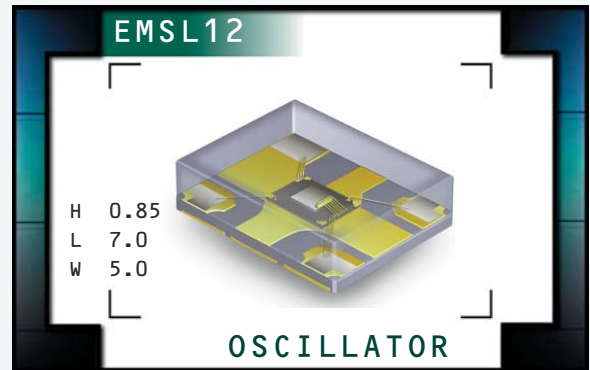


# EMSL12 Series



- MEMS Clock Oscillator
- HCSL Output
- 2.5V Supply Voltage
- Complementary Output
- Output Enable and Standby Options
- 6 Pad Plastic SMD Package
- 30,000 G Shock Resistance
- RoHS Compliant (Pb-free)



## ELECTRICAL SPECIFICATIONS

<b>Nominal Frequency (MHz)</b>		1.000MHz to 220.000MHz
<b>Operating Temperature Range</b>		0°C to +70°C, -20°C to +70°C, or -40°C to +85°C
<b>Storage Temperature Range</b>		-55°C to +125°C
<b>Supply Voltage (V<sub>CC</sub>)</b>		+2.5V <sub>DC</sub> ±0.125V <sub>DC</sub>
<b>Input Current</b>	Excluding Load Termination Current	65mA Maximum
<b>Frequency Tolerance / Stability</b>	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, Reflow, Shock, and Vibration	±100ppm, ±50ppm, ±25ppm, or ±20ppm Maximum
<b>Output Voltage Logic High (V<sub>OH</sub>)</b>		750mV <sub>DC</sub> Typical, 600mV <sub>DC</sub> Minimum
<b>Output Voltage Logic Low (V<sub>OL</sub>)</b>		25mV <sub>DC</sub> Typical, 50mV <sub>DC</sub> Maximum
<b>Rise Time / Fall Time</b>	20% to 80% of waveform	300pSec Typical, 350pSec Maximum
<b>Duty Cycle</b>	at 50% of waveform	50 ±5(%)
<b>Load Drive Capability</b>	Output and Complementary Output	50 Ohms to ground
<b>Logic Control / Additional Output</b>		Output Enable and Complementary Output, or Standby and Complementary Output
<b>Output Control Input Voltage</b>	V <sub>IH</sub> of 70% of V <sub>CC</sub> Minimum No Connection V <sub>IL</sub> of 30% of V <sub>CC</sub> Maximum	Enables Outputs Enables Outputs Disables Outputs: High Impedance
<b>Output Enable Current</b>	Without Load	60mA Maximum (OE)
<b>Standby Current</b>	Without Load	30µA Maximum (ST)
<b>Aging</b>	First Year at 25°C	±1ppm Maximum
<b>Start Up Time</b>		10mSeconds Maximum
<b>Period Jitter</b>	Deterministic Random RMS pk-pk Cycle to Cycle	0.2pSec Typical 2.0pSec Typical 1.5pSec Typical, 3.0pSec Maximum 20pSec Typical, 25pSec Maximum 10pSec Typical
<b>RMS Phase Jitter (Random)</b>	1.000MHz to 100.000MHz	1.7pSec Typical
<b>Fj=637kHz to 10MHz</b>	100.001MHz to 156.250MHz	1.6pSec Typical
	156.251MHz to 220.000MHz	1.6pSec Typical
<b>RMS Phase Jitter (Random)</b>	1.000MHz to 100.000MHz	0.8pSec Typical
<b>Fj=1.5MHz to 22MHz</b>	100.001MHz to 156.250MHz	0.6pSec Typical
	156.251MHz to 220.000MHz	0.4pSec Typical
<b>RMS Phase Jitter (Random)</b>	1.000MHz to 100.000MHz	0.7pSec Typical
<b>Fj=1.875MHz to 20MHz</b>	100.001MHz to 156.250MHz	0.5pSec Typical
	156.251MHz to 220.000MHz	0.4pSec Typical

MANUFACTURER  
ECLIPTEK CORP.

CATEGORY  
OSCILLATOR

SERIES  
EMSL12

PACKAGE  
PLASTIC

VOLTAGE  
2.5V

CLASS  
OS7P

REV. DATE  
11/09

## PART NUMBERING GUIDE

### EMSL12 C 2 H - 100.000M TR

#### FREQUENCY TOLERANCE & STABILITY/ OPERATING TEMPERATURE RANGE

C=±100ppm Maximum over 0°C to +70°C  
 D=±50ppm Maximum over 0°C to +70°C  
 E=±25ppm Maximum over 0°C to +70°C  
 F=±20ppm Maximum over 0°C to +70°C  
 G=±100ppm Maximum over -40°C to +85°C  
 H=±50ppm Maximum over -40°C to +85°C  
 J=±25ppm Maximum over -40°C to +85°C  
 L=±100ppm Maximum over -20°C to +70°C  
 M=±50ppm Maximum over -20°C to +70°C  
 N=±25ppm Maximum over -20°C to +70°C

#### AVAILABLE OPTIONS

Blank=Bulk  
 TR=Tape & Reel

#### FREQUENCY

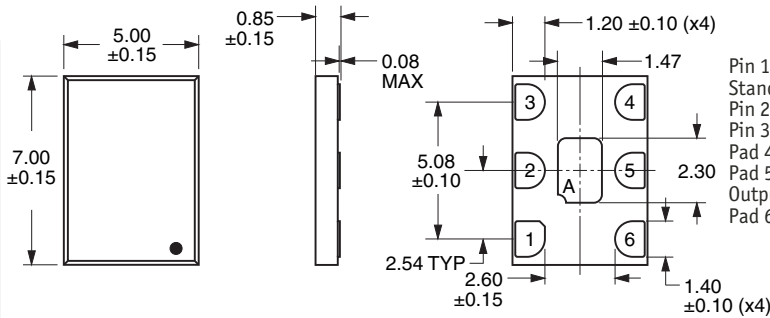
#### LOGIC CONTROL/ADDITIONAL OUTPUT

H=Output Enable (OE) and Complementary Output  
 J=Standby (ST) and Complementary Output

#### DUTY CYCLE

2=50 ±5(%)

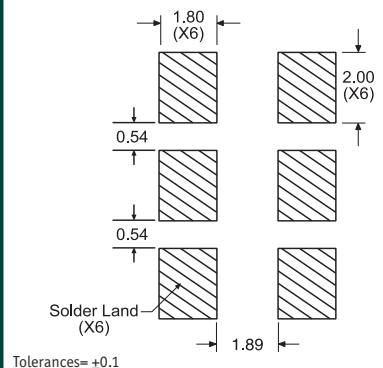
#### MECHANICAL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



Pin 1: Output Enable (OE) or Standby (ST)  
 Pin 2: No Connect  
 Pin 3: Case Ground  
 Pad 4: Output  
 Pad 5: Complementary Output  
 Pad 6: Supply Voltage

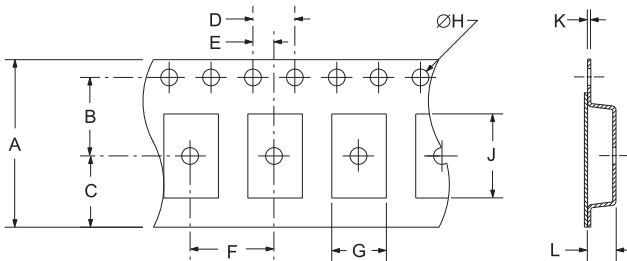
Note A: Center paddle is connected internally to oscillator ground (Pad 3).

#### SUGGESTED SOLDER PAD LAYOUT ALL DIMENSIONS IN MILLIMETERS

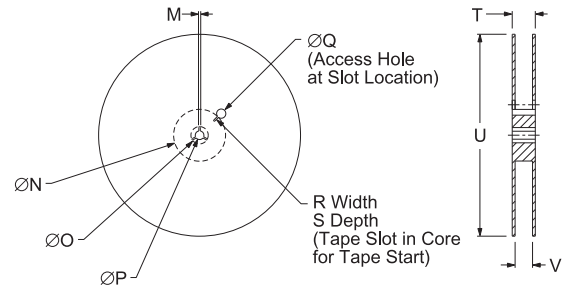


Tolerances=±0.1

#### TAPE AND REEL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



TAPE	A	B	C	D	E
	16±.3-1	7.5±.1	6.75±.1	4 ±.1	2±.1
F	G	H	J	K	L
8±.1	B0*	1.5 +.1-0	A0*	.3 ±.05	K0*



REEL	M	N	O	P	Q
	1.5 MIN	50 MIN	20.2 MIN	13±.2	40 MIN
R	S	T	U	V	QTY/REEL
2.5 MIN	10 MIN	22.4 MAX	360 MAX	16.4+2-0	1,000

\*Compliant to EIA 481A

#### 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 (Six 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  
 Ecliptek Manufacturing Lot Code

MANUFACTURER	CATEGORY	SERIES	PACKAGE	VOLTAGE	CLASS	REV. DATE
ECLIPTEK CORP.	OSCILLATOR	EMSL12	PLASTIC	2.5V	OS7P	11/09