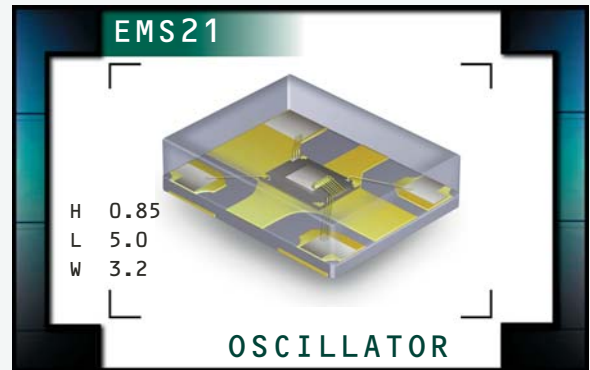


EMS21 Series



- Spread Spectrum MEMS Clock Oscillators
- Low EMI LVCMOS Output
- +1.8V Supply Voltage
- Tri-State, Power Down, and Spread Disable Options
- Center Spread and Down Spread Modulation Options
- 4 Pad Plastic SMD Package
- 30,000 G Shock Resistance
- RoHS Compliant (Pb-Free)



ELECTRICAL SPECIFICATIONS

Nominal Frequency		1MHz to 87MHz; 93MHz to 175MHz
Operating Temperature Range		-20°C to +70°C, or -40°C to +85°C
Storage Temperature Range		-55°C to +125°C
Supply Voltage (V_{DD})		1.8V _{DC} ±5%
Maximum Supply Voltage (V_{DD})		-0.5Vdc to +1.98Vdc
Input Current	≤ 25.000MHz (Unloaded; Nominal Vdd)	25mA Maximum
	> 25.000MHz (Unloaded; Nominal Vdd)	35mA Maximum
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, 1st Year Aging at 25°C, 260°C Reflow, Shock, and Vibration	±50ppm or ±100ppm Maximum
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
Rise Time / Fall Time	20% to 80% of waveform	2nSeconds Maximum
Duty Cycle	≤ 75.000MHz (at 50% of waveform)	50 ±5(%)
	> 75.000MHz (at 50% of waveform)	50 ±10(%)
Load Drive Capability		15pF Maximum
Output Control Function		Tri-State (High Impedance) Power Down (Logic Low) Spread Disabled (Disabled)
Tri-State Input Voltage (V_{IH} and V_{IL})	70% of V _{DD} Minimum or No Connection to Enable Output, 30% of V _{DD} Maximum to Disable at Output Control Function of Tri-State	Disabled Output: High Impedance
Power Down Input Voltage (V_{IH} and V_{IL})	70% of V _{DD} Minimum or No Connection to Enable Output, 30% of V _{DD} Maximum to Disable at Output Control Function of Power Down	Disabled Output: Logic Low
Spread Spectrum Input Voltage (V_{IH} and V_{IL})	70% of V _{DD} Minimum or No Connection to Enable Output, 30% of V _{DD} Maximum to Disable at Output Control Function of Spread Disable	Spread Spectrum Output: Disabled
Standby Current	Pad 1=Ground (at Output Control Function of Power Down)	50µA Maximum
Disable Current	Pad 1=Ground (at Output Control Function of Tri-State)	20mA Maximum
Spread Spectrum	Center Spread not available with Output Control Function of Spread Disable	±0.25%, ±0.50%, ±1.00%, -0.50%, -1.00%, or -2.00%
Modulation Frequency		30kHz Min, 32kHz Typ, 35kHz Max
Period Jitter	Cycle to Cycle; Spread Spectrum-On; Fo=133.333M, Vdd=1.8Vdc	90pSec Maximum
Aging	First Year at 25°C	±1ppm Maximum
Start Up Time		10mSec Maximum

MANUFACTURER
ECLIPTEK CORP.

CATEGORY
OSCILLATOR

SERIES
EMS21

PACKAGE
PLASTIC

VOLTAGE
1.8V

CLASS
OS6H

REV. DATE
04/10

PART NUMBERING GUIDE

EMS21 C H A - 50.00M TR

FREQUENCY TOLERANCE & STABILITY/ OPERATING TEMPERATURE RANGE

C = ±100ppm Maximum over -20°C to +70°C
 D = ±50ppm Maximum over -20°C to +70°C
 G = ±100ppm Maximum over -40°C to +85°C
 H = ±50ppm Maximum over -40°C to +85°C

OUTPUT CONTROL FUNCTION

H = Tri-State (Disabled Output: High Impedance)
 J = Power Down (Disabled Output: Logic Low)
 K = Spread Disable (Spread Spectrum Output: Disabled)

AVAILABLE OPTIONS

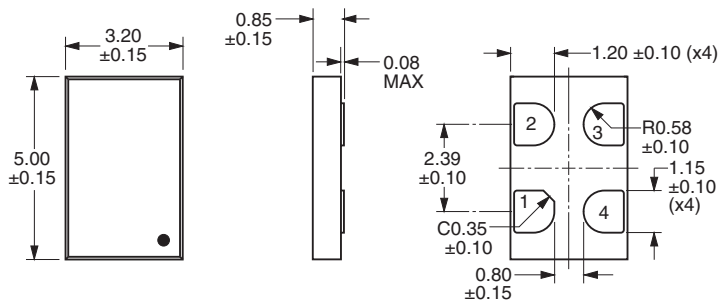
Blank = Bulk
 TR = Tape & Reel

FREQUENCY

SPREAD SPECTRUM

A = ±0.25% Center Spread
 B = ±0.50% Center Spread
 C = ±1.00% Center Spread
 D = -0.50% Down Spread
 E = -1.00% Down Spread
 F = -2.00% Down Spread

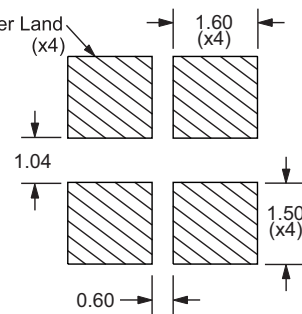
MECHANICAL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



Pad 1: Tri-State or Power Down or Spread Disable
 Pad 3: Output

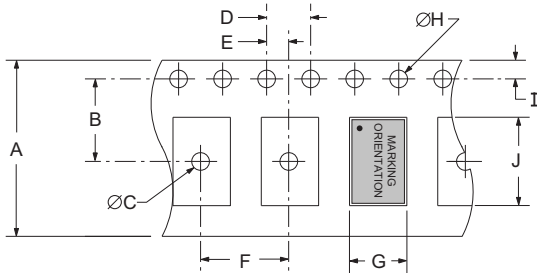
Pad 2: Case Ground
 Pad 4: Supply Voltage

SUGGESTED SOLDER PAD LAYOUT ALL DIMENSIONS IN MILLIMETERS



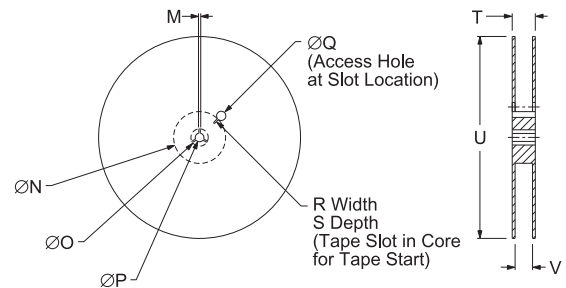
Tolerances = ±0.1

TAPE AND REEL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



Direction of Unreeling →

TAPE	A	B	C	D	E	F
	16.0 ±0.3	7.5 ±0.1	1.50 MIN	4.0 ±0.1	2.0 ±0.1	8.0 ±0.1
G	H	I	J	K	L	M
A0*	1.5 +0.1/-0.0	1.75 ±0.10	B0*	0.60 MAX	0.10 MAX	K0*



REEL	M	N	O	P	Q
	1.5 MIN	50 MIN	20.2 MIN	13.0 ±0.2	40 MIN
R	S	T	U	V	QTY/REEL
	2.5 MIN	10 MIN	18.4 MAX	180 MAX	12.4 +2/-0

*Compliant to EIA 481

ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

Characteristic	Specification
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 (Four I/O 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

MARKING SPECIFICATIONS

Line 1: XXXX or XXXXX

Ecliptek Manufacturing Lot Code

MANUFACTURER	CATEGORY	SERIES	PACKAGE	VOLTAGE	CLASS	REV. DATE
ECLIPTEK CORP.	OSCILLATOR	EMS21	PLASTIC	1.8V	OS6H	04/10