GSR811
Reset IC

Product Description

The GSR811 are 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 +3.3V, +3.0V, or 2.5V powered circuits.

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

The GSR811 have push-pull outputs and have an active-low /RESET output. The reset comparator is designed to ignore fast transients on V_{CC}, and the outputs are guaranteed to be in the correct logic state for V_{CC} down to 1V. Low supply current makes the GSR811 ideal for use in portable equipment. The ICs are available in SOT-143 packages.
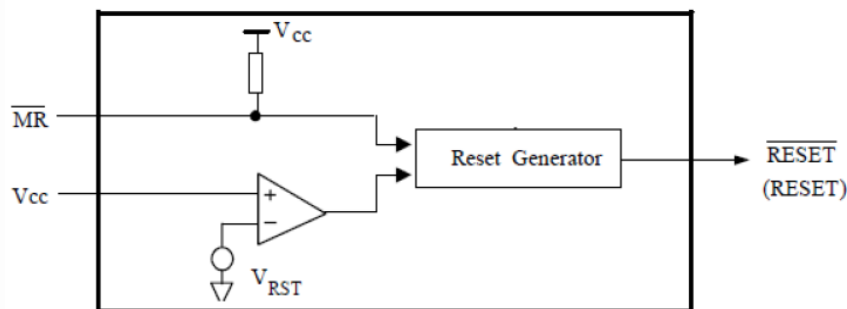
Features

- Precision supply-voltage monitor
  - 4.30V (GSR811M)
  - 4.00V (GSR811J)
  - 3.08V (GSR811T)
  - 2.93V (GSR811S)
  - 2.63V (GSR811R)
  - 2.32V (GSR811Z)
  - 1.5V~2.2V (Contact us)
- 140ms(min) reset pulse width
- Push-Pull /RESET Output Configurations
- Debounced CMOS-compatible manual-reset input
- 12µA Supply Current
- Guaranteed Reset(/Reset) Valid to V_{CC}=+1.0V
- Power Supply Transient Immunity
- No External Components
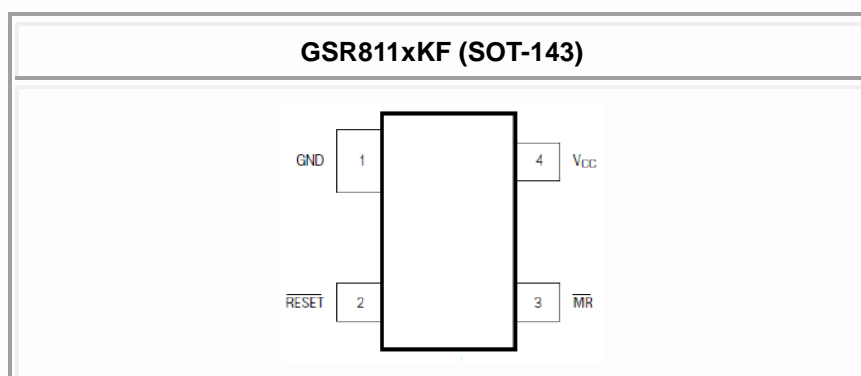- RoHS Compliant, 100%Pb & Halogen Free

Applications

- Microprocessor reset circuitry
- Computers & Wireless
- Embedded Control Systems
- Battery-operated systems

Block Diagram

Packages & Pin Assignments (Top View)

GSR811xKF (SOT-143)

Pin Description

| Name	Type	Description
V_{CC}	-	Supply Voltage. Reset is asserted when V_{CC} drops below the Reset Threshold Voltage (V_{RST}). Reset remains asserted until V_{CC} rises above V_{RST} and keep asserted for the duration of the Reset Timeout Period (t_{RS}) once V_{CC} rises above V_{RST}.
GND	-	Ground Pin.
/RESET	O	Active-Low Reset Output (Push-Pull). It goes low when V_{CC} is below the reset threshold. It remains low for about 200ms after V_{CC} rises above the reset threshold (V_{RST}).
/MR	I	Manual-Reset: (CMOS). Active low. Pull low to force a reset. Reset remains asserted for the duration of the Reset Timeout Period after MR transitions from low to high. Leave unconnected or connected to V_{CC} if not used.

Ordering Information
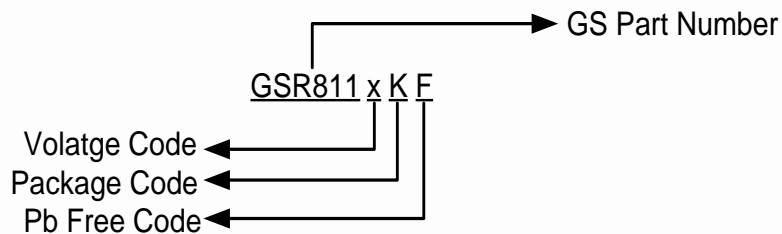
Voltage Code : As following Table :

x	M	J	T	S	R	Z
Reset Threshold	4.30V	4.00V	3.08V	2.93V	2.63V	2.32V

Marking Information
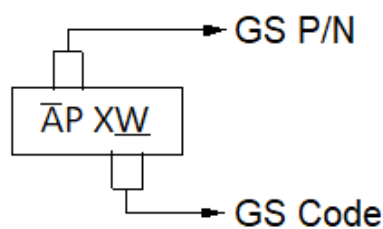
GS P/N	Package	Marking	Reset Threshold
GSR811MKF	SOT-143	APXW	4.30V
GSR811JKF	SOT-143	AUXW	4.00V
GSR811TKF	SOT-143	AQXW	3.08V
GSR811SKF	SOT-143	ARXW	2.93V
GSR811RKF	SOT-143	ASXW	2.63V
GSR811ZKF	SOT-143	ATXW	2.32V

Note: Year and Work Week must use the actual time of molding process.

Functional Description

Reset Output

A microprocessor (µP) reset input starts the µP in a known state. Whenever the µP is in an unknown state, it should be held in reset. The supervisory circuits assert reset during power-up and prevent code execution errors during power-down or brownout conditions.

On power-up, once V_{CC} reaches about 1.0V, /RESET is a guaranteed logic low of 0.4V or less. As V_{CC} rises, /RESET stays low. When V_{CC} rises above the reset threshold, an internal timer releases /RESET after about 200ms. /RESET pulses low whenever V_{CC} drops below the reset threshold, i.e. brownout condition. If brownout occurs in the middle of a previously initiated reset pulse, the pulse continues for at least another 200ms. On power-down, once V_{CC} falls below the reset threshold, /RESET stays low and is guaranteed to be 0.4V or less until V_{CC} drops below 1.0V. Reset timing diagram shows the timing relationship.

Manual Reset

The manual-reset input (MR) allows reset to be triggered by a push button switch. MR has an internal pull up resistor, so it can be left open when not used.

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage to Ground Potential	-0.3 to +6.0	V
-	All Other Pins Voltage	-0.3 to V_{CC}+0.3	V
I_{OUT}	Output Current	20	mA
P_D	Power Dissipation	320	mW
T_A	Operating Ambient Temperature Range	-40 to +85	ºC
T_{STG}	Storage Temperature Range	-55 to +150	ºC

Note: Stresses greater than those listed under maximum ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Recommended Operation Conditions

Symbol	Parameter	Min	Typ	Max	Unit
V_{CC}	Supply Voltage for GSR811(L/M)	4.5	5.0	5.5	V
	Supply Voltage for GSR811(T/S)	3.0	3.3	5.5	
	Supply Voltage for GSR811(R)	2.7	3.0	5.5	
T_A	Operating Ambient Temperature Range	-40	-	85	ºC

Reset Timing Diagram

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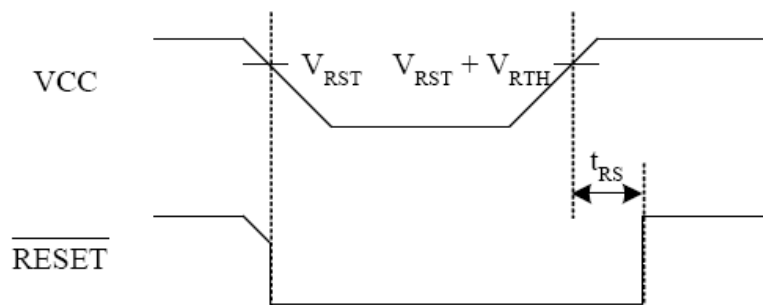
Electrical Characteristics

($V_{CC}=V_{RN}+5\%$ to 5.5V, T_A=-40 to 85ºC, unless otherwise noted.) (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	Operating Voltage Range	-	1.0	-	5.5	V
I_{CC}	Supply Current	V_{CC}<5.5V, GSR811(L/M)	-	10	30	µA
		V_{CC}<3.6V, GSR811(R/S/T/Z)	-	10	30	µA
V_{RST} (V_{RTH-})	Threshold Voltage (Falling Edge) Note 2	GSR811M, T_A=25ºC	V_{RN}-1.1%	V_{RN}	V_{RN}+1.1%	V
		All except GSR811M, T_A=25ºC	V_{RN}-1.5%	V_{RN}	V_{RN}+1.5%	
		GSR811M, T_A=-40 to 85ºC	V_{RN}-1.8%	V_{RN}	V_{RN}+2%	
		All except GSR811M, T_A=-40 to 85ºC	V_{RN}-2.5%	V_{RN}	V_{RN}+2.5%	
V_{RTH+}	Threshold Voltage (Rising-edge) (Note 2)	GSR811M, T_A=-40 to 85ºC	4.232	4.31	4.396	V
V_{RTH}	Reset Threshold Hysteresis (Note 2)	V_{CC} varies between V_{RN}±5% (Only for GSR811L/M)	-	50	-	mV
V_{OH}	Output High Voltage	$V_{CC}\geq$4.5V, I_{SOURCE}=800µA	V_{CC}-1.5	-	-	V
		$V_{CC}\geq$2.7V, I_{SOURCE}=500µA	0.8xV_{CC}	-	-	
		$V_{CC}\geq$1.8V, I_{SOURCE}=150µA	0.8xV_{CC}	-	-	
		$V_{CC}\geq$1.0V, I_{SOURCE}=4µA	0.8xV_{CC}	-	-	
V_{OL}	Output Low Voltage	$V_{CC}\geq$4.5V, I_{SINK}=3.2mA	-	-	0.4	V
		$V_{CC}\geq$2.7V, I_{SINK}=1.2mA	-	-	0.3	
		$V_{CC}\geq$1.0V, I_{SINK}=100µA	-	-	0.3	

Note: 1. Parameters of room temperature guaranteed by production test and parameters of full-temperature guaranteed by design.
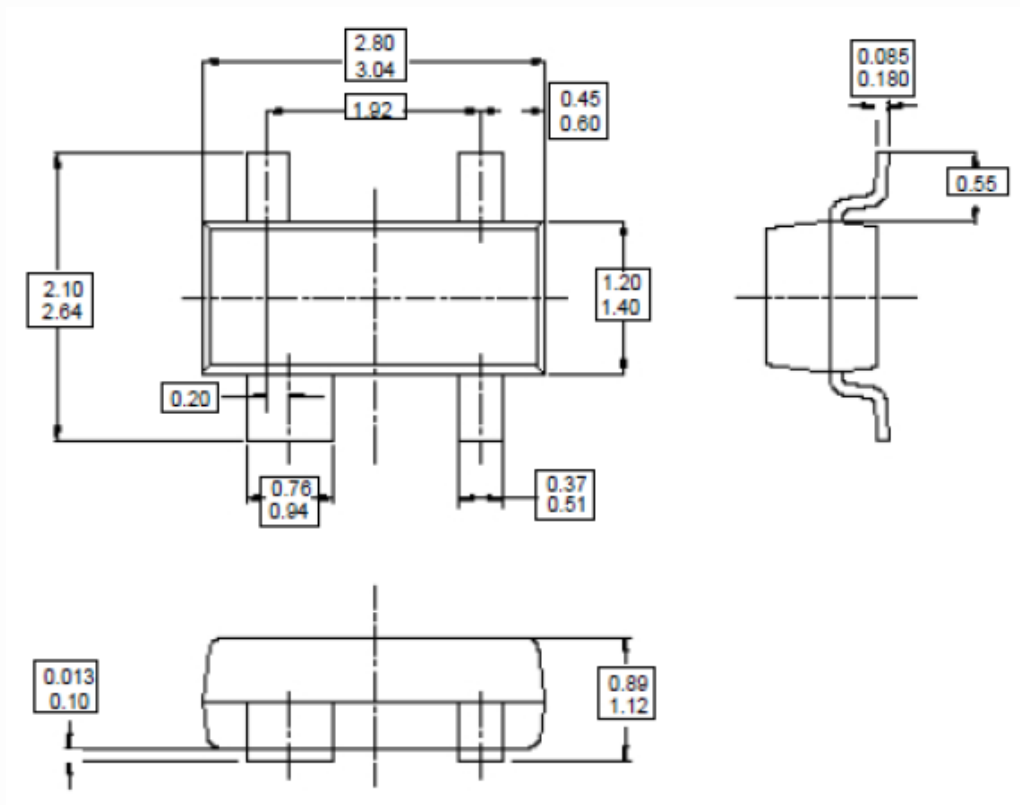2. V_{RST} is Reset threshold voltage when V_{CC} falls from high to low level. V_{RN} is nominal reset threshold voltage.

AC Electrical Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_{RS}	Reset Pulse Width	T_A=25ºC	140	200	280	ms
t_{MR}	MR Pulse Width	T_A=25ºC	1	-	-	µs

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Package Dimension

SOT-143 PLASTIC PACKAGE

Note:
1. Controlling dimensions in millimeters.
2. Dimensions are inclusive of plating.

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NOTICE

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