



MIC8115

Microprocessor Reset Circuit

General Description

The MIC8115 is an inexpensive microprocessor supervisory circuit that monitors power supplies in microprocessor based systems.

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

The MIC8115 has an active low /RESET output. The reset output is guaranteed to remain asserted for a minimum of 1100ms after V_{CC} has risen above the designated reset threshold level. The MIC8115 comes in a 4-pin SOT-143 package.

Features

- Precision voltage monitor for 3.3V power supplies
- **Specifically tailored to the AMD Elan SC500 Series**
- /RESET remains valid with V_{CC} as low as 1V
- 5 μ A typical supply current
- 1100ms minimum reset pulse width
- Manual reset input
- Available in 4-Pin SOT-143 Package

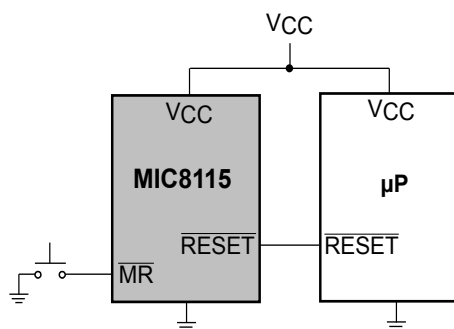
Applications

- Portable equipment
- Intelligent instruments
- Critical microprocessor power monitoring
- Printers/computers
- Embedded controllers

Ordering Information

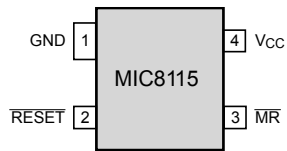
Part Number	Marking	Operating Temp. Range	Package	Pb-Free
MIC8115TU	NT	-40°C to +85°C	4-lead SOT-143	No
MIC8115TUY	<u>NT</u>	-40°C to +85°C	4-lead SOT-143	Yes

Typical Application



MIC8115 Typical Application

Pin Configuration



4-Lead SOT-143

Pin Description

Pin Number	Pin Name	Pin Function
1	GND	IC Ground Pin
2	/RESET	/RESET goes low if either V_{CC} falls below the supply reset threshold voltage or if /MR is asserted. /RESET remains asserted for one reset timeout period 1100ms min. After both V_{CC} exceeds the supply reset threshold voltage and /MR is deasserted.
3	/MR	Manual Reset Input. A logic low on /MR forces a reset. The reset will remain asserted as long as /MR is held low and for one reset timeout period (1100ms min.) after /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 Ω resistor. Float if unused.
4	V_{CC}	Power supply Input.

Absolute Maximum Ratings(Note 1)

Terminal Voltage
 (V_{CC}).....-0.3V to 6.0V
 (/MR).....-0.3V ($V_{CC} + 0.3V$)
 Input Current (V_{CC} , /MR)..... 20mA
 Output Current (/RESET) 20mA
 Rate of Rise (V_{CC})..... 100V/ μ S
 Lead Temperature (soldering, 10 sec.)..... 300°C
 Storage Temperature (T_S) -65°C to +150°C
 ESD Rating..... 3kV

Operating Ratings(Note 2)

Operating Temperature Range
 MIC8115TU -40°C to +85°C
 Power Dissipation ($T_A = +70^\circ\text{C}$) 320mW

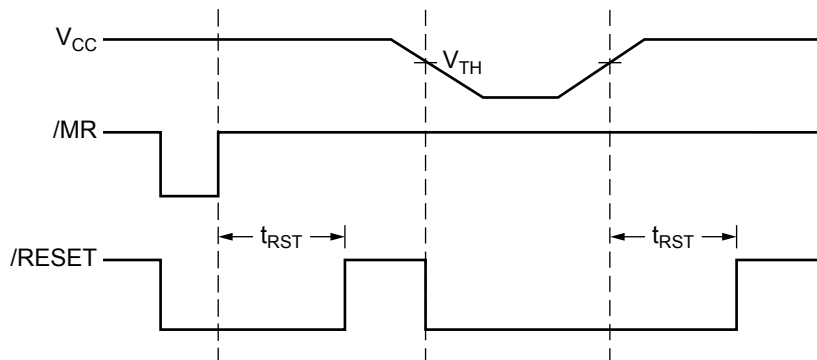
Electrical Characteristics

For typical values, $V_{CC} = 3.3V$; $T_A = 25^\circ\text{C}$, **bold** values indicate $-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$; unless noted

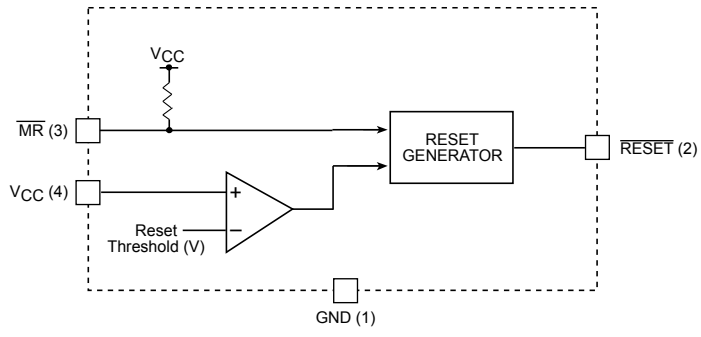
Symbol	Parameter	Condition	Min	Typ	Max	Units
V_{CC}	Operating Voltage Range	$T_A = -40^\circ\text{C}$ to 85°C	1		5.5	V
I_{CC}	Supply Current			5	15	μA
V_{TH}	Reset Voltage Threshold		3.00	3.08	3.15	V
t_{RST}	Reset Timeout Period		1100	1700	2500	ms
V_{OH}	/RESET Output Voltage	$I_{SOURCE} = 500\mu\text{A}$	$0.8 \times V_{CC}$			V
V_{OL}	/RESET Output Voltage	$V_{CC} = V_{TH}$ min, $I_{SINK} = 1.2\text{mA}$			0.3	V
		$V_{CC} = 1V$, $I_{SINK} = 50\mu\text{A}$, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$			0.3	V
	/MR Minimum Pulse Width		10			μs
	/MR to Reset Delay			0.5		μs
	/MR Input Threshold, V_{IH}		$0.7 \times V_{CC}$			V
	/MR Input Threshold, V_{IL}				$0.25 \times V_{CC}$	
	/MR Pull-Up Resistance		10	20	30	k Ω
	/MR Glitch Immunity			100		ns

- Note 1.** Exceeding the absolute maximum rating may damage the device.
- Note 2.** The device is not guaranteed to function outside its operating rating.
- Note 3.** Devices are ESD sensitive. Handling precautions recommended. Human body model, 1.5k in series with 100pF.

Timing Diagram



Functional Diagram



Applications Information

Microprocessor Reset

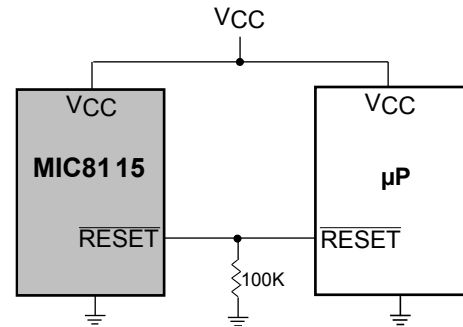
The /RESET pin is asserted whenever V_{CC} falls below the reset threshold voltage. The reset pin remains asserted for a period of 1100ms after V_{CC} has risen above the reset threshold voltage. The reset function ensures the microprocessor is properly reset and powers up into a known condition after a power failure. /RESET will remain valid with V_{CC} as low as 1V.

V_{CC} Transients

The MIC8115 is relatively immune to the negative-going V_{CC} glitches below the reset threshold. Typically, a negative-going transient 125mV below the reset threshold with a duration of 20 μ s or less will not cause a reset.

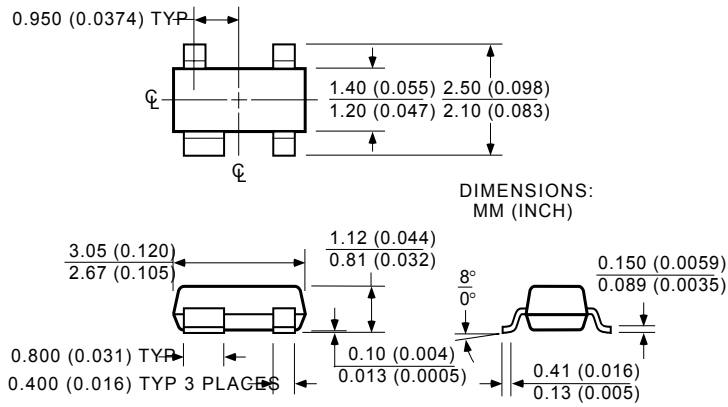
/RESET Valid at Low Voltage

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



/RESET Valid to $V_{CC} = 0V$

Package Information



4-Lead SOT-143 (UT)

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