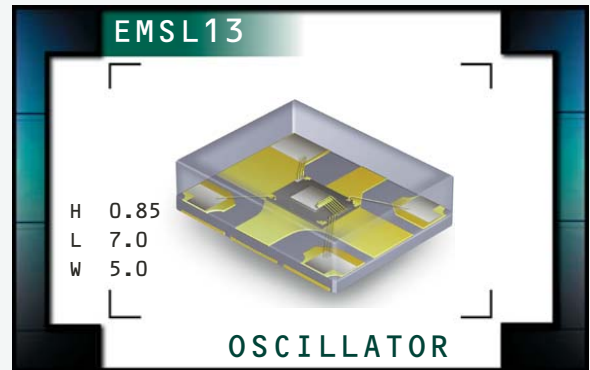


EMSL13 Series



ECLIPTEK[®]
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

| | | |
|---|---|--|
| Nominal Frequency (MHz) | | 1.000MHz to 220.000MHz |
| Operating Temperature Range | | 0°C to +70°C, -20°C to +70°C, or -40°C to +85°C |
| Storage Temperature Range | | -55°C to +125°C |
| Supply Voltage (V_{cc}) | | +3.3V _{DC} ±0.3V _{DC} |
| Input Current | Excluding Load Termination Current | 70mA 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, Reflow, Shock, and Vibration | ±100ppm, ±50ppm, ±25ppm, or ±20ppm Maximum |
| Output Voltage Logic High (V_{OH}) | | 750mV _{DC} Typical, 600mV _{DC} Minimum |
| Output Voltage Logic Low (V_{OL}) | | 25mV _{DC} Typical, 50mV _{DC} Maximum |
| Rise Time / Fall Time | 20% to 80% of waveform | 300pSec Typical, 350pSec Maximum |
| Duty Cycle | at 50% of waveform | 50 ±5 (%) |
| Load Drive Capability | Output and Complementary Output | 50 Ohms to ground |
| Logic Control / Additional Output | | Output Enable and Complementary Output, or Standby and Complementary Output |
| Output Control Input Voltage | V _{IH} of 70% of V _{CC} Minimum No Connection V _{IL} of 30% of V _{CC} Maximum | Enables Outputs Enables Outputs Disables Outputs: High Impedance |
| Output Enable Current | Without Load | 65mA Maximum (OE) |
| Standby Current | Without Load | 30µA Maximum (ST) |
| Aging | First Year at 25°C | ±1ppm Maximum |
| Start Up Time | | 10mSeconds Maximum |
| Period Jitter | 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 |
| RMS Phase Jitter (Random) | 1.000MHz to 100.000MHz | 1.7pSec Typical |
| Fj=637kHz to 10MHz | 100.001MHz to 156.250MHz | 1.6pSec Typical |
| | 156.251MHz to 220.000MHz | 1.6pSec Typical |
| RMS Phase Jitter (Random) | 1.000MHz to 100.000MHz | 0.8pSec Typical |
| Fj=1.5MHz to 22MHz | 100.001MHz to 156.250MHz | 0.6pSec Typical |
| | 156.251MHz to 220.000MHz | 0.4pSec Typical |
| RMS Phase Jitter (Random) | 1.000MHz to 100.000MHz | 0.7pSec Typical |
| Fj=1.875MHz to 20MHz | 100.001MHz to 156.250MHz | 0.5pSec Typical |
| | 156.251MHz to 220.000MHz | 0.4pSec Typical |

MANUFACTURER
ECLIPTEK CORP.

CATEGORY
OSCILLATOR

SERIES
EMSL13

PACKAGE
PLASTIC

VOLTAGE
3.3V

CLASS
OS7P

REV. DATE
11/09

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

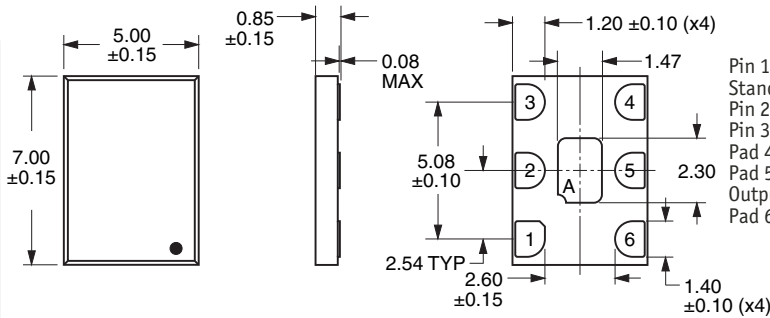
LOGIC CONTROL/ADDITIONAL OUTPUT

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

DUTY CYCLE

2=50 ±5(%)

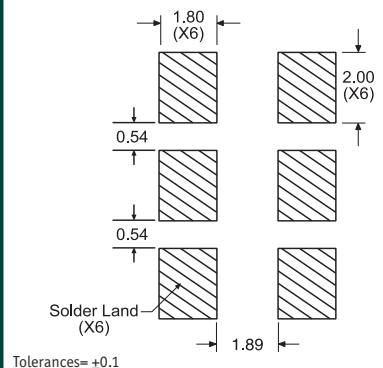
MECHANICAL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



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

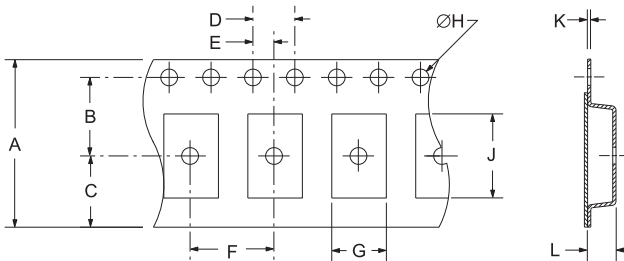
Note A: Center paddle is connected internally to oscillator ground (Pad 3).

SUGGESTED SOLDER PAD LAYOUT ALL DIMENSIONS IN MILLIMETERS

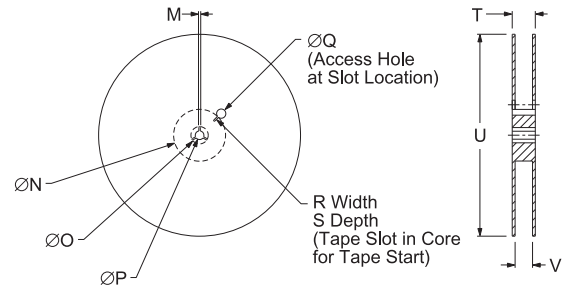


Tolerances=±0.1

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
 Ecliptek Manufacturing Lot Code

| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|---------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EMSL13 | PLASTIC | 3.3V | OS7P | 11/09 |