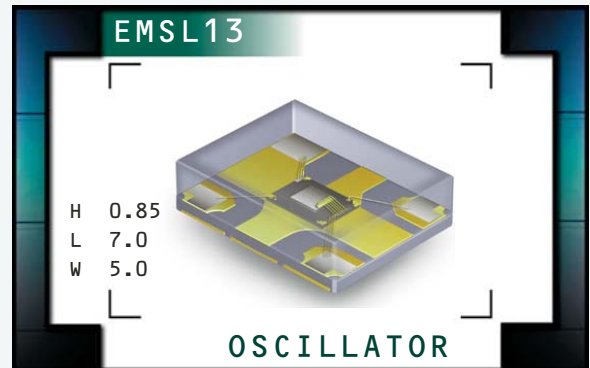


# EMSL13 Series



**ECLIPTEK**<sup>®</sup>  
CORPORATION

- MEMS Clock Oscillator
- HCSL Output
- +3.3V 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> <i>Some frequencies within this range may not be available</i>		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>		+3.3V <sub>DC</sub> ±0.3V <sub>DC</sub>
<b>Input Current</b>	Excluding Load Termination Current	70mA Maximum
<b>Frequency Tolerance / Stability</b> <i>Some tolerance stability options may not be available</i>	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	65mA 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> <b>Fj=637kHz to 10MHz</b>	1.000MHz to 100.000MHz 100.001MHz to 156.250MHz 156.251MHz to 220.000MHz	1.7pSec Typical 1.6pSec Typical 1.6pSec Typical
<b>RMS Phase Jitter (Random)</b> <b>Fj=1.5MHz to 22MHz</b>	1.000MHz to 100.000MHz 100.001MHz to 156.250MHz 156.251MHz to 220.000MHz	0.8pSec Typical 0.6pSec Typical 0.4pSec Typical
<b>RMS Phase Jitter (Random)</b> <b>Fj=1.875MHz to 20MHz</b>	1.000MHz to 100.000MHz 100.001MHz to 156.250MHz 156.251MHz to 220.000MHz	0.7pSec Typical 0.5pSec Typical 0.4pSec Typical

MANUFACTURER ECLIPTEK CORP.	CATEGORY OSCILLATOR	SERIES EMSL13	PACKAGE PLASTIC	VOLTAGE 3.3V	CLASS OS7P	REV. DATE 10/11
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## PART NUMBERING GUIDE

### EMSL13 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

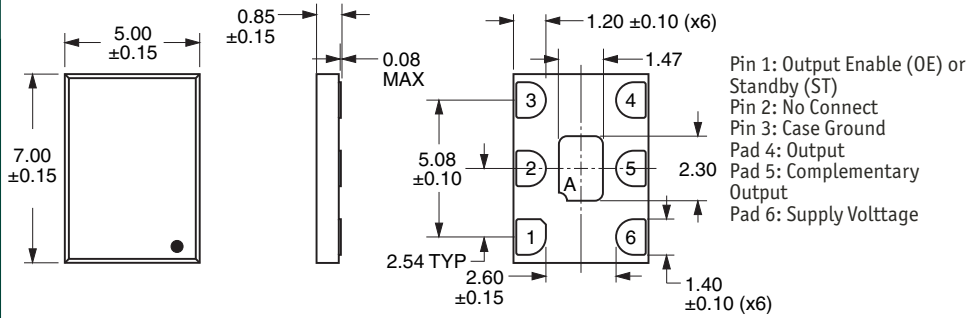
#### LOGIC CONTROL/ADDITIONAL OUTPUT

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

#### DUTY CYCLE

2=50 ±5(%)

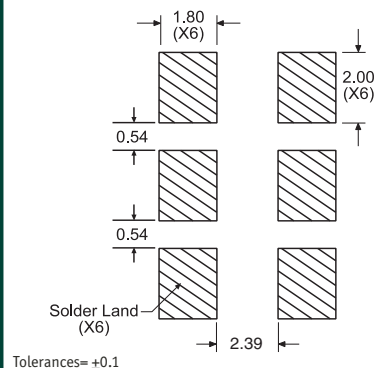
#### MECHANICAL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



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

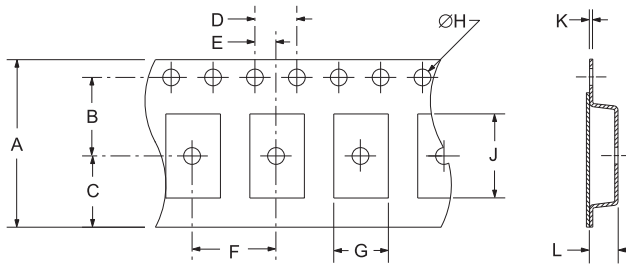
Note A: Center paddle is connected internally to oscillator ground (Pad 3).

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

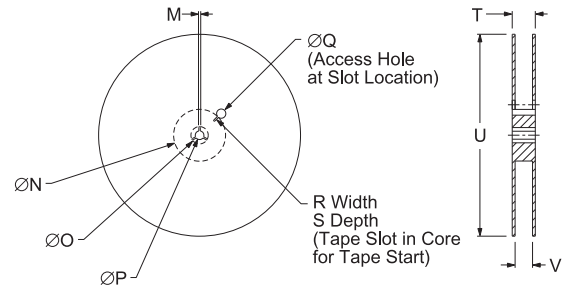


Tolerances=±0.1

#### 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 or XXXXX

Eclipsek Manufacturing Lot Code

MANUFACTURER	CATEGORY	SERIES	PACKAGE	VOLTAGE	CLASS	REV. DATE
ECLIPTEK CORP.	OSCILLATOR	EMSL13	PLASTIC	3.3V	OS7P	10/11