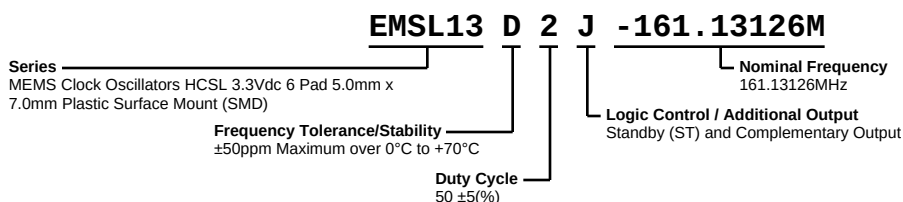


EMSL13D2J-161.13126M



ELECTRICAL SPECIFICATIONS

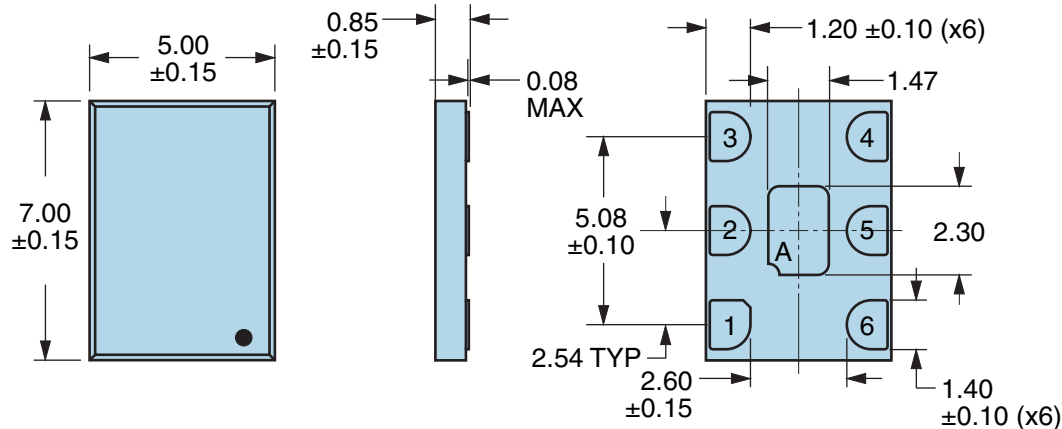
Nominal Frequency	161.13126MHz
Frequency Tolerance/Stability	± 50 ppm Maximum over 0°C to $+70^{\circ}\text{C}$ (Inclusive of all conditions: Calibration Tolerance at 25°C , Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, 1st Year Aging at 25°C , Reflow, Shock, and Vibration)
Aging at 25°C	± 1 ppm First Year Maximum
Supply Voltage	+3.3Vdc ± 0.3 Vdc
Input Current	70mA Maximum (Excluding Load Termination Current)
Output Voltage Logic High (Voh)	750mVdc Typical, 600mVdc Minimum
Output Voltage Logic Low (Vol)	25mVdc Typical, 50mVdc Maximum
Rise/Fall Time	300pSec Typical, 350pSec Maximum (Measured over 20% to 80% of waveform)
Duty Cycle	$50 \pm 5(\%)$ (Measured at 50% of waveform)
Load Drive Capability	50 Ohms to ground (Output and Complementary Output)
Output Logic Type	HCSL
Logic Control / Additional Output	Standby (ST) and Complementary Output
Output Control Input Voltage	Vih of 70% of Vcc Minimum or No Connect to Enable Output and Complementary Output, Vil of 30% of Vcc Maximum to Disable Output and Complementary Output (High Impedance)
Standby Current	30 μ A Maximum (ST) Without Load
Period Jitter (Deterministic)	0.2pSec Typical
Period Jitter (Random)	2.0pSec Typical
Period Jitter (RMS)	1.5pSec Typical, 3.0pSec Maximum
Period Jitter (pk-pk)	20pSec Typical, 25pSec Maximum
Period Jitter (Cycle to Cycle)	10pSec Typical
RMS Phase Jitter (Fj = 637kHz to 10MHz; Random)	1.6pSec Typical
RMS Phase Jitter (Fj = 1.5MHz to 22MHz; Random)	0.4pSec Typical
RMS Phase Jitter (Fj = 1.875MHz to 20MHz; Random)	0.4pSec Typical
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to $+125^{\circ}\text{C}$

ENVIRONMENTAL & 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 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

EMSL13D2J-161.13126M

MECHANICAL DIMENSIONS (all dimensions in millimeters)



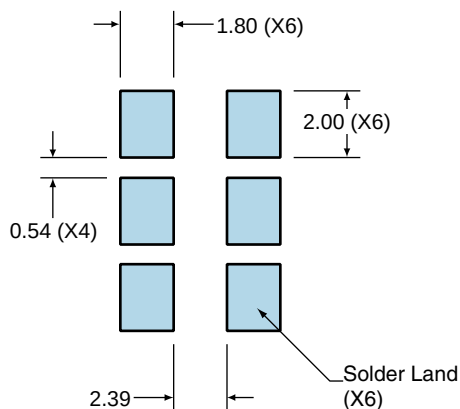
PIN	CONNECTION
1	Standby (ST)
2	No Connect
3	Case Ground
4	Output
5	Complementary Output
6	Supply Voltage

LINE	MARKING
1	XXXX or XXXXX XXXX or XXXXX=Ecliptek Manufacturing Lot Code

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

Suggested Solder Pad Layout

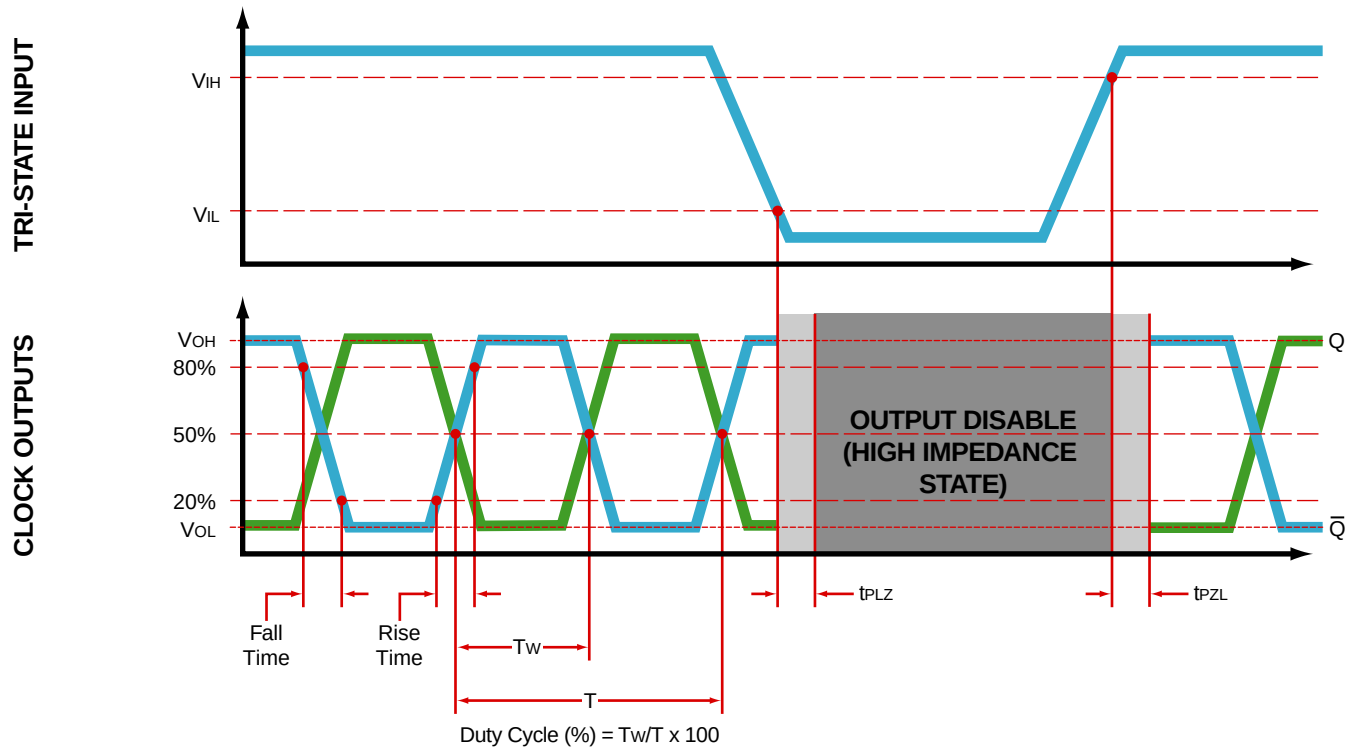
All Dimensions in Millimeters



All Tolerances are ± 0.1

EMSL13D2J-161.13126M

OUTPUT WAVEFORM & TIMING DIAGRAM



EMSL13D2J-161.13126M

OUTPUT WAVEFORM & TIMING DIAGRAM

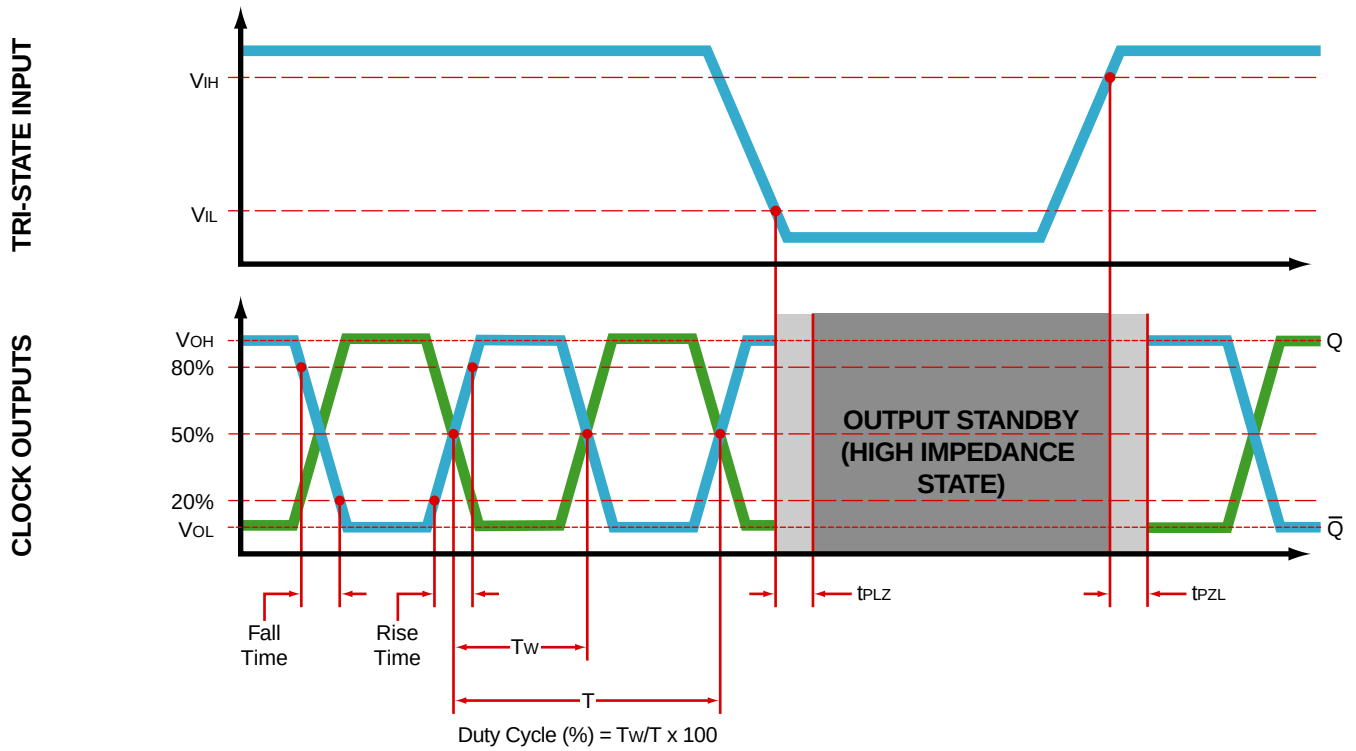
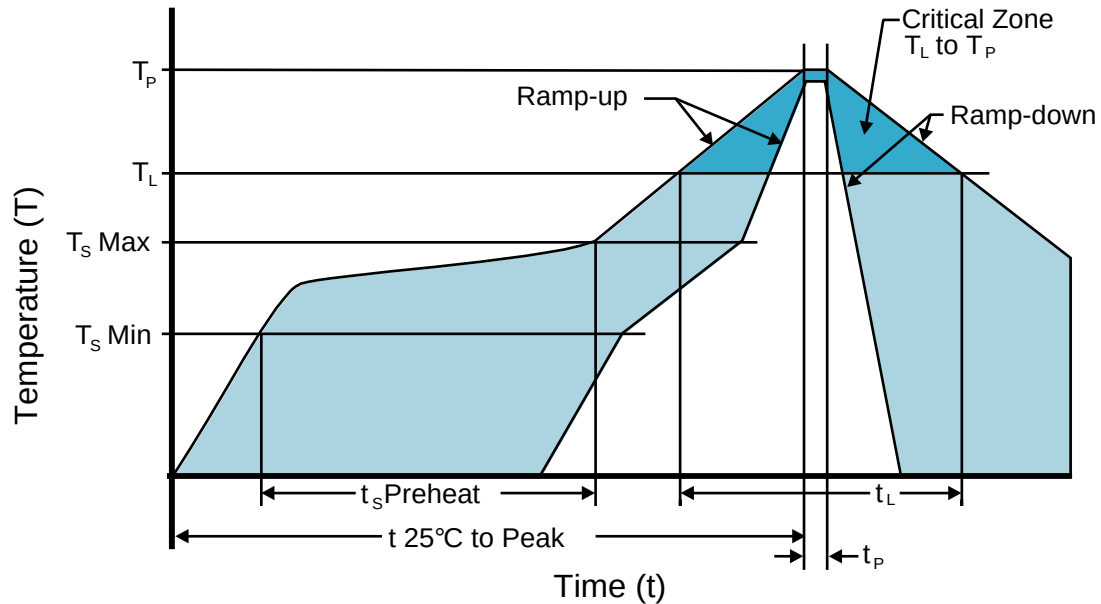


Figure 1 is a schematic diagram of the test setup for the 74VHC04. The circuit includes a Power Supply, Voltage Meter, Current Meter, 50 Ohms resistor, Supply Voltage (V_{DD}), Output, Complementary Output, Tri-State, Ground, No Connect, Switch, and another Power Supply. The setup is used to measure the output resistance of the 74VHC04.

Note 4: A 10 ohm to 33 ohm series resistor is required to limit overshoot. Rs value is circuit layout dependant.

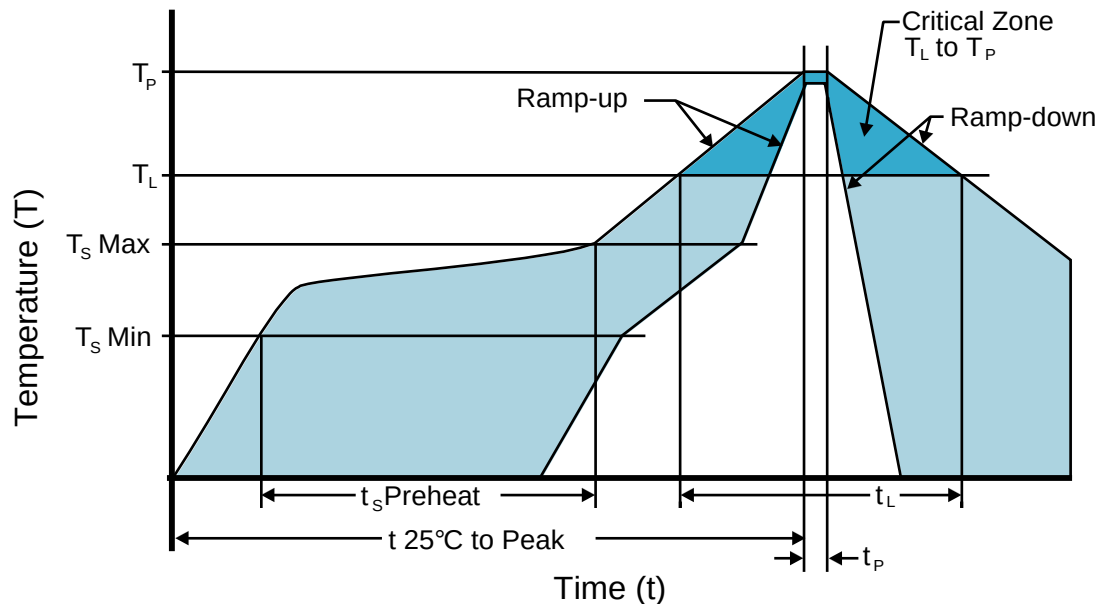
Recommended Solder Reflow Methods



High Temperature Infrared/Convection

$T_s \text{ MAX to } T_L$ (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 ($t_s \text{ MIN}$)	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

Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 240°C

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 MIN) 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

Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum.

High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum.