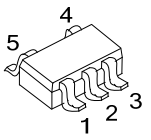
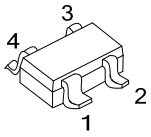
4-PIN µP VOLTAGE MONITORS WITH MANUAL RESET INPUT



SOT-23-5
(JEDEC TO-236)



SOT-143

■ DESCRIPTION

The UTC **UIC812** is microprocessor (µP) supervisory circuits used to monitor the power supplies in µP 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 230ms 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 $\overline{RESET}$ output stage, The UTC **UIC812's** open-drain $\overline{RESET}$ 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 $\overline{RESET}$ Output
* Typical supply current: 5µA
* 230 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

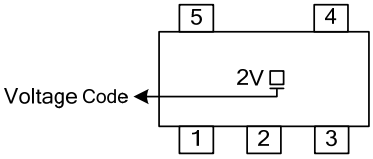
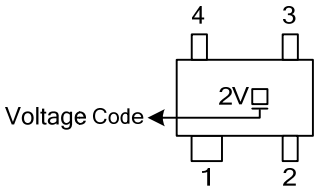
Ordering Number	Package	Pin Assignment					Packing
		1	2	3	4	5	
UIC812G-x-AE5-R	SOT-23-5	GND	NC	$\overline{RESET}$	$\overline{MR}$	V_{CC}	Tape Reel
UIC812G-x-AD4-R	SOT-143	GND	$\overline{RESET}$	$\overline{MR}$	V_{CC}	-	Tape Reel

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

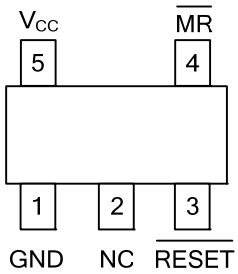
UIC812G-x-AE5-R
(1) Packing Type
(2) Package Type
(3) Output Voltage Code
(4) Green Package

(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

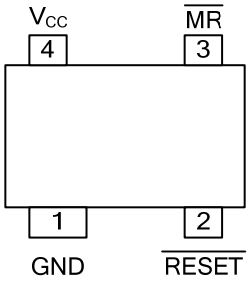
■ MARKING INFORMATION

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	
SOT-143		

■ PIN CONFIGURATION



SOT-23-5

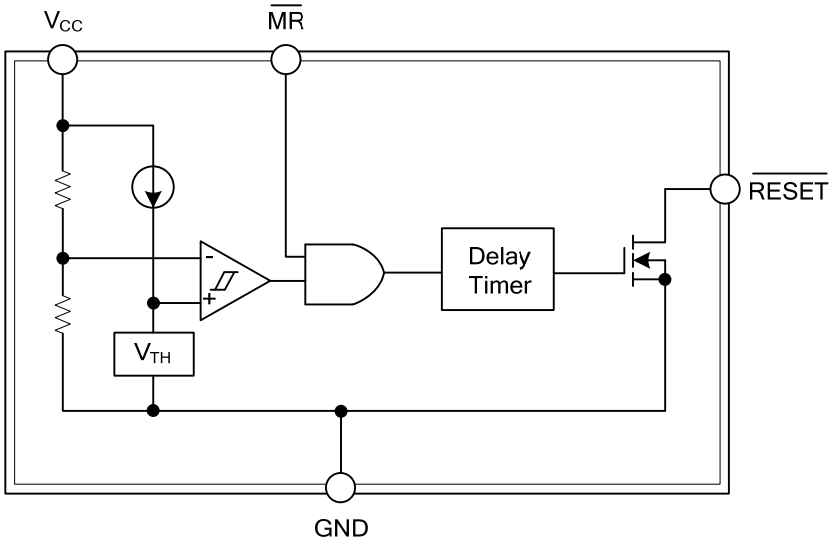


SOT-143

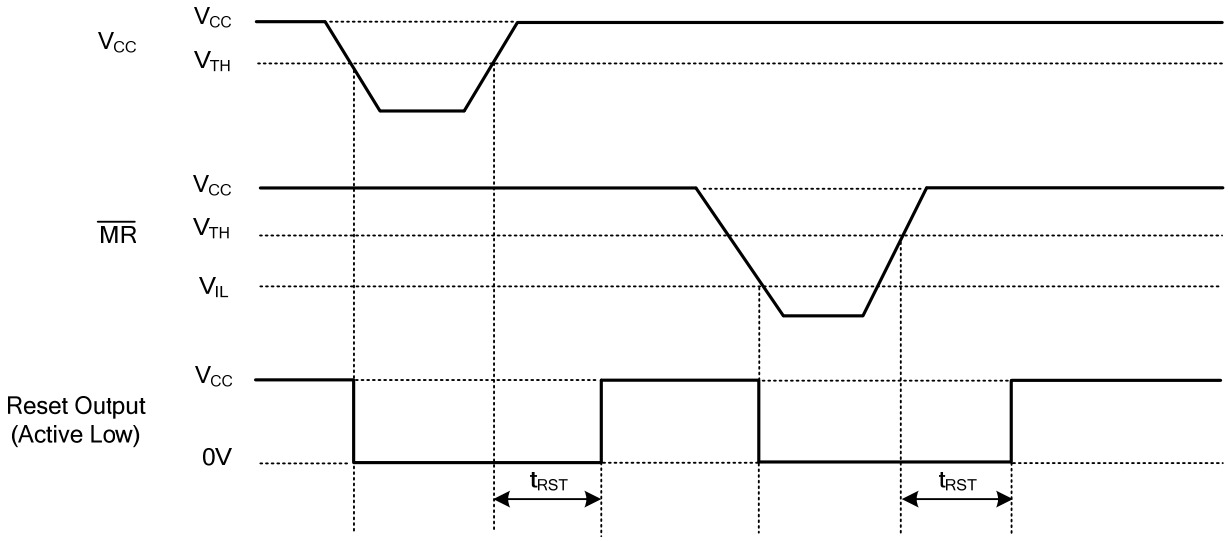
■ PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-23-5	SOT-143		
1	1	GND	Ground Pin.
2	-	NC	No Connection.
3	2	$\overline{RESET}$	$\overline{RESET}$ Output remains low while V_{CC} is below the reset threshold, and for at least 230ms after V_{CC} rises above the reset threshold.
4	3	$\overline{MR}$	Manual Reset Input. A logic low on $\overline{MR}$ asserts reset. Reset remains asserted as long as $\overline{MR}$ is low and for at least 230ms after $\overline{MR}$ 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
$\overline{RESET}$ (Open Drain)		V_{RESET}	-0.3~6.0	V
Input Current (V_{CC}, MR)		I_{IN}	20	mA
Output Current, $\overline{RESET}$		I_{OUT}	20	mA
Continuous Power Dissipation (T_A=25°C)	SOT-23-5	P_D	298	mW
	SOT-143		290	mW
Junction Temperature		T_J	150	°C
Operating Temperature Range		T_{OPR}	-40~105	°C
Storage Temperature Range		T_{STG}	-65~+150	°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	θ_{JA}	420	°C/W
	SOT-143		430	°C/W
Junction to Case	SOT-23-5/SOT-143	θ_{JC}	180	°C/W

■ ELECTRICAL CHARACTERISTICS

(V_{CC}= full range, T_A=-40°C~+105°C, unless otherwise noted. Typical values are at T_A=+25°C) (Note 1)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
V_{CC} Range	V_{CC}	T_A=0°C~+70°C		1.00		5.5	V
		T_A=-40°C~+105°C		1.20		5.5	V
Supply Current	I_{CC}				5	20	μA
Reset Threshold	V_{TH}	V_{CC}=3V	UIC812-A	2.59	2.63	2.69	V
		V_{CC}=3.3V	UIC812-B	2.88	2.93	3.00	V
			UIC812-C	3.02	3.08	3.15	V
		V_{CC}=5V	UIC812-D	3.93	4.00	4.08	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/°C
V_{CC} to Reset Delay (Note 2)		V_{CC}=V_{TH}~(V_{TH} -100mV)			15		
Reset Active Timeout Period	t_{RST}	V_{CC}=V_{TH} max		230	440	510	ms
$\overline{MR}$ Minima Pulse Width	t_{MR}				10		μs
$\overline{MR}$ Glitch Immunity (Note 3)					100		ns
$\overline{MR}$ to Reset Propagation Delay (Note 2)	t_{MD}				0.5		μs
$\overline{MR}$ Input Threshold	V_{IH}	V_{CC}>$V_{TH(max)}$		0.6×V_{CC}	0.7×V_{CC}		V
	V_{IL}				0.2×V_{CC}	0.3×V_{CC}	V
$\overline{MR}$ Pull-Up Resistance				10	21	30	KΩ
$\overline{RESET}$ Output Current Low (and Open- Drain Active-Low)	I_{OL}	V_{CC}=2.5V, V$\overline{RESET}$ =0.5V		6			mA
$\overline{RESET}$ Open-Drain Output Leakage Current		V_{CC}>V_{TH}, $\overline{RESET}$ deasserted				1	μA

Notes: 1. Production testing done at T_A=+25°C; limits over temperature guaranteed by design.
2. $\overline{RESET}$ output is for UTC **UIC812**
3. "Glitches" of 100ns or less typically will not generate a reset pulse.

■ TYPICAL APPLICATION CIRCUIT