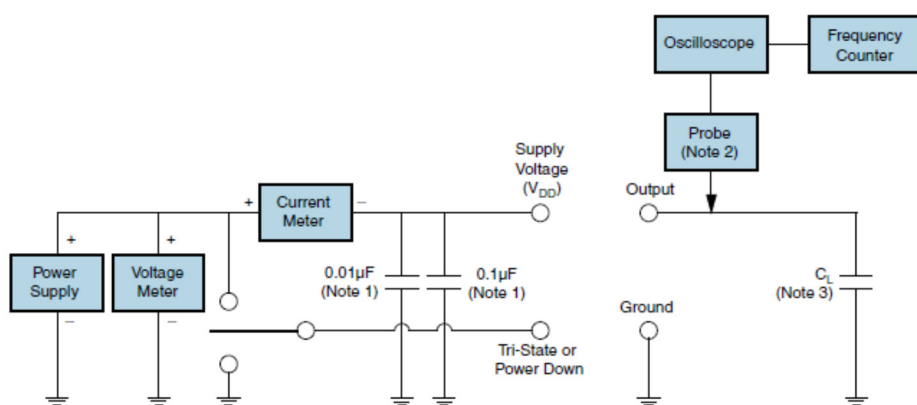
ESD Susceptibility	MIL-STD-883, Method 3015, Class 2, HBM:2000V
Flammability	UL94-V0
Mechanical Shock	MIL-STD-883, Method 2002, Condition G, 30,000G
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Resistance 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
Thermal Resistance (θ_{JA})	75°C/W (degrees Celsius per Watt)
Thermal Resistance (θ_{JC})	24°C/W (degrees Celsius per Watt)

Tape & Reel Dimensions



1000 pieces per reel
Compliant to EIA-481
All Dimensions in Millimeters

Test Circuit for CMOS Output

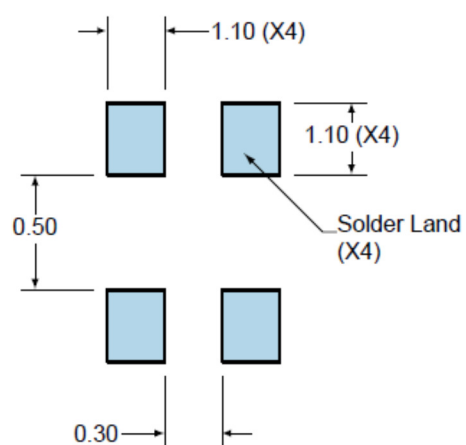


Note 1: An external $0.01\mu\text{F}$ ceramic bypass capacitor in parallel with a $0.1\mu\text{F}$ high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

Note 2: A low input capacitance ($<12\text{pF}$), 10X Attenuation Factor, High Impedance ($>10\text{Mohms}$), and High bandwidth ($>300\text{MHz}$) passive probe is recommended.

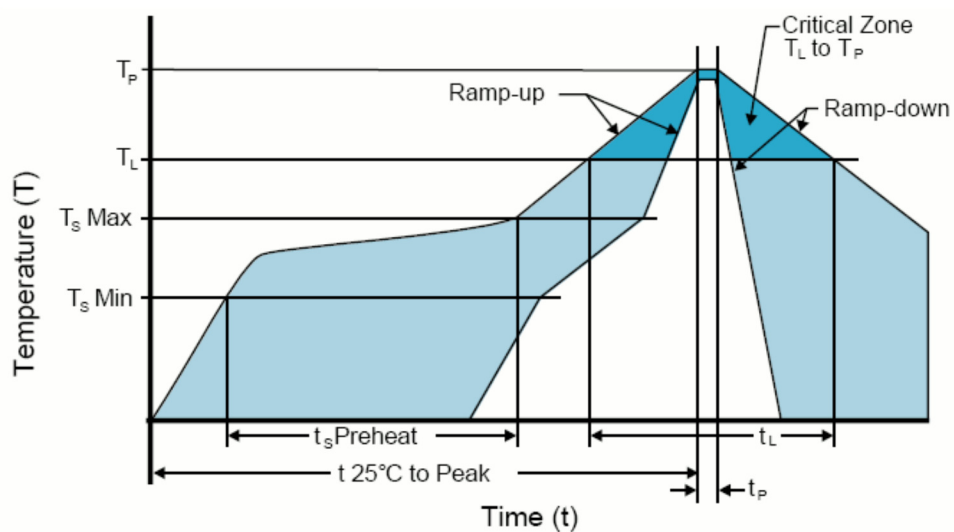
Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance. See applicable specification sheet for Load Drive Capability.

Recommended Solder Pad Dimensions



Tolerances = ± 0.1
All Dimensions in Millimeters

Solder Reflow Profile



High Temperature Infrared/Convection

Note: Temperatures shown are applied to body of device.

$T_S \text{ MAX}$ to T_L (Ramp-up Rate) 3°C/Second Maximum

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) 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 ($T_P \text{ Target}$) 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

Low Temperature Infrared/Convection

Note: Temperatures shown are applied to body of device.

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) 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 2 Times / 230°C Maximum 1 Time

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

High Temperature Manual Soldering

Note: Temperatures listed are applied to body of device.
260°C Maximum for 5 Seconds Maximum, 2 times Maximum.

Low Temperature Manual Soldering

Note: Temperatures listed are applied to body of device.
185°C Maximum for 10 Seconds Maximum, 2 times Maximum.

1 - Build A Part Number

Select the parameters that meet your requirements and then click Next

Frequency in Megahertz (1 to 125):
Some frequencies within this range may not be available

Frequency Tolerance/Stability:

Duty Cycle:

Output Control Function:

Packaging Options:

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Access these Part Number specific resources and tools

[P/N Specific Data Sheet](#)

[Automated Quick Quote](#)

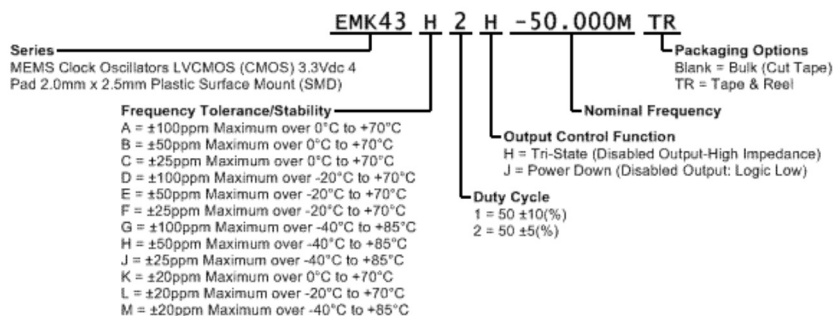
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Part Numbering Guide



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