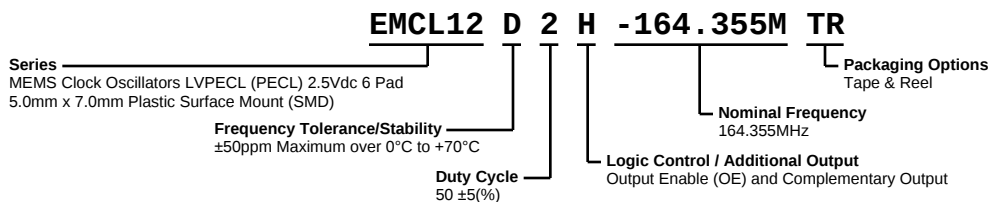


EMCL12D2H-164.355M TR



ELECTRICAL SPECIFICATIONS

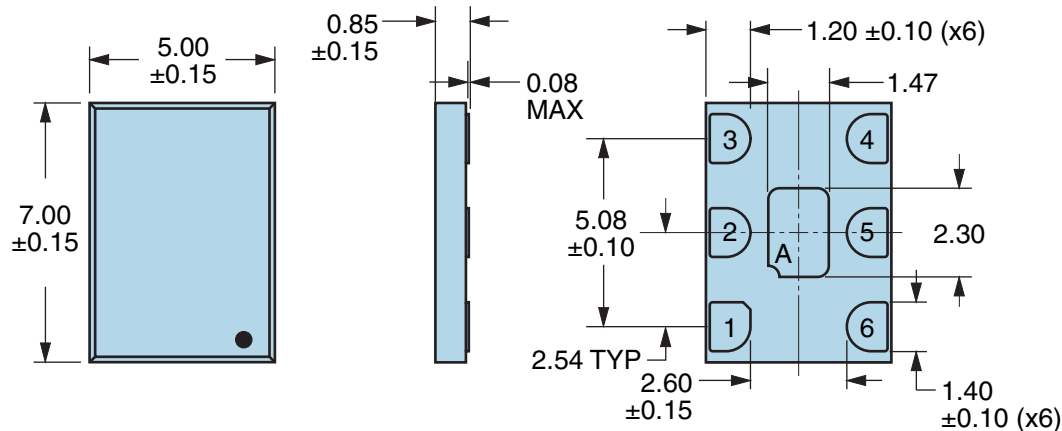
Nominal Frequency	164.355MHz
Frequency Tolerance/Stability	± 50 ppm Maximum over 0°C to +70°C (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, 1st Year Aging at 25°C, Reflow, Shock, and Vibration)
Aging at 25°C	± 1 ppm First Year Maximum
Supply Voltage	+2.5Vdc ± 0.125 Vdc
Input Current	75mA Maximum (Excluding Load Termination Current)
Output Voltage Logic High (Voh)	1.55Vdc Typical, Vcc-1.025Vdc Minimum
Output Voltage Logic Low (Vol)	0.80Vdc Typical, Vcc-1.62Vdc Maximum
Rise/Fall Time	150pSec Typical, 300pSec Maximum (Measured over 20% to 80% of waveform)
Duty Cycle	50 ± 5 (%) (Measured at 50% of waveform)
Load Drive Capability	50 Ohms into Vcc-2.0Vdc
Output Logic Type	LVPECL
Logic Control / Additional Output	Output Enable (OE) 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)
Output Enable Current	70mA Maximum (OE) 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
RMS Phase Jitter (Fj = 637kHz to 10MHz; Random)	1.6pSec Typical
RMS Phase Jitter (Fj = 1MHz to 20MHz; Random)	0.7pSec 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°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

EMCL12D2H-164.355M TR

MECHANICAL DIMENSIONS (all dimensions in millimeters)



PIN	CONNECTION
1	Output Enable (OE)
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

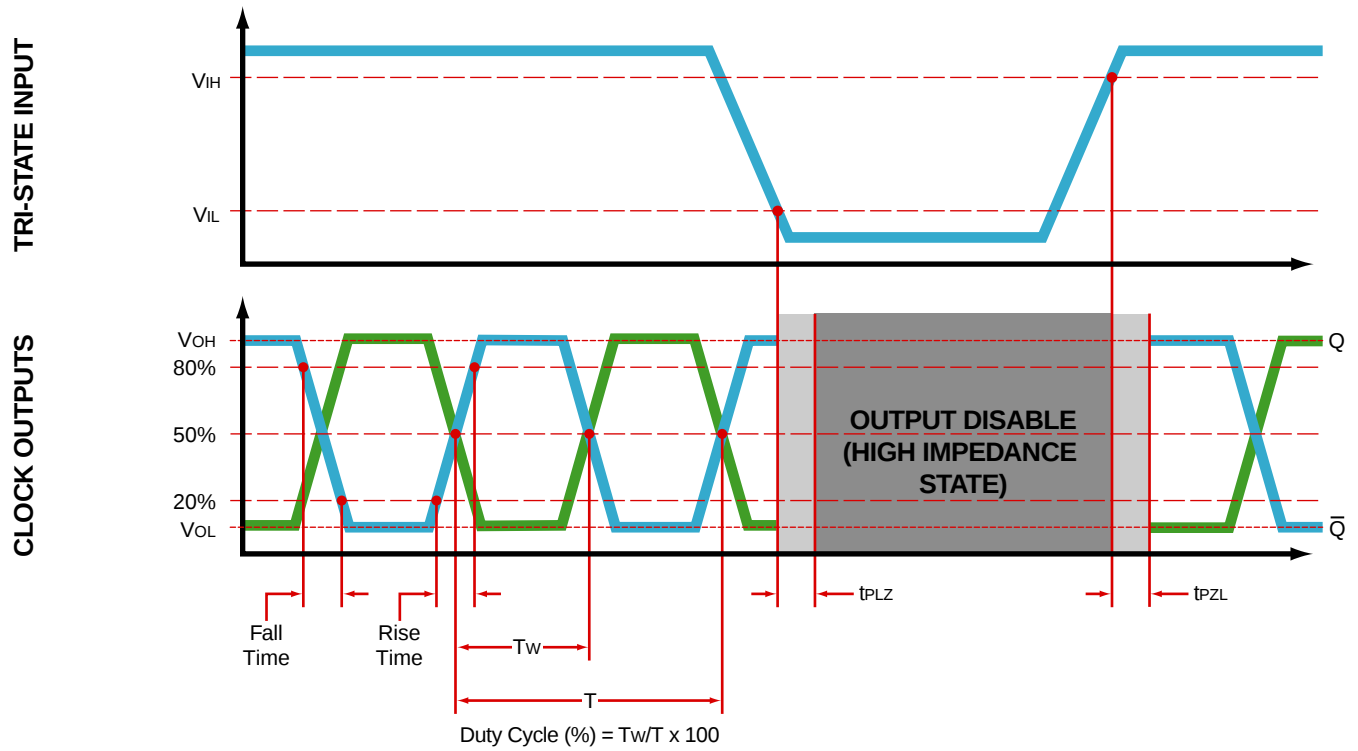
All Dimensions in Millimeters



All Tolerances are ± 0.1

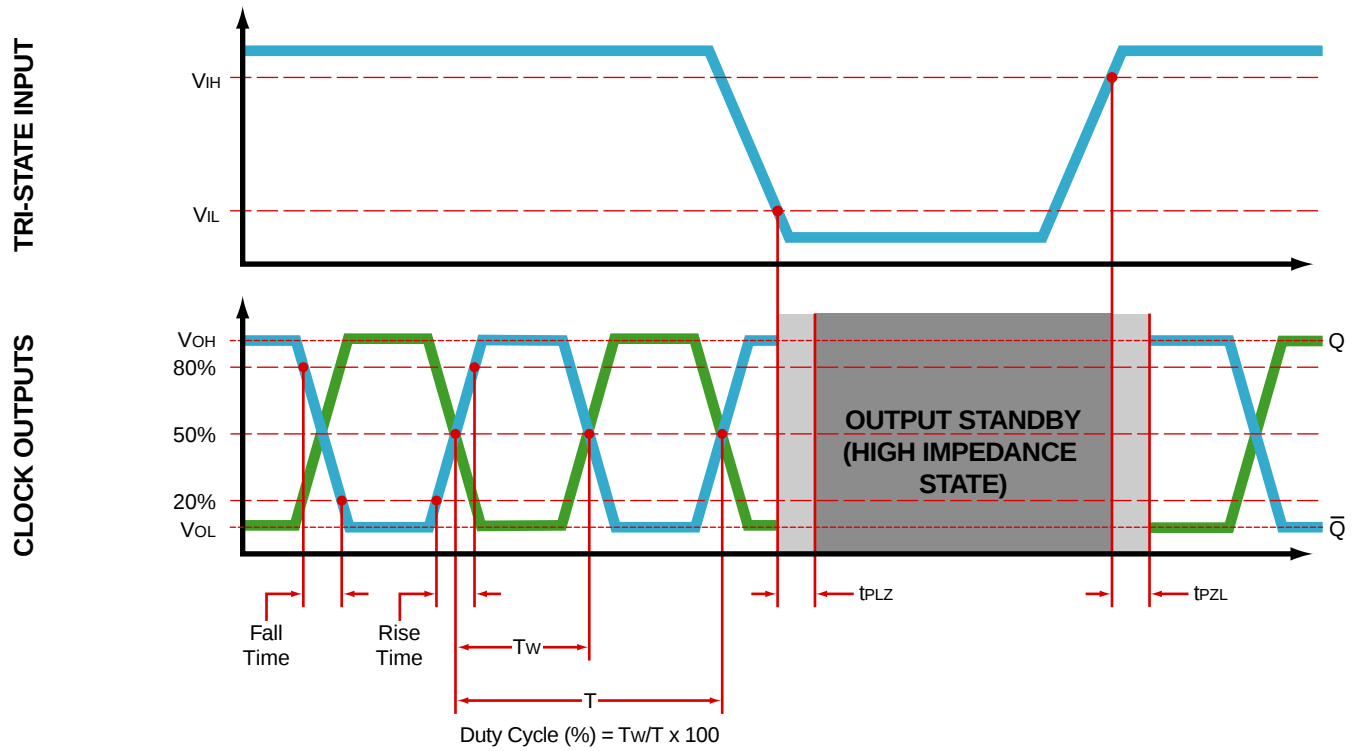
EMCL12D2H-164.355M TR

OUTPUT WAVEFORM & TIMING DIAGRAM



EMCL12D2H-164.355M TR

OUTPUT WAVEFORM & TIMING DIAGRAM



Pin Connections

- 1 Tri-State
- 2 No Connect
- 3 Ground
- 4 Output
- 5 Complementary Output
- 6 Supply Voltage (V_{DD})

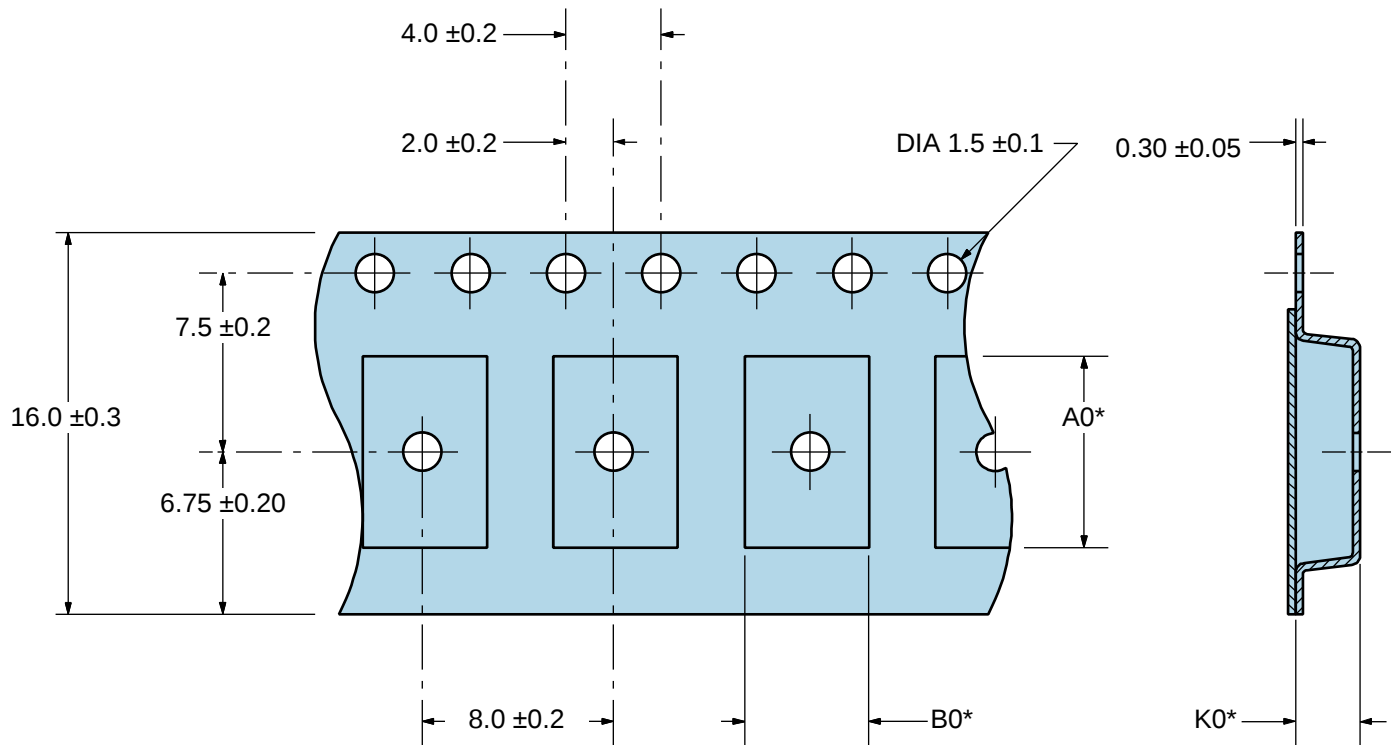
The diagram shows a circuit for testing the output of a 74VHC04 inverter. The output is connected to a 50 Ohm resistor, which is connected to a 5V supply. A current meter is connected in series with the output. A switch is connected to the output. A voltage meter is connected across the output. A 0.01 μF capacitor and a 0.1 μF capacitor are connected to ground. The output is connected to a 50 Ohm resistor, which is connected to a 5V supply. The output is also connected to an oscilloscope and a frequency counter. The output is labeled 'Output' and 'Complementary Output'.

Note 3: Test circuit PCB traces need to be designed for a characteristic line impedance of 50 ohms.

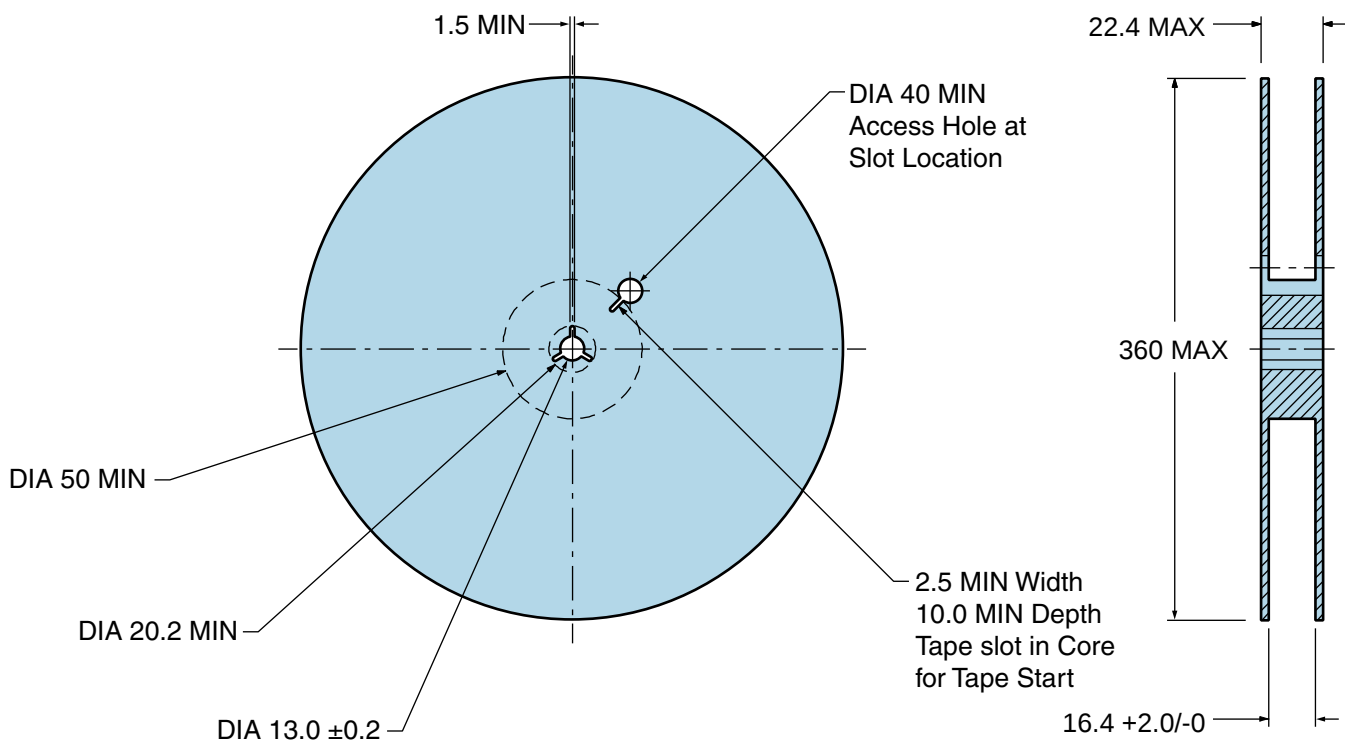
EMCL12D2H-164.355M TR

Tape & Reel Dimensions

Quantity Per Reel: 1,000 units



*Compliant to EIA 481



Recommended Solder Reflow Methods



High Temperature Infrared/Convection

$T_s \text{ MAX to } T_L$ (Ramp-up Rate)	3°C/second Maximum
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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
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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
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Target Peak Temperature ($T_p \text{ Target}$)	250°C +0/-5°C
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Time within 5°C of actual peak (t_p)	20 - 40 seconds
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Ramp-down Rate	6°C/second Maximum
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Time 25°C to Peak Temperature (t)	8 minutes Maximum
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Moisture Sensitivity Level	Level 1
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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.