

## Features

- Precision voltage monitor: 2.32 V(CBM811Z/812Z) / 2.63 V (CBM811R/812R) / 2.93 V (CBM811S/812S) /3.08 V (CBM811T/812T) / 4.38 V (CBM811M/812M) / 4.63 V (CBM811L/812L)
- Low power consumption: 5 $\mu$ A typical
- Reset assertion down to 1 V<sub>CC</sub>
- Power-on reset: 140 ms minimum
- Logic low RESET output (CBM811)
- Logic high RESET output (CBM812)
- Built-in manual reset

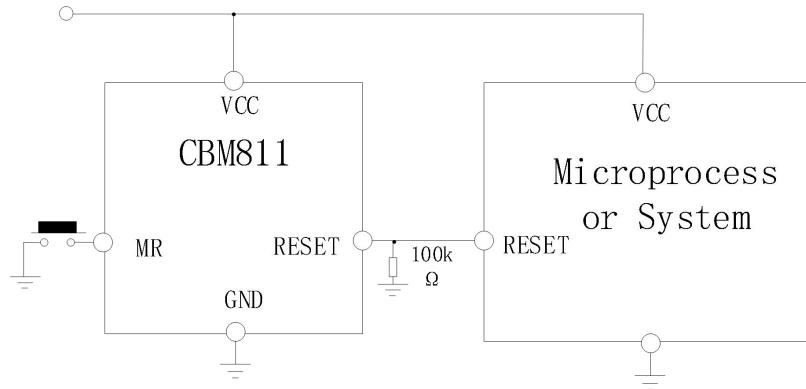
## Application

- Microprocessor systems
- Controllers
- Intelligent instruments
- Automotive systems
- Safety systems
- Portable instruments

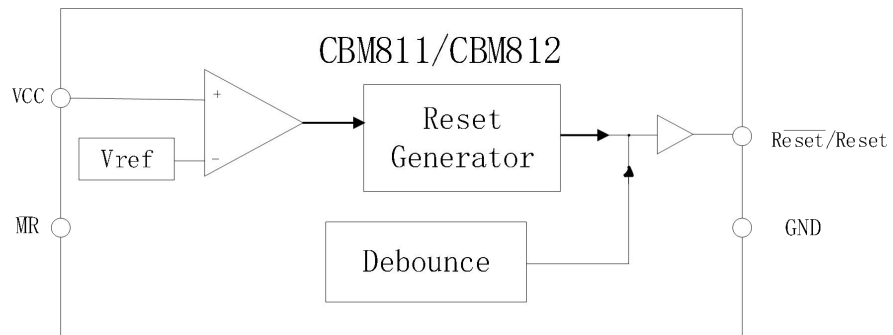
## Description

The CBM811/CBM812 are reliable voltage monitoring devices suitable for use in most voltage monitoring applications. The CBM811/CBM812 are designed to monitor six different voltages. These voltages have been selected for the effective monitoring of 2.5 V, 3 V, 3.3 V, and 5 V supply voltage levels.

Included in this circuit is a debounced manual reset input. Reset can be activated using an electrical switch (or an input from another digital device) or by a degradation of the supply voltage. The manual reset function is very useful, especially if the circuit in which the CBM811/CBM812 are operating enters into a state that can only be detected by the user. Allowing the user to reset a system manually can reduce the damage or danger that could otherwise be caused by an out-of-control or locked system.



**Typical CBM811 Operating Circuit**

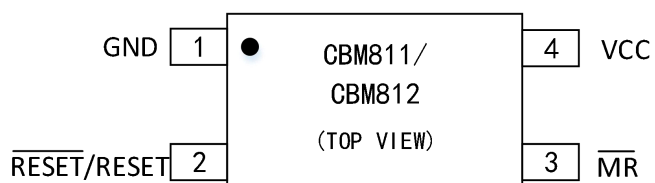


**Functional Block Diagram**

## Catalog

Features.....	1
Application.....	1
Description.....	1
Catalog.....	3
Pin Configurations.....	4
Absolute Maximum Ratings <sup>(1)</sup> .....	5
Electrical Characteristics.....	6
Typical Characteristics.....	8
Application Notes.....	9
Package Outline Dimensions.....	11
SOT-143-4.....	11
Package/Ordering Information.....	12

## Pin Configurations



**CBM811/CBM812 Pin Configuration**

### Pin Decsription

Pin No.	Pin Name	Description
1	GND	Ground Reference,0V
2	$\overline{\text{RESET}}$	Active Low Logic Output.
	RESET	Active High Logic Output.
3	$\overline{\text{MR}}$	Manual Reset.
4	V <sub>CC</sub>	Monitored Supply Voltage of 2.5 V, 3 V, 3.3 V, or 5 V.

## Absolute Maximum Ratings <sup>(1)</sup>

- Terminal Voltage (With Respect to Ground)  
 $V_{CC}$  : -0.3 V to +6 V  
All Other Inputs : -0.3 V to  $V_{CC} + 0.3$  V
- $V_{CC}$  Input Current : 20 mA  
 $\overline{MR}$  Input Current : 20 mA
- RESET Output Current : 20 mA
- Power Dissipation ( $T_A = 70^\circ\text{C}$ )  
(SOT-143) : 200 mW
- Derate by 4 mW/ $^\circ\text{C}$  Above  $70^\circ\text{C}$   
 $\theta_{JA}$  Thermal Impedance :  $330^\circ\text{C}/\text{W}$
- Operating Temperature Range :  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Storage Temperature Range :  $-65^\circ\text{C}$  to  $+160^\circ\text{C}$
- Lead Temperature (Soldering, 10 sec) :  $300^\circ\text{C}$   
Vapor Phase (60 sec) :  $215^\circ\text{C}$   
Infrared (15 sec) :  $220^\circ\text{C}$
- ESD Rating : 3 kV

## Electrical Characteristics

( $V_{CC}$  = full operating range;  $T_A$  =  $T_{MIN}$  to  $T_{MAX}$ ;  $V_{CC}$  typical = 5 V for L/M models, 3.3 V for T/S models, 3 V for R model, 2.5 V for Z models, unless otherwise noted.)

PARAMETER	CONDITION	CBMG708,CBMG709			
		MIN	TYP	MAX	UNIT
<b>Supply</b>					
Voltage		1.0		5.5	V
Current			8	15	$\mu$ A
<b>Reset Voltage Threshold</b>					
CBM811L/CBM812L	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	4.54	4.63	4.72	V
CBM811L/CBM812L	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	4.50		4.75	V
CBM811M/CBM812M	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	4.30	4.38	4.46	V
CBM811M/CBM812M	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	4.25		4.50	V
CBM811T/CBM812T	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	3.03	3.08	3.14	V
CBM811T/CBM812T	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	3.00		3.15	V
CBM811S/CBM812S	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	2.88	2.93	2.98	V
CBM811S/CBM812S	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	2.85		3.00	V
CBM811R/CBM812R	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	2.58	2.63	2.68	V
CBM811R/CBM812R	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	2.55		2.70	V
CBM811Z/CBM812Z	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	2.28	2.32	2.35	V
CBM811Z/CBM812Z	$T_A = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	2.25		2.38	V
<b>RESET ACTIVE TIMEOUT PERIOD</b>	$V_{CC}=V_{TH(MAX)}$	140		560	ms
<b>Manual Reset</b>					
Minimum Pulse Width		10			$\mu$ s
Glitch Immunity			100		ns
$\overline{\text{RESET}}/\text{RESET}$ Propagation Delay			0.5		$\mu$ s
Pull-Up Resistance		10	20	30	k $\Omega$
The Manual Reset Circuit Acts On					
An Input Rising Above		2.3			V
An Input Falling Below				0.8	V
An Input Rising Above		$0.7 \cdot V_{CC}$			V

An Input Falling Below				$0.25 \times V_{CC}$	
<b>RESET/RESET Output Voltage</b>					
Low Voltage Output	$I_{SINK}=1.2mA$			0.3	V
High Voltage Output	$I_{SOURCE}=500\mu A$	$0.8 \times V_{CC}$			V

## Typical Characteristics

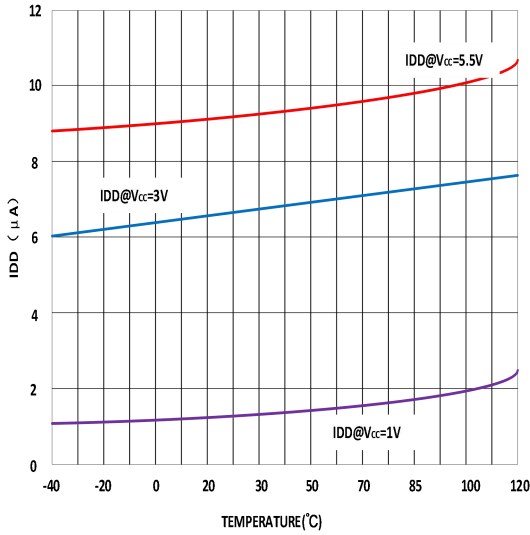


Figure1. Supply Current vs. Temperature

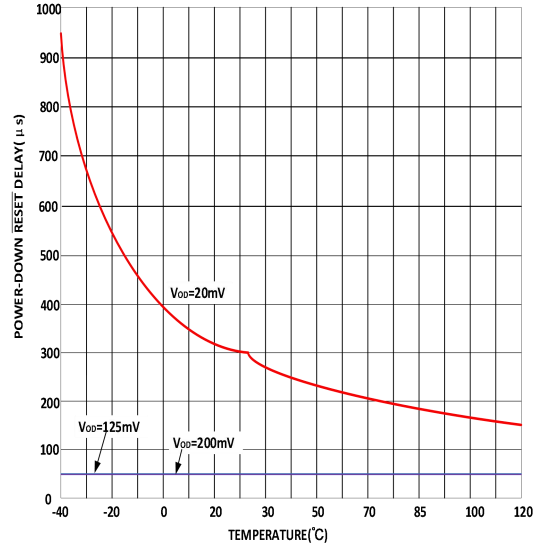


Figure2. Power-Down RESET Delay vs. Temperature

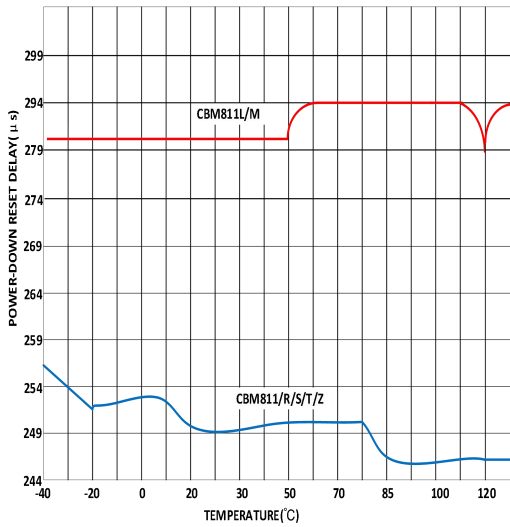


Figure3. Power-Up RESET Timeout vs. Temperature

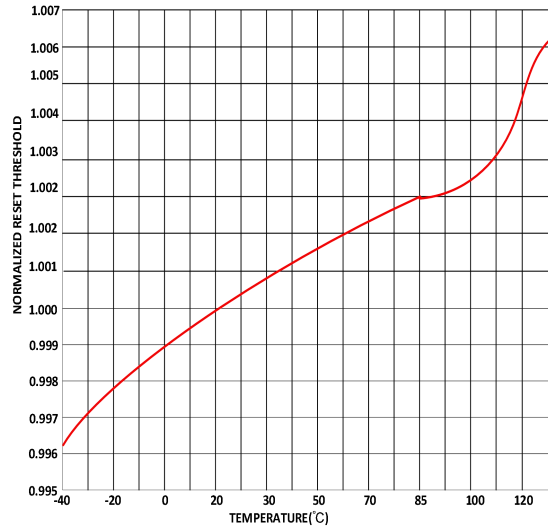


Figure4. RESET Threshold Deviation vs. Temperature



## Circuit Notes

A reset output is provided to the microprocessor whenever the VCC input is below the reset threshold. The actual reset threshold depends on whether an L, M, T, S, R, or Z suffix is used as follows:

Model Reset	Threshold (V)
CBM811L	4.63
CBM811M	4.38
CBM811T	3.08
CBM811-3T	3.08
CBM811S	2.93
CBM811R	2.63
CBM811Z	2.32
CBM812L	4.63
CBM812M	4.38
CBM812T	3.08
CBM812S	2.93
CBM812R	2.63
CBM812Z	2.32

## Reset Output

On power-up and after VCC rises above the reset threshold, an internal timer holds the reset output active for 240 ms (typical). This is intended as a power-on reset signal for the processor. It allows time for both the power supply and the microprocessor to stabilize after power-up. If a power supply brownout or interruption occurs, the reset output is similarly activated and remains active for 240 ms (typical) after the supply recovers. This allows time for the power supply and microprocessor to stabilize. The CBM811 provides an active low reset output (RESET) while the CBM812 provides an active high output (RESET). During power-down of the CBM811, the RESET output remains valid (low) with VCC as low as 1 V. This ensures that the microprocessor is held in a stable shutdown condition as the supply falls and also ensures that no spurious activity can occur via the microprocessor as it powers up.

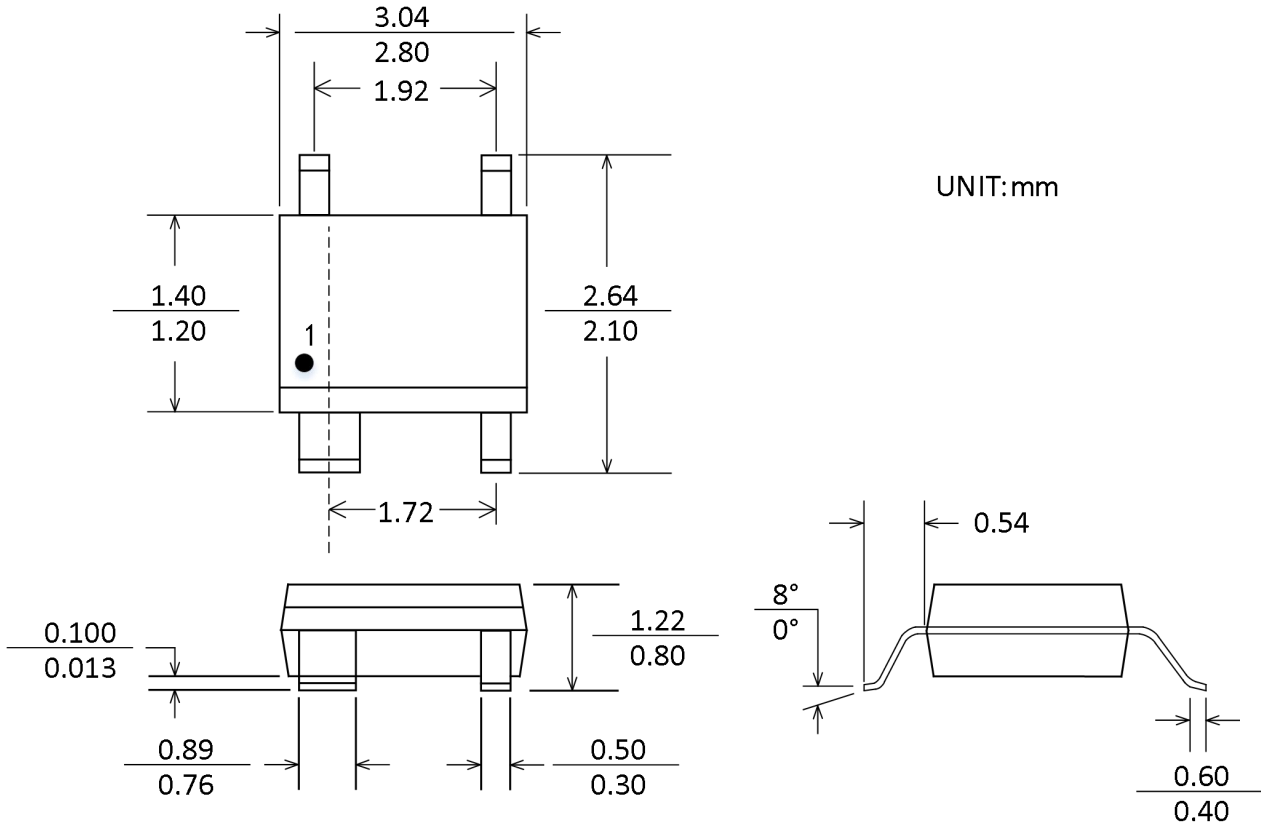
## **Manual Reset**

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The CBM811/CBM812 are equipped with a manual reset input. This input is designed to operate in a noisy environment where unwanted glitches could be induced. These glitches could be produced by the bouncing action of a switch contact, or where a manual reset switch may be located some distance away from the circuit (the cabling of which can pick up noise). The manual reset input is guaranteed to ignore logically valid inputs that are faster than 100 ns and to accept inputs longer induration than 10  $\mu$ s.

## Package Outline Dimensions

### SOT143-4



## Package/Ordering Information

PRODUCT TYPE	OPERATING TEMPERATURE	PACKAGE	PACKAGE MARKING	NUMBER OF PACKAGES
CBM811LST4	-40°C~85°C	SOT143-4	M1L	Tape and Reel, 3000
CBM811MST4	-40°C~85°C	SOT143-4	M1M	Tape and Reel, 3000
CBM811TST4	-40°C~85°C	SOT143-4	M1T	Tape and Reel, 3000
CBM811TST4-3.0	-40°C~85°C	SOT143-4	T13	编带和卷盘,每卷 3000
CBM811SST4	-40°C~85°C	SOT143-4	M1S	Tape and Reel, 3000
CBM811RST4	-40°C~85°C	SOT143-4	M1R	Tape and Reel, 3000
CBM811ZST4	-40°C~85°C	SOT143-4	M1Z	Tape and Reel, 3000
CBM812LST4	-40°C~85°C	SOT143-4	M2L	Tape and Reel, 3000
CBM812MST4	-40°C~85°C	SOT143-4	M2M	Tape and Reel, 3000
CBM812TST4	-40°C~85°C	SOT143-4	M2T	Tape and Reel, 3000
CBM812SST4	-40°C~85°C	SOT143-4	M2S	Tape and Reel, 3000
CBM812RST4	-40°C~85°C	SOT143-4	M2R	Tape and Reel, 3000
CBM812ZST4	-40°C~85°C	SOT143-4	M2Z	Tape and Reel, 3000