

5V EconoReset with Open Drain Output

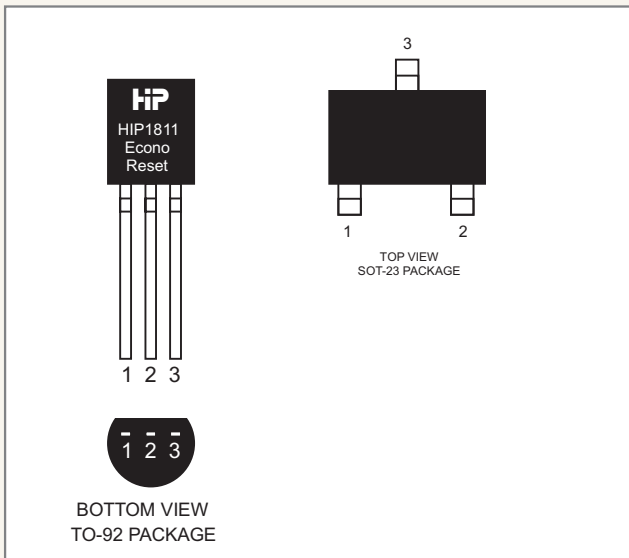
General Description

The HIP1811 EconoReset uses a precision temperature reference and comparator circuit to monitor the status of the power supply (V_{CC}). When an out-of-tolerance condition is detected, an internal power-fail signal is generated which forces reset to the active state. When V_{CC} returns to an in-tolerance condition, the reset signal is kept in the active state for approximately 150 ms to allow the power supply and processor to stabilize.

Features

- › Automatically restarts a microprocessor after power failure
- › Maintains reset for 150 ms after V_{CC} returns to an in-tolerance condition
- › Reduces need for discrete components
- › Precision temperature-compensated voltage reference and voltage sensor
- › Low-cost TO-92 or space saving SOT-23 packages available
- › Efficient open-drain output with internal 5.5 k Ω pull-up resistor
- › Operating temperature -40°C to +85°C

Pin Assignment



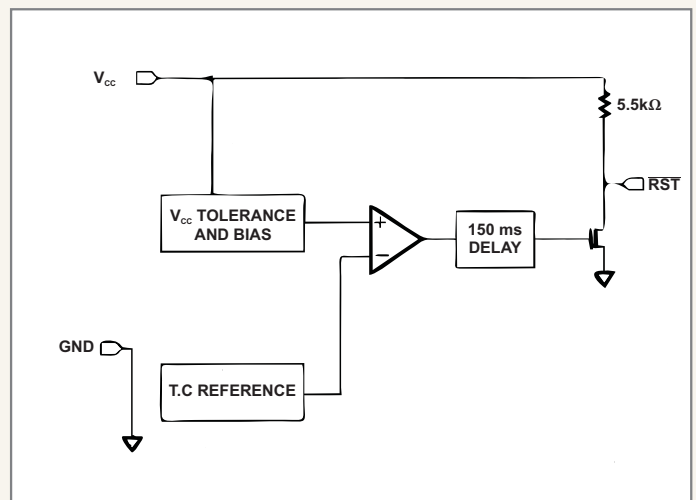
Pin Description

TO-92		
1	\overline{RST}	Active Low Reset Output
2	V_{CC}	Power Supply
3	GND	Ground
SOT-23		
\overline{RST}		Active Low Reset Output
V_{CC}		Power Supply
GND		Ground

Ordering Table

		V_{CC} TRIP POINT			PUSHBUTTON DETECT		
		MIN	TYP	MAX	MIN	TYP	MAX
5V	HIP1811	4.0	4.125	4.24	2.4	-	3.3
	HIP1811	4.25	4.375	4.49	2.4	-	3.3
	HIP1811	4.5	4.625	4.75	2.4	-	3.3
	HIP1811	4.0	4.125	4.24	N/A		N/A
	HIP1811	4.25	4.375	4.49	N/A		N/A
	HIP1811	4.5	4.625	4.75	N/A		N/A
	HIP1811	4.0	4.125	4.24	N/A		N/A
	HIP1811	4.25	4.375	4.49	N/A		N/A
3.3V	HIP1811A	2.64	2.72	2.80	1.8	-	3.0
	HIP1811A	2.8	2.88	2.97	1.8	-	3.0

Block Diagram



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Absolute Maximum Ratings*

Voltage on V _{CC} Pin Relative to Ground	-0.5V to +7.0V
Voltage on I/O Relative to Ground	-0.5V to V _{CC} +0.5V
Operating Temperature.....	-40°C to +85°C
Storage Temperature.....	-55°C to +125°C
Soldering Temperature.....	260°C for 10 seconds

* This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

Recommended DC Operating Conditions (-40°C to +85°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	V _{CC}	0.0		5.5	V	1

DC Electrical Characteristics (-40°C to +85°C; V_{CC} = 1.2V to 5.5V)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Output Current @ 0.4 volts	I _{OL}	+10			mA	2, 3
Operating Current V _{CC} < 5.5 volts	I _{CC}		30	40	μA	4
V _{CC} Trip Point (HIP1811-5)	V _{CCCTP}	4.50	4.62	4.75	V	1
V _{CC} Trip Point (HIP1811-10)	V _{CCCTP}	4.25	4.35	4.49	V	1
V _{CC} Trip Point (HIP1811-15)	V _{CCCTP}	4.00	4.13	4.24	V	1
Internal Pull-Up Resistor	R _P	3.5	5.5	7.5	k	
Output Capacitance	C _{OUT}			10	pF	

AC Electrical Characteristics (-40°C To +85°C; V_{CC} = 1.2V to 5.5V)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
RESET Active Time	t _{RST}	100	150	300	ms	
V _{CC} Detect to RST	t _{RPD}		2	5	μs	
V _{CC} Slew Rate (V _{CCCTP} (MAX) to V _{CCCTP} (MIN))	t _F	300			μs	
V _{CC} Slew Rate (V _{CCCTP} (MIN) to V _{CCCTP} (MAX))	t _R	0			ns	
V _{CC} Detect to RST	t _{RPU}	100	150	300	ms	5

NOTES

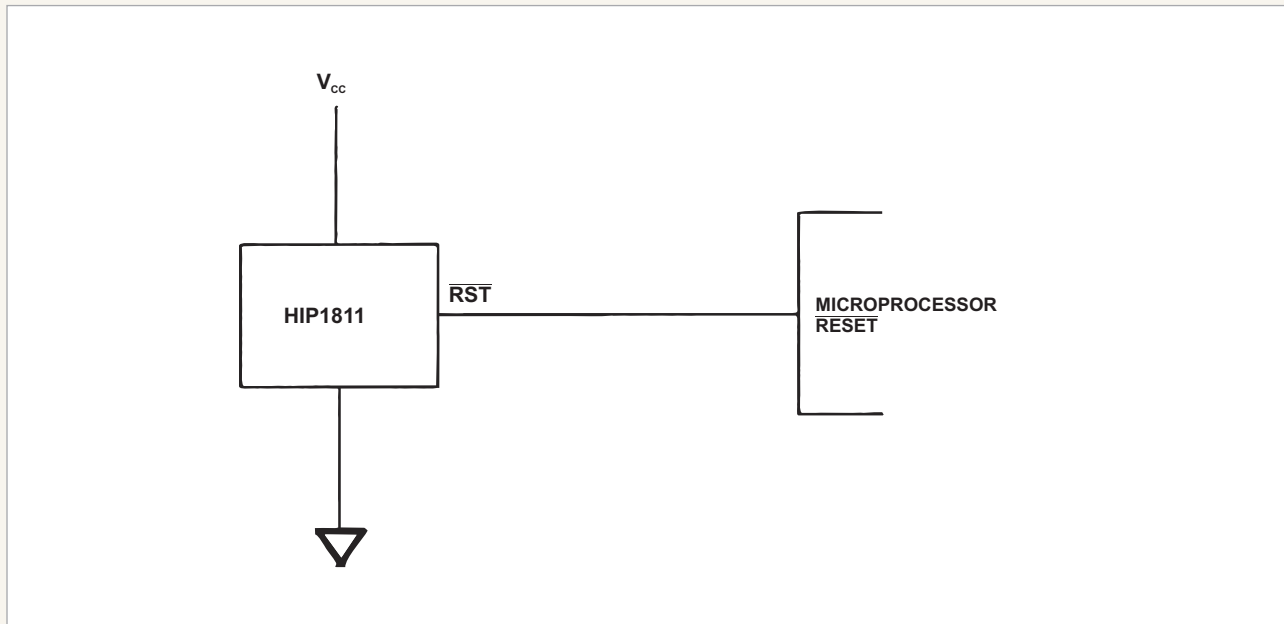
- All voltages are referenced to ground.
- Measured with V_{CC} ≥ 2.7 volts.
- A 1kΩ external resistor may be required in some applications for proper operation of the microprocessor reset control circuit.
- Measured with $\overline{\text{RST}}$ output open.
- t_r = 5 μs.

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Operation - Power Monitor

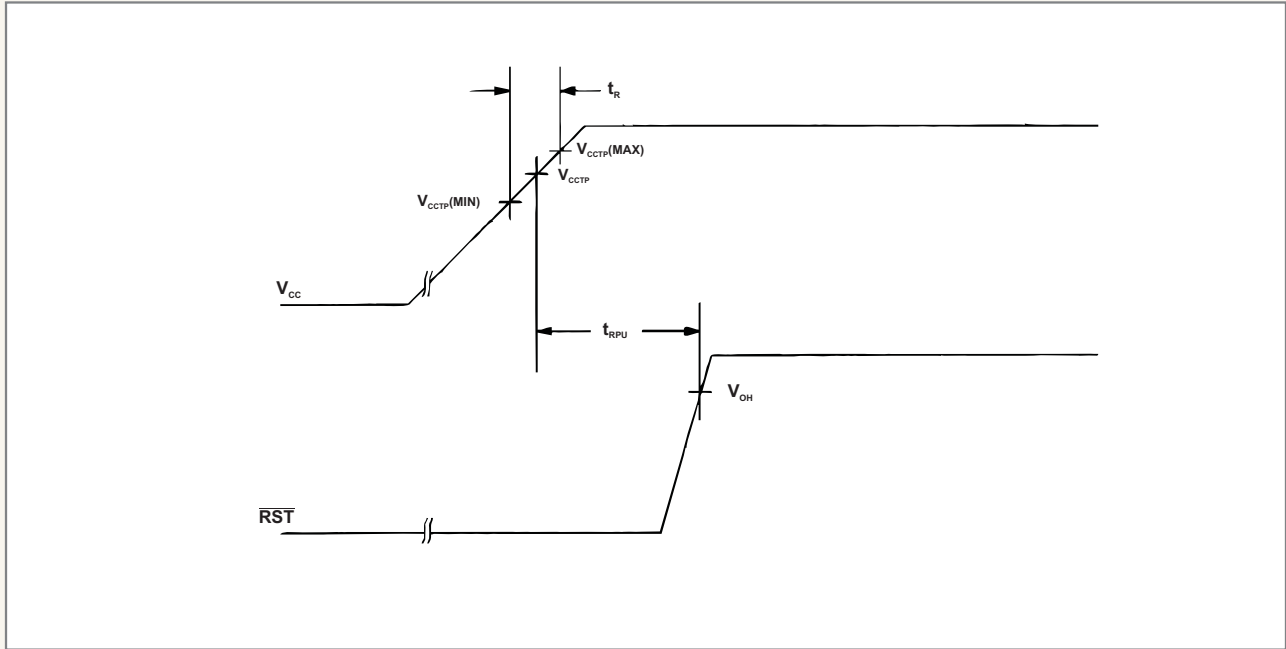
The HIP1811 provides the functions of detecting out-of-tolerance power supply conditions and warning a processor-based system of impending power failure. When V_{cc} is detected as out-of-tolerance, the \overline{RST} signal is asserted. On power-up, \overline{RST} is kept active for approximately 150 ms after the power supply has reached the selected tolerance. This allows the power supply and microprocessor to stabilize before RST

Application Example



5V EconoReset with Open Drain Output

Power Up



Power Down

