



UIC812Q

LINEAR INTEGRATED CIRCUIT

4-PIN μ P VOLTAGE MONITORS WITH MANUAL RESET INPUT

DESCRIPTION

The UTC **UIC812Q** 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 +3V, +3.3V, +5V, powered circuits. The UTC **UIC812Q** also provides a debounced manual reset input.

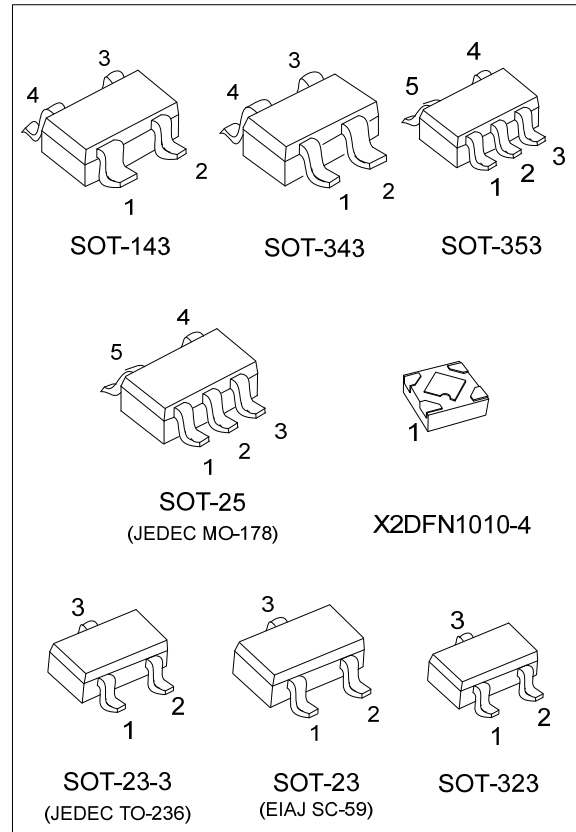
These circuits perform a single function: they assert a reset signal whenever the V_{CC} supply voltage declines below a preset threshold, keeping it asserted for at least 140 ms after V_{CC} has risen above the reset threshold. Reset thresholds suitable for operation with a variety of supply voltages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

The UTC **UIC812Q** has an active-low $\overline{\text{RESET}}$ output stage. The UTC **UIC812Q**'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 **UIC812Q** ideal for use in portable equipment.

FEATURES

- * Precision Monitoring of +3V, +3.3V and +5V Power-Supply Voltages
- * Typical supply current: 5 μ A
- * 140 mS Min Power-On Reset Pulse Width
- * Guaranteed Reset Valid to $V_{CC}=+1V$
- * Manual Reset Input
- * Open-Drain $\overline{\text{RESET}}$ Active Low Output



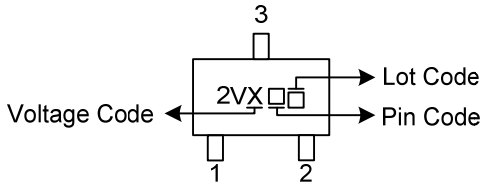
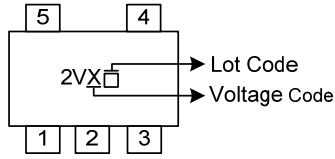
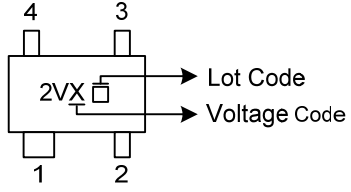
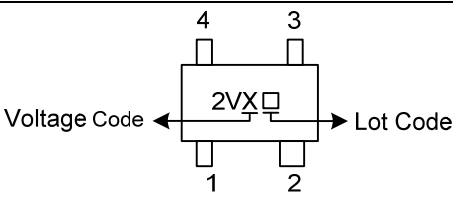
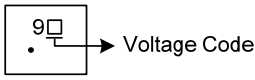
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UIC812QL-x-AD4-R	UIC812QG-x-AD4-R	SOT-143	GND	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	V_{CC}	-	Tape Reel
UIC812QL-x-AE2-2-R	UIC812QG-x-AE2-2-R	SOT-23-3	$\overline{\text{RESET}}$	V_{CC}	GND	-	-	Tape Reel
UIC812QL-x-AE2-3-R	UIC812QG-x-AE2-3-R	SOT-23-3	GND	$\overline{\text{RESET}}$	V_{CC}	-	-	Tape Reel
UIC812QL-x-AE2-5-R	UIC812QG-x-AE2-5-R	SOT-23-3	$\overline{\text{RESET}}$	GND	V_{CC}	-	-	Tape Reel
UIC812QL-x-AE3-2-R	UIC812QG-x-AE3-2-R	SOT-23	$\overline{\text{RESET}}$	V_{CC}	GND	-	-	Tape Reel
UIC812QL-x-AE3-3-R	UIC812QG-x-AE3-3-R	SOT-23	GND	$\overline{\text{RESET}}$	V_{CC}	-	-	Tape Reel
UIC812QL-x-AE3-5-R	UIC812QG-x-AE3-5-R	SOT-23	$\overline{\text{RESET}}$	GND	V_{CC}	-	-	Tape Reel
UIC812QL-x-AF5-R	UIC812QG-x-AF5-R	SOT-25	GND	NC	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	V_{CC}	Tape Reel
UIC812QL-x-AL3-3-R	UIC812QG-x-AL3-3-R	SOT-323	GND	$\overline{\text{RESET}}$	V_{CC}	-	-	Tape Reel
UIC812QL-x-AL4-R	UIC812QG-x-AL4-R	SOT-343	GND	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	V_{CC}	-	Tape Reel
UIC812QL-x-AL5-R	UIC812QG-x-AL5-R	SOT-353	GND	NC	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	V_{CC}	Tape Reel
UIC812QL-x-K04-1010X2-R	UIC812QG-x-K04-1010X2-R	X2DFN1010-4	$\overline{\text{RESET}}$	$\overline{\text{MR}}$	GND	V_{CC}	-	Tape Reel

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

<p>UIC812QG-x-AE2-2-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Pin Assignment (3) Package Type (4) Output Voltage Code (5) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) refer to Pin Assignment (3) AD4: SOT-143, AE2: SOT-23-3, AE3: SOT-23, AF5: SOT-25, AL3: SOT-323, AL4: SOT-343, AL5: SOT-353, K04-1010X2: X2DFN1010-4 (4) x: Refer to Marking Information (5) G: Halogen Free and Lead Free, L: Lead Free
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-23 SOT-23-3 SOT-323	N: 2.25V A: 2.63V B: 2.93V C: 3.08V D: 4.00V E: 4.38V F: 4.63V J: 5.00V	
SOT-25 SOT-353		
SOT-143		
SOT-343		
X2DFN1010-4		

■ PIN CONFIGURATION

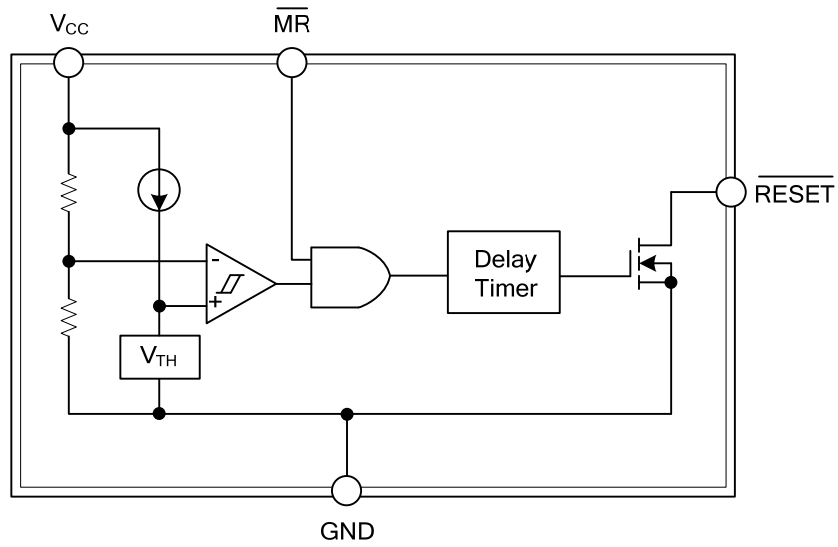
SOT-143	SOT-343	SOT-25 / SOT-353	X2DFN1010-4
			<p>(TOP VIEW)</p>

SOT-23-3 / SOT-23 / SOT-323		
AE2-2 / AE3-2	AE2-3 / AE3-3 / AL3	AE2-5 / AE3-5

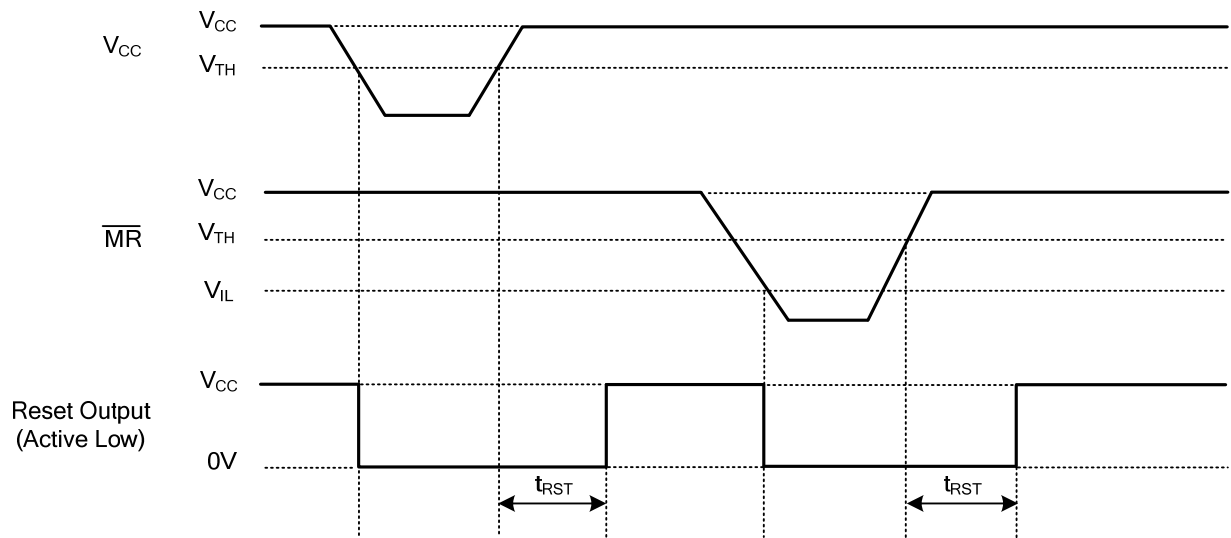
■ PIN DESCRIPTION

PIN NAME	DESCRIPTION
GND	Ground.
NC	No Connection.
$\overline{\text{RESET}}$	$\overline{\text{RESET}}$ Output remains low while V_{CC} is below the reset threshold, and for at least 140ms after V_{CC} rises above the reset threshold.
$\overline{\text{MR}}$	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 20k Ω 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. For 4 Pin, 5 Pin Packing only.
V_{CC}	Input of power supply.

■ BLOCK DIAGRAM



■ FUNCTIONAL DIAGRAM



■ ABSOLUTE MAXIMUM RATING

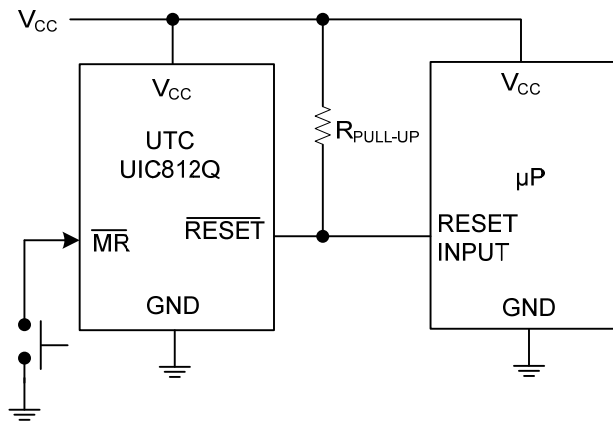
PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{CC}	-0.3 ~ +6.0	V
RESET (Open Drain)		V_{RESET}	-0.3 ~ +6.0	V
Input Current (V_{CC} , MR)		I_{IN}	20	mA
Output Current, RESET		I_{OUT}	20	mA
Power Dissipation ($T_A=70^\circ\text{C}$)	SOT-23-3/SOT-23	P_D	300	mW
	SOT-25		350	mW
	SOT-143		320	mW
	SOT-323		200	mW
	SOT-343		250	mW
	SOT-353		260	mW
	X2DFN1010-4		500 (Note3)	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	$^\circ\text{C}$

- Notes: 1. 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.
 2. The device is not guaranteed to function outside its operating rating.
 3. Heat Sink Area of PCB for X2DFN1010-4 is recommended at least 2.5mmx4mm.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Operating Voltage Range	V_{CC}		1.0		5.5	V	
Supply Current	I_{CC}				20	μA	
Reset Voltage Threshold	V_{TH}	$V_{CC}=3\text{V}$	UIC812Q-N	2.19	2.25	2.31	V
			UIC812Q-A	2.56	2.63	2.70	V
		$V_{CC}=3.3\text{V}$	UIC812Q-B	2.85	2.93	3.01	V
			UIC812Q-C	3.00	3.08	3.16	V
			UIC812Q-D	3.90	4.00	4.10	V
		$V_{CC}=5\text{V}$	UIC812Q-E	4.26	4.38	4.50	V
			UIC812Q-F	4.50	4.63	4.76	V
$V_{CC}=5.5\text{V}$	UIC812Q-J	4.85	5.00	5.15	V		
Reset Timeout Period	t_{RST}		140	240	560	ms	
MR Input Threshold	V_{IH}		$0.7 \times V_{CC}$			V	
	V_{IL}				$0.25 \times V_{CC}$	V	
MR Minimum Pulse Width			10			μs	
MR to Reset Delay				0.5		μs	
MR Pull-Up Resistance			10	20	40	$\text{K}\Omega$	
MR Glitch Immunity				100		ns	
RESET Output Current Low (and Open- Drain Active-Low)	I_{OL}	$V_{CC} < V_{TH(\text{min})}$, $\overline{V_{RESET}} = 0.5\text{V}$	6			mA	
RESET Open-Drain Output Leakage Current		$V_{CC} > V_{TH}$, $\overline{V_{RESET}}$ deasserted			1	μA	

■ TYPICAL APPLICATION CIRCUIT



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