

EC3145HSA10ET-10.000M-CL100
[Click part number to visit Part Number Details page](#)
REGULATORY COMPLIANCE (Data Sheet downloaded on Apr 26, 2019)
[Click badges to download compliance docs](#)

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**ITEM DESCRIPTION**10.000MHz $\pm 50\text{ppm}$ -40°C to +85°C**ELECTRICAL SPECIFICATIONS**

Nominal Frequency	10.000MHz
Frequency Tolerance/Stability	$\pm 50\text{ppm}$ Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, Shock, and Vibration)
Aging at 25°C	$\pm 5\text{ppm/year}$ Maximum
Operating Temperature Range	-40°C to +85°C
Supply Voltage	5.0Vdc $\pm 5\%$
Input Current	20mA Maximum
Output Voltage Logic High (Voh)	2.4Vdc Minimum with TTL Load, Vdd-0.5Vdc Minimum with HCMOS Load
Output Voltage Logic Low (Vol)	0.4Vdc Maximum with TTL Load, 0.5Vdc Maximum with HCMOS Load
Rise/Fall Time	5nSec Maximum (Measured at 0.4Vdc to 2.4Vdc w/TTL Load; Measured at 20% to 80% of waveform with HCMOS Load)
Duty Cycle	50 $\pm 10\%$ (Measured at 1.4Vdc with TTL Load or at 50% of waveform with HCMOS Load)
Load Drive Capability	10TTL Load or 15pF HCMOS Load Maximum
Output Logic Type	CMOS
Control Voltage	2.5Vdc $\pm 2.0\text{Vdc}$
Frequency Deviation	$\pm 100\text{ppm}$ Minimum
Linearity	$\pm 10\%$ Maximum
Transfer Function	Positive Transfer Characteristic
Absolute Clock Jitter	$\pm 100\text{pSec}$ Maximum
One Sigma Clock Period Jitter	$\pm 25\text{pSec}$ Maximum
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

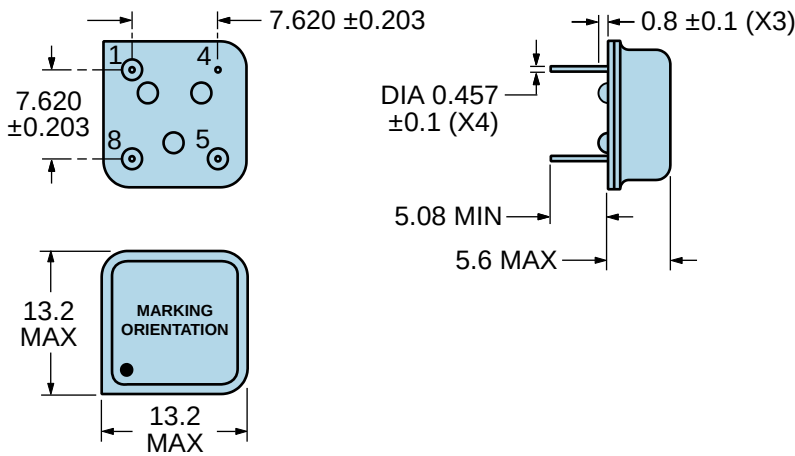
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Lead Integrity	MIL-STD-883, Method 2004
Mechanical Shock	MIL-STD-202, Method 213, Condition C
Resistance to Soldering Heat	MIL-STD-202, Method 210
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010
Vibration	MIL-STD-883, Method 2007, Condition A

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

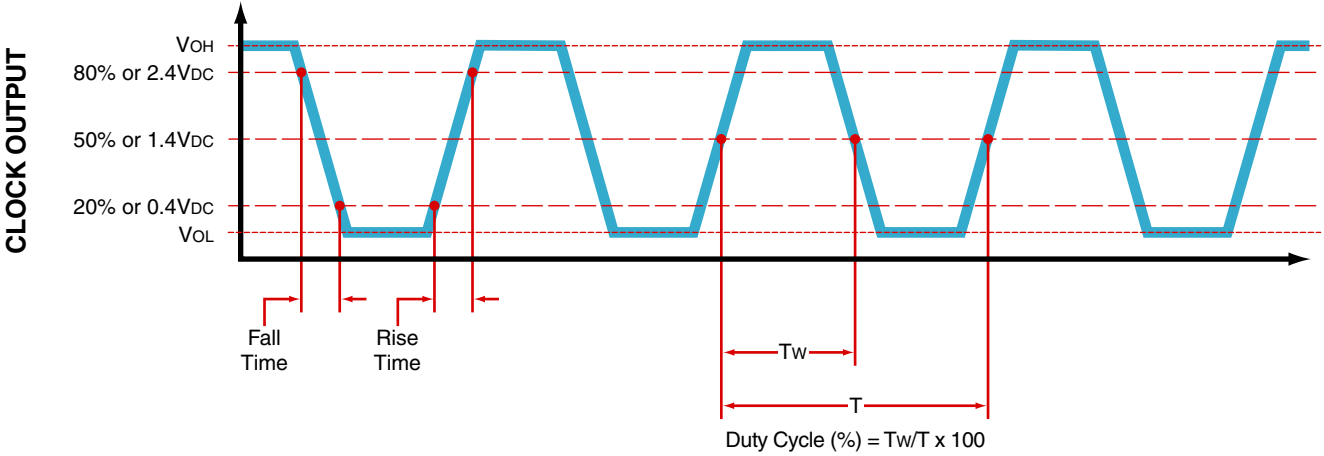


PIN	CONNECTION
1	Control Voltage
4	Ground/Case Ground
5	Output
8	Supply Voltage

LINE	MARKING
1	ECLIPTEK
2	EC31 EC31=Product Series
3	10.000M
4	XXYYZZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year



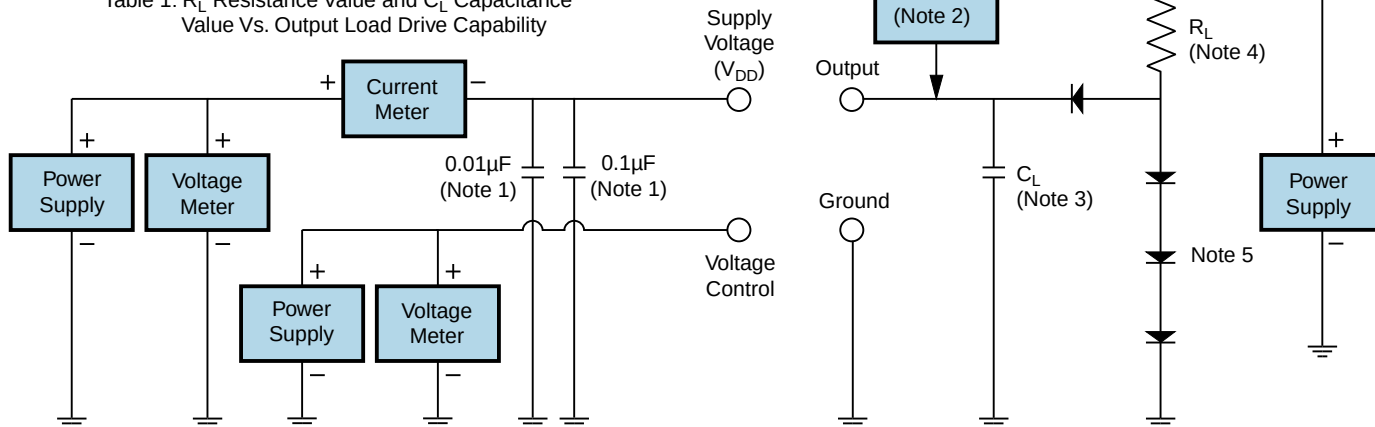
OUTPUT WAVEFORM



Test Circuit for TTL Output

Output Load Drive Capability	R _L Value (Ohms)	C _L Value (pF)
10TTL	390	15
5TTL	780	15
2TTL	1100	6
10LSTTL	2000	15
1TTL	2200	3

Table 1: R_L Resistance Value and C_L Capacitance Value Vs. Output Load Drive Capability



Note 1: An external 0.1μF low frequency tantalum bypass capacitor in parallel with a 0.01μF high frequency ceramic bypass capacitor close to the package ground and V_{DD} pin is required.

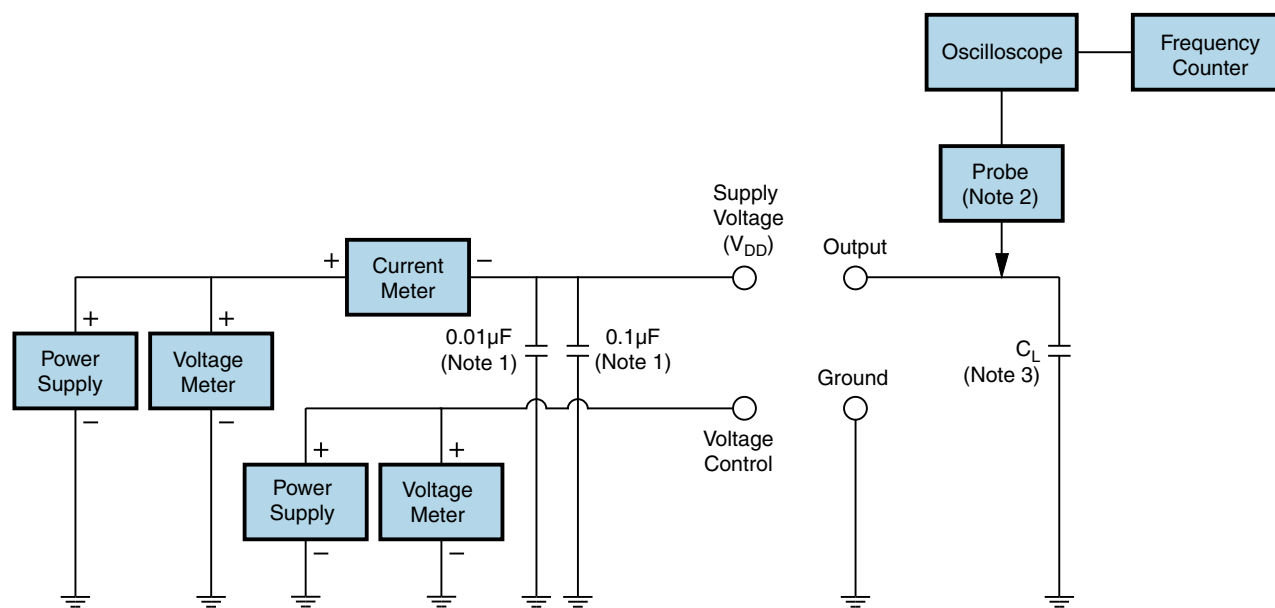
Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value C_1 includes sum of all probe and fixture capacitance.

Note 4: Resistance value R_L is shown in Table 1. See applicable specification sheet for 'Load Drive Capability'.

Note 5: All diodes are MMBD7000, MMBD914, or equivalent.

Test Circuit for CMOS Output

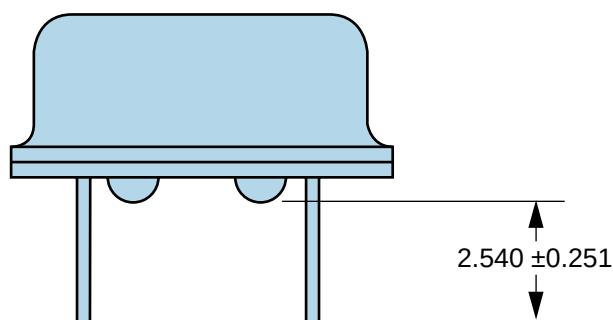


Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

Value Added Option - Cut Leads

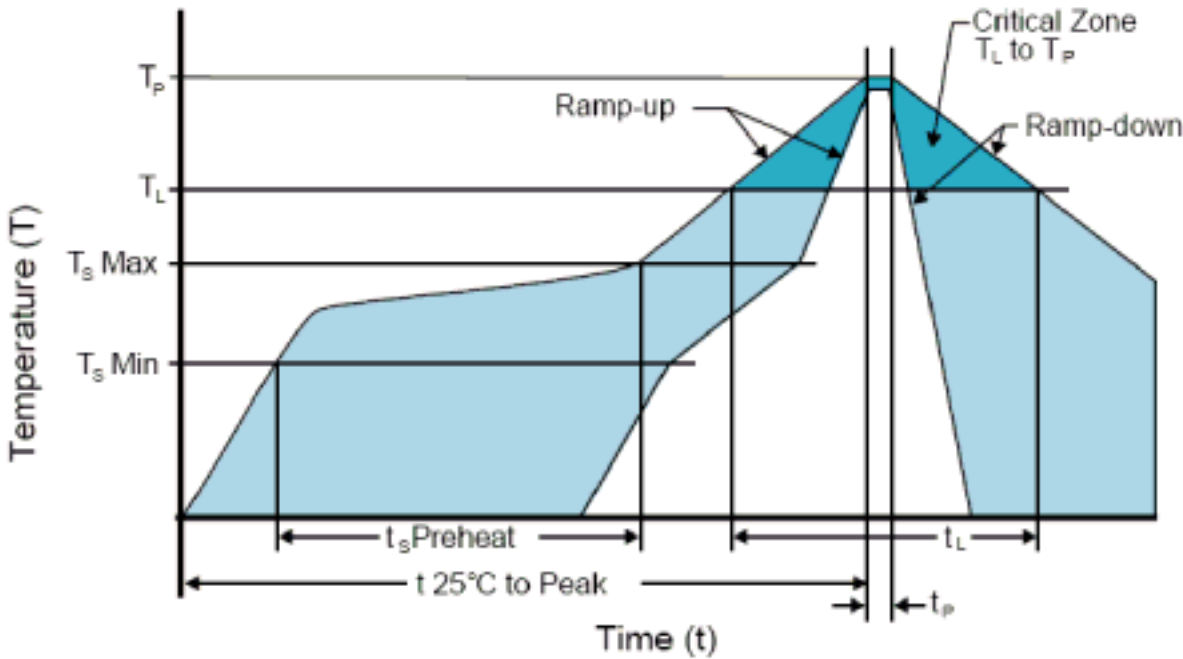


All dimensions are in millimeters

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Recommended Solder Reflow Methods



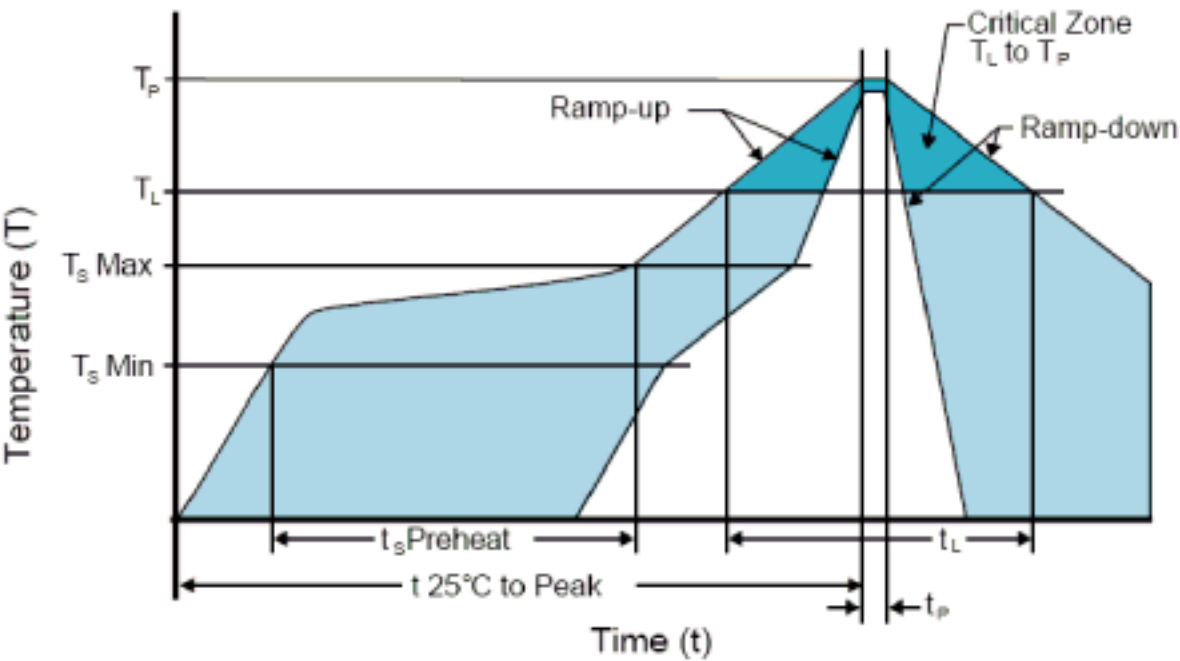
High Temperature Solder Bath (Wave Solder)

Ts MAX to TL (Ramp-up Rate)	3°C/Second Maximum
Preheat	
- Temperature Minimum (Ts MIN)	150°C
- Temperature Typical (Ts TYP)	175°C
- Temperature Maximum (Ts MAX)	200°C
- Time (ts MIN)	60 - 180 Seconds
Ramp-up Rate (TL to TP)	3°C/Second Maximum
Time Maintained Above:	
- Temperature (TL)	217°C
- Time (tL)	60 - 150 Seconds
Peak Temperature (TP)	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (TP Target)	250°C +0/-5°C
Time within 5°C of actual peak (tp)	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

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Recommended Solder Reflow Methods



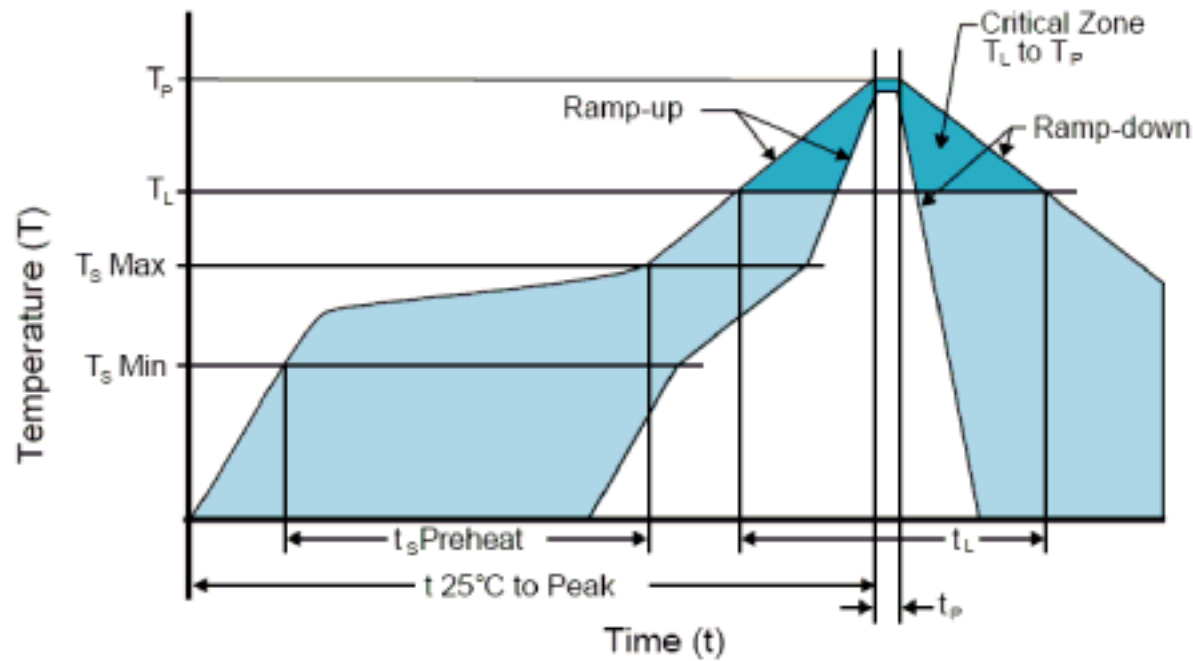
Low Temperature Infrared/Convection 185°C

TS MAX to TL (Ramp-up Rate)	5°C/Second Maximum
Preheat	
- Temperature Minimum (TS MIN)	N/A
- Temperature Typical (TS TYP)	150°C
- Temperature Maximum (TS MAX)	N/A
- Time (ts MIN)	60 - 120 Seconds
Ramp-up Rate (TL to TP)	5°C/Second Maximum
Time Maintained Above:	
- Temperature (TL)	150°C
- Time (tL)	200 Seconds Maximum
Peak Temperature (TP)	185°C Maximum
Target Peak Temperature (TP Target)	185°C Maximum 2 Times
Time within 5°C of actual peak (tp)	10 Seconds Maximum 2 Times
Ramp-down Rate	5°C/Second Maximum
Time 25°C to Peak Temperature (t)	N/A
Moisture Sensitivity Level	Level 1

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Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

Ts MAX to Tl (Ramp-up Rate)	5°C/Second Maximum
Preheat	
- Temperature Minimum (Ts MIN)	N/A
- Temperature Typical (Ts TYP)	150°C
- Temperature Maximum (Ts MAX)	N/A
- Time (ts MIN)	30 - 60 Seconds
Ramp-up Rate (Tl to Tp)	5°C/Second Maximum
Time Maintained Above:	
- Temperature (Tl)	150°C
- Time (tL)	200 Seconds Maximum
Peak Temperature (Tp)	245°C Maximum
Target Peak Temperature (Tp Target)	245°C Maximum 1 Time / 235°C Maximum 2 Times
Time within 5°C of actual peak (tp)	5 Seconds Maximum 1 Time / 15 Seconds Maximum 2 Times
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.