



UIC812

Preliminary

LINEAR INTEGRATED CIRCUIT

4-PIN μ P VOLTAGE MONITORS WITH MANUAL RESET INPUT

DESCRIPTION

The UTC **UIC812** is microprocessor (μ P) supervisory circuits used to monitor the power supplies in μ P and digital systems. They provide excellent circuit reliability and low cost by eliminating external components and adjustments when used with +5V, +3.3V, +3.0V- powered circuits. The UTC **UIC812** also provides a debounced manual reset input.

These circuits perform a single function: they assert a reset signal whenever the V_{CC} supply voltage declines below a preset threshold, keeping it asserted for at least 140 ms after V_{CC} has risen above the reset threshold. Reset thresholds suitable for operation with a variety of supply voltages are available.

The UTC **UIC812** has an active-low $\overline{\text{RESET}}$ output stage, The UTC **UIC812's** open-drain $\overline{\text{RESET}}$ output requires a pull-up resistor that can be connected to a voltage higher than V_{CC} .

Low supply current makes the UTC **UIC812** ideal for use in portable equipment.

FEATURES

- * Precision Monitoring of +3V, +3.3V, and +5V Power-Supply Voltages
- * Available in Three Output Configurations
Open-Drain $\overline{\text{RESET}}$ Output
- * Typical supply current: 5 μ A

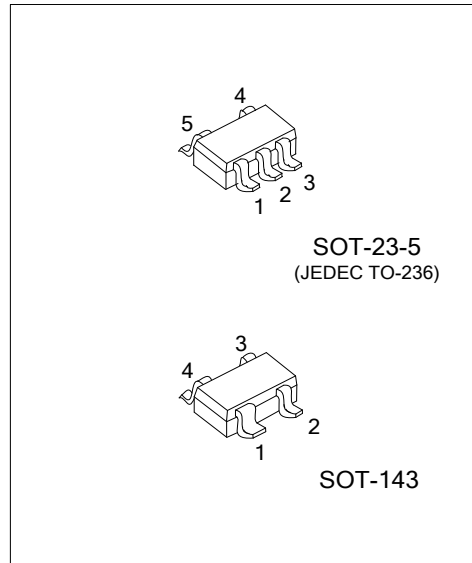
- * 140 mS Min Power-On Reset Pulse Width
- * Guaranteed Reset Valid to $V_{CC}=+1V$
- * Power Supply Transient Immunity
- * Manual Reset Input
- * 2% Threshold Accuracy

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UIC812L-x-AE5-R	UIC812G-x-AE5-R	SOT-23-5	GND	NC	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	V_{CC}	Tape Reel
UIC812L-x-AD4-R	UIC812G-x-AD4-R	SOT-143	GND	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	V_{CC}	-	Tape Reel

Note: x: Output Voltage, refer to Marking Information.

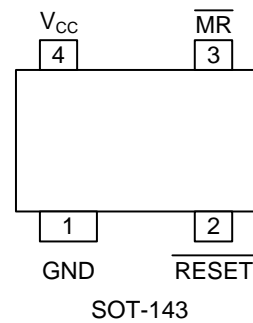
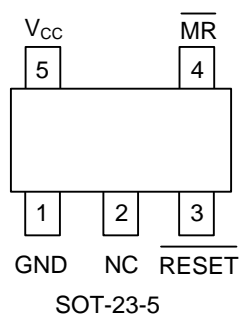
<p>UIC812G-x-AE5-R</p> <p>(1) Packing Type (2) Package Type (3) Output Voltage Code (4) Green Package</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AD4: SOT-143 (3) x: Refer to Marking Information (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-23-5	A: 2.63V B: 2.93V C: 3.08V D: 4.00V E: 4.38V F: 4.63V	<p>Voltage Code ←</p>
SOT-143		<p>Voltage Code ←</p>

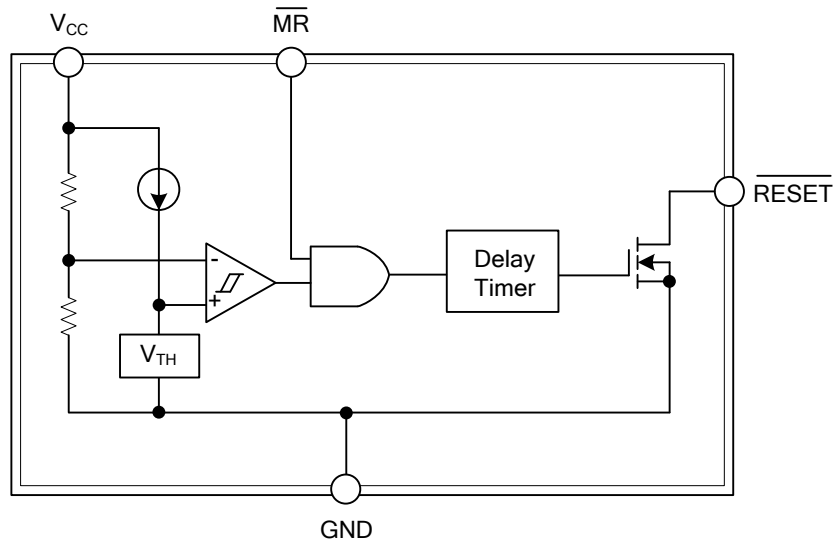
PIN CONFIGURATION



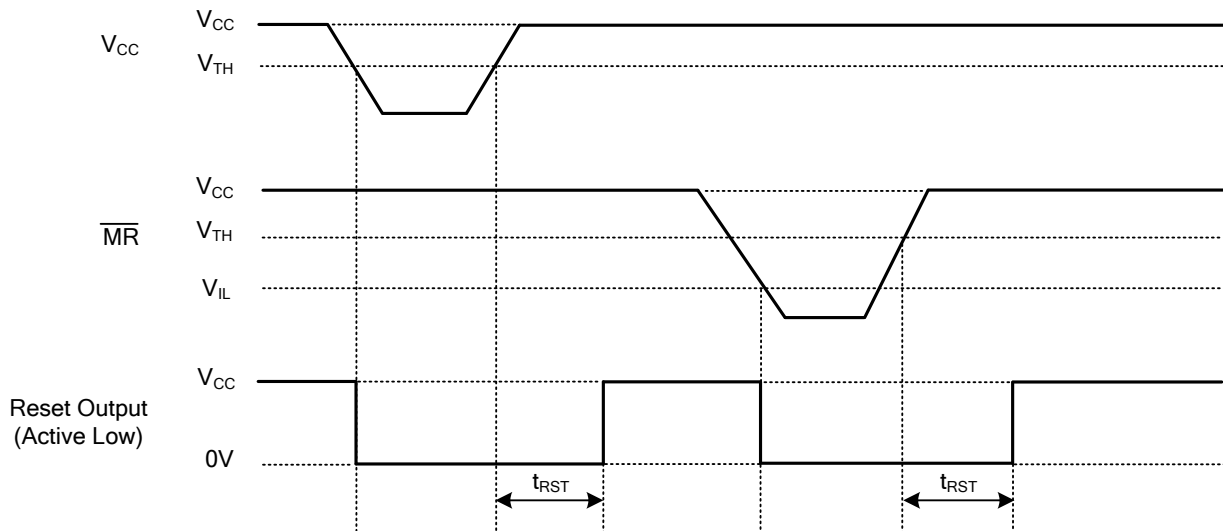
PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-23-5	SOT-143		
1	1	GND	Ground Pin.
2	-	NC	No Connection.
3	2	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$ Output remains low while V_{CC} is below the reset threshold, and for at least 140ms after V_{CC} rises above the reset threshold.
4	3	$\overline{\text{MR}}$	Manual Reset Input. A logic low on $\overline{\text{MR}}$ asserts reset. Reset remains asserted as long as $\overline{\text{MR}}$ is low and for at least 140ms after $\overline{\text{MR}}$ returns high. This active-low input has an internal 20kΩ pull-up resistor. It can be driven from a TTL or CMOS-logic line, or shorted to ground with a switch. Leave open if unused.
5	4	V_{CC}	Supply Voltage (+5V, +3.3V, +3.0V)

■ BLOCK DIAGRAM



■ FUNCTIONAL DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Terminal Voltage (with Respect to GND)	V_{CC}	-0.3~6.0	V
RESET (Open Drain)	V_{RESET}	-0.3~6.0	V
Input Current (V_{CC} , MR)	I_{IN}	20	mA
Output Current, RESET	I_{OUT}	20	mA
Continuous Power Dissipation ($T_A=25^\circ\text{C}$)	SOT-23-5	298	mW
	SOT-143	290	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Operating Temperature Range	T_{OPR}	-40 ~ +105	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-5	420	$^\circ\text{C}/\text{W}$
	SOT-143	430	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	180	$^\circ\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS

(V_{CC} = full range, $T_A=-40^\circ\text{C}\sim+105^\circ\text{C}$, unless otherwise noted. Typical values are at $T_A=+25^\circ\text{C}$) (Note 1)

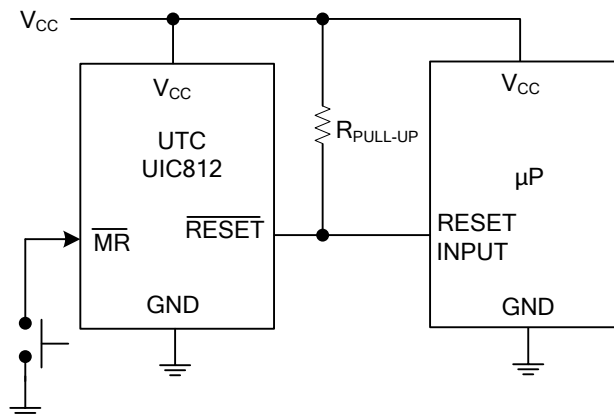
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
V_{CC} Range	V_{CC}	$T_A=0^\circ\text{C}\sim+70^\circ\text{C}$	1.00		5.5	V	
		$T_A=-40^\circ\text{C}\sim+105^\circ\text{C}$	1.20		5.5	V	
Supply Current	I_{CC}			5	20	μA	
Reset Threshold	V_{TH}	$V_{CC}=3\text{V}$	UIC812-A	2.59	2.63	2.69	V
		$V_{CC}=3.3\text{V}$	UIC812-B	2.88	2.93	3.00	V
			UIC812-C	3.02	3.08	3.15	V
			UIC812-D	3.93	4.00	4.08	V
		$V_{CC}=5\text{V}$	UIC812-E	4.31	4.38	4.47	V
			UIC812-F	4.54	4.63	4.72	V
Reset Threshold Tempco	V_{TH}			70		ppm/ $^\circ\text{C}$	
V_{CC} to Reset Delay (Note 2)		$V_{CC}=V_{TH}\sim(V_{TH}-100\text{mV})$		15			
Reset Active Timeout Period	t_{RST}	$V_{CC}=V_{TH}$ max	140	240	560	ms	
MR Minima Pulse Width	t_{MR}			10		μs	
MR Glitch Immunity (Note 3)				100		ns	
MR to Reset Propagation Delay (Note 2)	t_{MD}			0.5		μs	
MR Input Threshold	V_{IH}	$V_{CC}>V_{TH(max)}$	$0.6\times V_{CC}$	$0.7\times V_{CC}$		V	
	V_{IL}			$0.2\times V_{CC}$	$0.3\times V_{CC}$	V	
MR Pull-Up Resistance			10	21	30	$\text{K}\Omega$	
RESET Output Current Low (and Open- Drain Active-Low)	I_{OL}	$V_{CC}=2.5\text{V}$, $V_{RESET}=0.5\text{V}$	6			mA	
RESET Open-Drain Output Leakage Current		$V_{CC}>V_{TH}$, RESET deasserted			1	μA	

Notes: 1. Production testing done at $T_A=+25^\circ\text{C}$; limits over temperature guaranteed by design.

2. RESET output is for UTC UIC812

3. "Glitches" of 100ns or less typically will not generate a reset pulse.

■ **TYPICAL APPLICATION CIRCUIT**



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