



ETC8115

Microprocessor Reset Circuit

Description

The ETC8115 is an inexpensive microprocessor reset circuit that monitors power supplies in microprocessor based systems.

The function of this device is to assert a reset if either the power supply drops below a designated reset threshold level or MR is forced low.

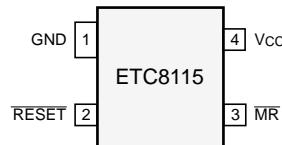
The ETC8115 has an active low RESET output. The reset output is guaranteed to remain asserted for a minimum of 1100ms after VCC has risen above the designated reset threshold level. The ETC8115 comes in a 4-pin SOT-143 package.

Typical Applications

- Portable Equipment
- Intelligent Instruments
- Critical Microprocessor Power Monitoring
- Printers/Computers
- Controllers

Pin Configuration

Top View



Features

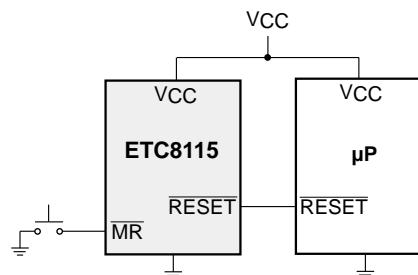
- RESET Remains Valid with VCC as Low as 1.4V
- Precision Voltage Monitor for 3.3V Power Supplies
- Available in 4-Pin SOT-143 Package
- <15 μ A Supply Current
- 1100ms Minimum Reset Pulse Width
- Manual Reset Input
- Specifically tailored to the reset requirements of the AMD Elan SC500 Series

Typical Operating Circuit

Ordering Information

| Part | Package | Temp. Range |
|-----------|----------------|----------------|
| ETC8115TU | 4-Lead SOT-143 | -40°C to +85°C |

Place the device suffix of desired reset threshold voltage from table above in blank to complete the part number.



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Absolute Maximum Ratings

| Terminal Voltage | |
|------------------------|-----------------------|
| VCC | -0.3V to 6.0V |
| MR | -0.3V to (VCC + 0.3V) |
| Input Current, VCC, MR | 20mA |
| Output Current, RESET | 20mA |
| Rate of Rise, VCC | 100V/μs |

| Operating Temperature Range | |
|--|----------------|
| ETC8115TU | -40°C to 85°C |
| Storage Temperature Range | -65°C to 150°C |
| Lead Temperature (Soldering - 10 sec.) | 300°C |
| Power Dissipation (TA = +70°C) | 320mW |

Stresses above those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent device failure. Functionality at or above these limits is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability. Operating ranges define those limits between which the functionality of the device is guaranteed.

Electrical Characteristics

VCC = 3.3V for ETC8115T, TA = Operating Temperature Range, unless otherwise noted.

| Parameter | Conditions | Min | Typ | Max | Units |
|------------------------------|--|------------|------|-------------------|-------------|
| Operating Voltage Range, VCC | TA = 0°C to 70°C TA = -40°C to 85°C | 1.4 1.6 | | 5.5 5.5 | V |
| Supply Current, ICC | | | 9 | 15 | μA |
| Reset Voltage Threshold, VTH | | 3.00 | 3.08 | 3.15 | V |
| Reset Timeout Period | | 1100 | 1700 | 2500 | ms |
| RESET Output Voltage, VOH | Source = 500μA | 0.8 X VCC | | | V |
| RESET Output Voltage, VOL | VCC=VTH Min., Sink =1.2mA VCC>1.4V, Sink =50μA, TA = 0°C to 70°C VCC>1.6V, Sink =50μA, TA = -40°C to 85°C | | | 0.3 0.3 0.3 | V V V |
| MR Minimum Pulse Width | | 10 | | | μs |
| MR to Reset Delay | | | 0.5 | | μs |
| MR Input Threshold, VIH | | 0.7 X VCC | | | V |
| MR Input Threshold, Vil | | | | 0.25 X VCC | V |
| MR Pull-Up Resistance | | 10 | 20 | 30 | kΩ |
| MR Glitch Immunity | | | 100 | | ns |

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Pin Functions

| Pin Name | Pin No. | Description |
|----------------------------|---------|---|
| GND | 1 | IC Ground Pin. |
| RESET | 2 | $\overline{\text{RESET}}$ goes low if either V_{CC} falls below the supply reset threshold or if \overline{MR} is asserted. $\overline{\text{RESET}}$ remains asserted for one reset timeout period (1100ms min.) after both V_{CC} exceeds the supply reset threshold and \overline{MR} is deasserted. |
| MR | 3 | Manual reset input. A logic low on \overline{MR} forces a reset. The reset will remain asserted as long as \overline{MR} is held low and for one reset timeout period (1100ms min.) after \overline{MR} goes high. This input can be shorted to ground via a switch or driven from CMOS or TTL logic. Pulled high internally through a $20k\Omega$ resistor. Float if unused. |
| V_{CC} | 4 | Power supply input. |

Block Diagram

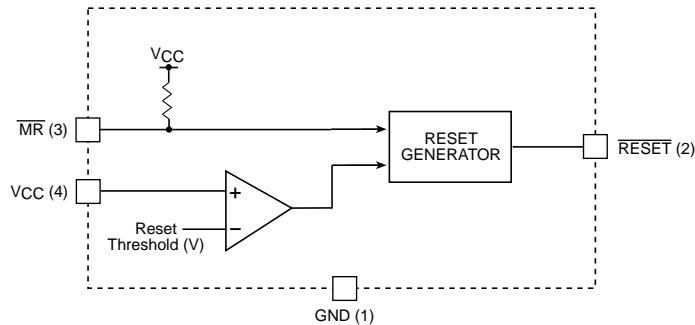


Figure 1. ETC8115 Block Diagram

Circuit Description

Microprocessor Reset

The RESET pin is asserted whenever VCC falls below the reset threshold voltage or if MR (manual reset) is forced low. The reset pin remains asserted for a period of at least 1100ms after VCC has risen above the reset threshold voltage or MR has returned high. The reset function ensures the microprocessor is properly reset and powers up into a known condition after a power failure. RESET will remain valid with VCC as low as 1.4V.

VCC Transients

The ETC8115 is relatively immune to negative-going VCC glitches below the reset threshold. Typically, a negative-going transient 125mV below the reset threshold with a duration of 25 μ s or less will not cause an unwanted reset.

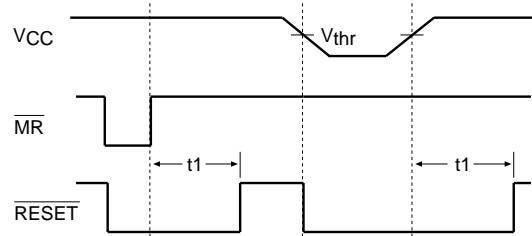


Figure 2. Reset Timing Diagram

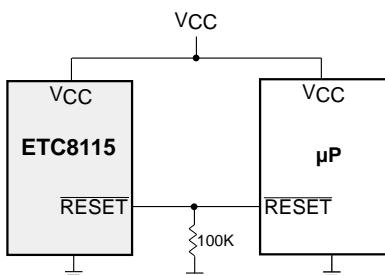


Figure 3. RESET Valid to VCC = 0V.

RESET Valid to 0V

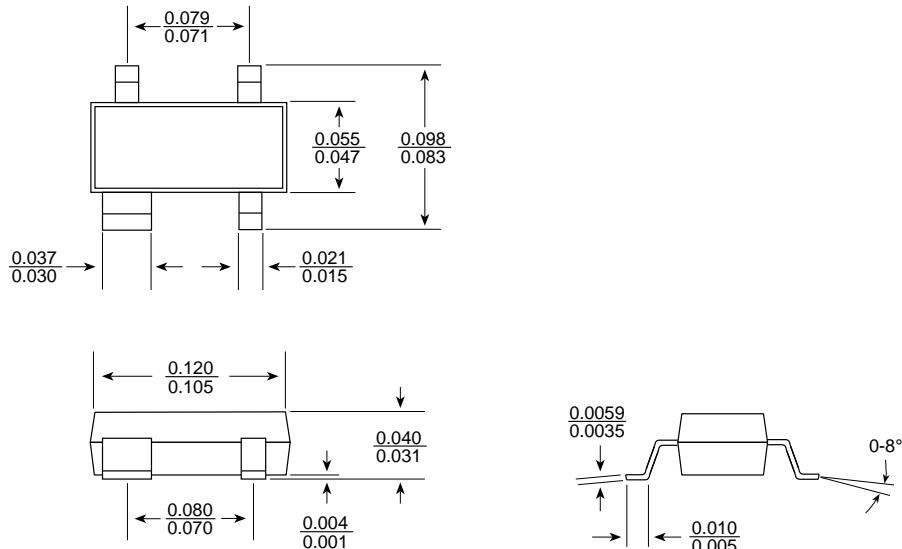
A resistor can be added from the RESET pin to ground to ensure the RESET output remains low with VCC down to 0V. A 100 Ω resistor connected from RESET to ground is recommended. The size of the resistor should be large enough to not load the RESET output and small enough to pull-down any stray leakage currents.

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Packaging Information

U Package, 4-Pin SOT-143 Small-Outline Transistor Package



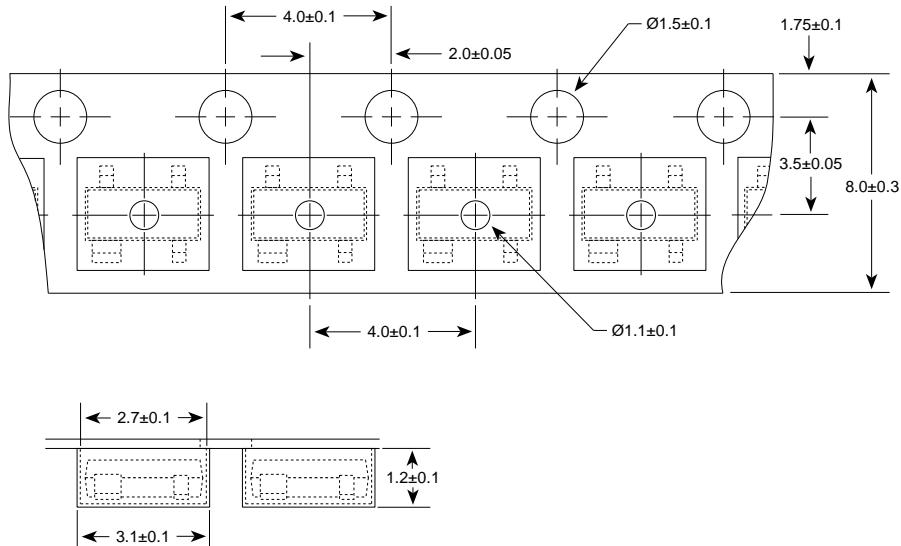
Dimensions are in inches.

Device Marking Information

Lot Code
NT¹XX¹ = ETC8115TU

Packaging Information

Tape and Reel Information



Dimensions are in millimeters.

Electronic Technology

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