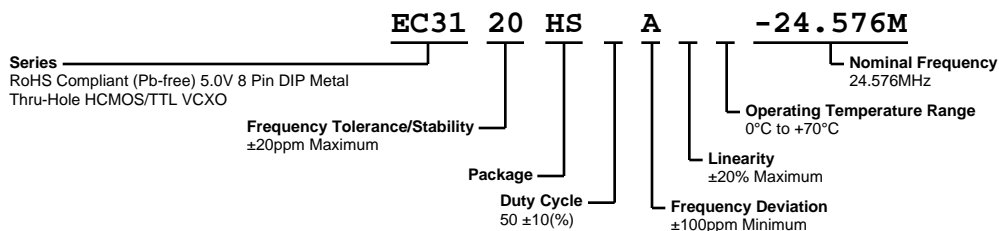


EC3120HSA-24.576M



ECLIPTEK
CORPORATION



ELECTRICAL SPECIFICATIONS

| | |
|---------------------------------|--|
| Nominal Frequency | 24.576MHz |
| Frequency Tolerance/Stability | ±20ppm 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 | ±5ppm/year Maximum |
| Operating Temperature Range | 0°C to +70°C |
| Supply Voltage | 5.0Vdc ±5% |
| Input Current | 40mA 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 ±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 ±2.0Vdc |
| Frequency Deviation | ±100ppm Minimum |
| Linearity | ±20% Maximum |
| Transfer Function | Positive Transfer Characteristic |
| Absolute Clock Jitter | ±100pSec Maximum |
| One Sigma Clock Period Jitter | ±25pSec 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 |

EC3120HSA-24.576M

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 | 24.576M |
| 4 | XXYYZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year |

OUTPUT WAVEFORM

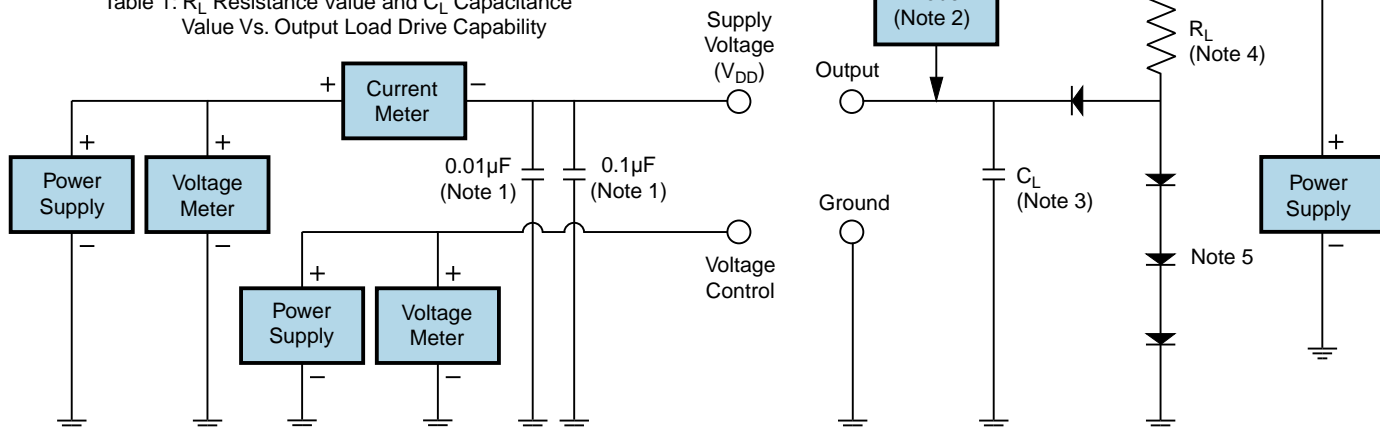


EC3120HSA-24.576M

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 $0.1\mu F$ low frequency tantalum bypass capacitor in parallel with a $0.01\mu F$ 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 ($>10M\Omega$), and high bandwidth ($>300MHz$) passive probe is recommended.

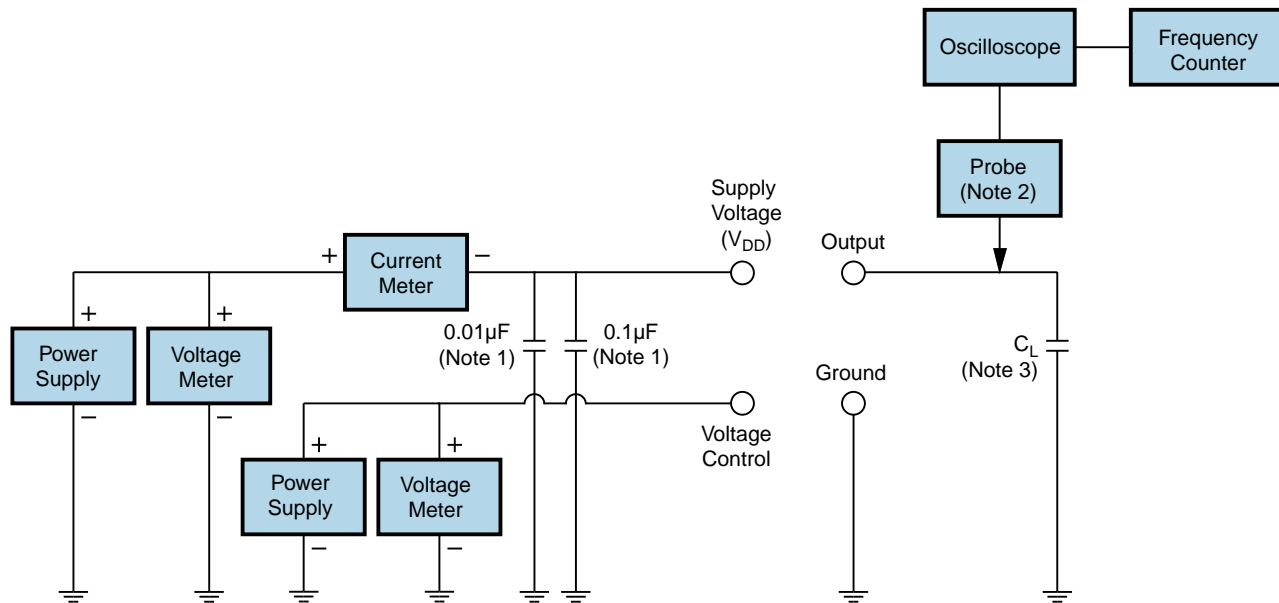
Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

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.

EC3120HSA-24.576M

Test Circuit for CMOS Output

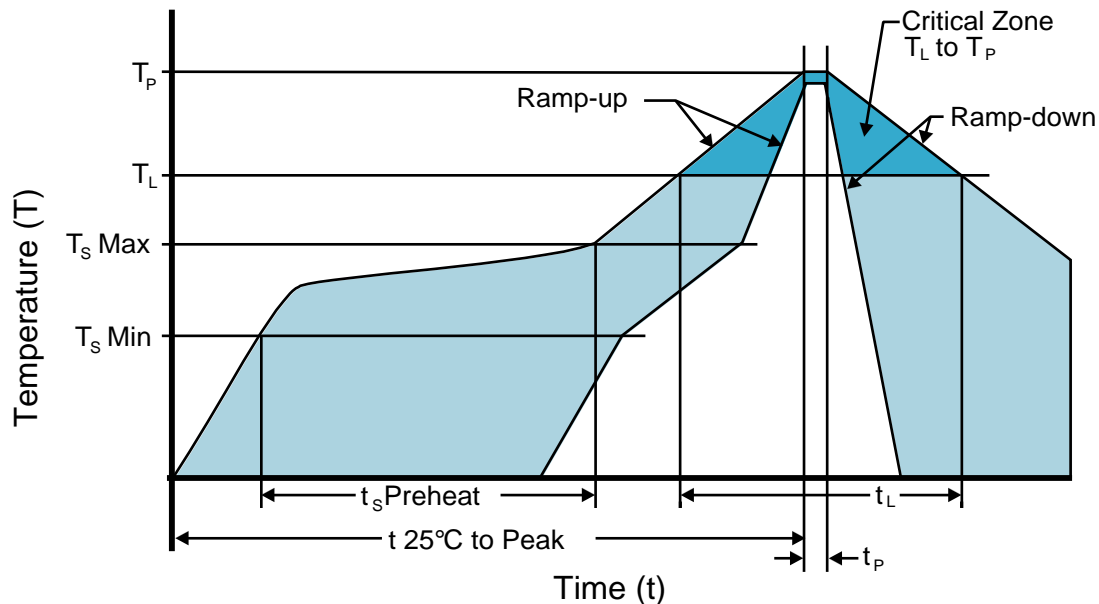


Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground and V_{DD} pin is required.

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_L includes sum of all probe and fixture capacitance.

Recommended Solder Reflow Methods



High Temperature Solder Bath (Wave Solder)

| | |
|--|--------------------------------------|
| $T_s \text{ MAX to } T_L$ (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 185°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) 185°C Maximum

Target Peak Temperature (T_p Target) 185°C Maximum 2 Times

Time within 5°C of actual peak (t_p) 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

Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

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) 30 - 60 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) 245°C Maximum

Target Peak Temperature (T_p Target) 245°C Maximum 1 Time / 235°C Maximum 2 Times

Time within 5°C of actual peak (t_p) 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.