GSR803

Reset IC

Product Description

The GSR803 is microprocessor (μP) supervisory circuit used to monitor the power supplies in μP and digital systems. It provides excellent circuit reliability and low cost by eliminating external components and adjustments when used with +5V, +3.3V, +3.0V, or 2.5V powered circuits.

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

The GSR803 has an open-drain output stage and has an active-low $\overline{\text{RESET}}$ output which requires a pullup resistor that can be connected to V_{CC} or other supply. The reset comparator is designed to ignore fast transients on V_{CC}, and the output is guaranteed to be in the correct logic state for V_{CC} down to 1.15V within the range of the operating temperature .

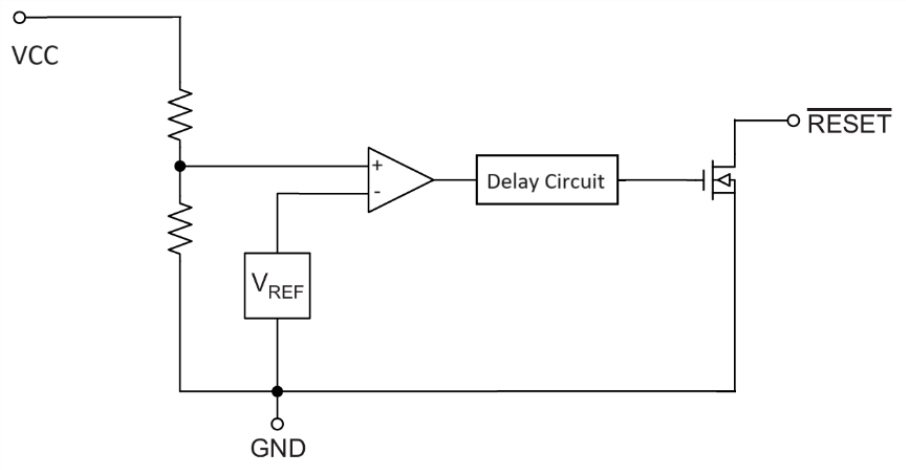
Features

- Precision monitoring of Supply Voltages
  – Available Threshold Options:
  - 4.63V (GSR803L)
  - 4.38V (GSR803M)
  - 4.00V (GSR803J)
  - 3.08V (GSR803T)
  - 2.93V (GSR803S)
  - 2.63V (GSR803R)
  - 2.32V (GSR803Z)
- 140ms Minimum Reset Pulse Width
- Open-Drain $\overline{\text{RESET}}$ Output
- 10μA Supply Current Typically
- Power Supply Transient Immunity
- RoHS Compliant

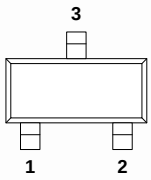
Applications

- Computers
- Controllers
- Intelligent Instruments
- Embedded Control Systems
- Battery-powered Equipment

Block Diagram



Packages & Pin Assignments

GSR803xZF (SOT-23)		
	**Pin No.**	**Name**
	1	**GND**
	2	**$\overline{\text{RESET}}$**
	3	**Vcc**

Pin Description

Name	Type	Description
Vcc	I	Supply Voltage.
GND	-	Ground Pin.
$\overline{\text{RESET}}$	O	Active-Low Reset Output (Open-Drain). $\overline{\text{RESET}}$ Output remains low while Vcc is below the reset threshold, and for at least 140ms after Vcc rises above the reset threshold.

Ordering and Marking Information

GS P/N	Package	Marking	Reset Threshold
*GSR803LZF	SOT-23	AODL	4.63V
*GSR803MZF	SOT-23	AODM	4.38V
*GSR803JZF	SOT-23	AODJ	4.00V
GSR803TZF	SOT-23	AODT	3.08V
GSR803SZF	SOT-23	AODS	2.93V
GSR803RZF	SOT-23	AODR	2.63V
*GSR803ZZF	SOT-23	AODZ	2.32V

★ Please contact a GS sales representative to inquire about production status.

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.3 to +6.0	V
$\overline{RESET}$	Output Pin	-0.3 to V_{CC}	V
I_{OUT}	Output Current	20	mA
$T_{J(MAX)}$	Maximum Junction Temperature	125	ºC
T_{STG}	Storage Temperature Range	-65 to +150	ºC
$R_{\theta JA}$	Junction-to-ambient thermal resistance	300	°C/W
P_D	Power Dissipation	320	mW
T_{SOD}	Lead temperature (Soldering, 10 s)	300	ºC
V_{ESD}	Human-body model (HBM)	2000	V
	Charged-device model (CDM)	200	V

Note: Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Value	Unit
T_A	Operating Temperature Range	-40 to +85	ºC

Electrical Characteristics

Over operating free-air temperature range (unless otherwise noted) (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	Operating Voltage Range	T_A=0℃ ~ +70℃	1.0	-	5.5	V
		T_A=-40℃ ~ +85℃	1.15	-	5.5	
I_{CC}	Supply Current (T_A=-40℃ ~ +85℃)	V_{CC}<5.5V, GSR803(L/M/J)	-	10	25	μA
		V_{CC}<3.6V, GSR803(T/S/R/Z)	-	8	25	μA
V_{TH}	GSR803L Reset Threshold Voltage	T_A=25ºC	4.54	4.63	4.72	V
		T_A=-40 to 85ºC	4.50	-	4.75	
	GSR803M Reset Threshold Voltage	T_A=25ºC	4.29	4.38	4.47	V
		T_A=-40 to 85ºC	4.25	-	4.50	
	GSR803J Reset Threshold Voltage	T_A=25ºC	3.92	4.00	4.08	V
		T_A=-40 to 85ºC	3.89	-	4.10	

Electrical Characteristics (Continued)

V_{TH}	GSR803T Reset Threshold Voltage	T_A=25ºC	3.01	3.08	3.15	V
		T_A=-40 to 85ºC	3.00	-	3.17	
	GSR803S Reset Threshold Voltage	T_A=25ºC	2.86	2.93	3.00	V
		T_A=-40 to 85ºC	2.85	-	3.01	
	GSR803R Reset Threshold Voltage	T_A=25ºC	2.56	2.63	2.69	V
		T_A=-40 to 85ºC	2.55	-	2.70	
	GSR803Z Reset Threshold Voltage	T_A=25ºC	2.26	2.32	2.37	V
		T_A=-40 to 85ºC	2.25	-	2.38	
-	Reset Threshold Temp Coefficient			30		ppm/ºC
-	V_{CC} to Reset Delay	V_{CC}= V_{TH} ~ (V_{TH}-100mV)		20		µs
t_{RS}	Reset Active Timeout Period	T_A=-40 to 85ºC	140	240	560	ms
V_{OH}	GSR803(L/M/J) Output High Voltage	V_{CC} > V_{TH} (max), I_{SOURCE} = 800µA	V_{CC}-1.5	-	-	V
	GSR803(T/S/R/Z) Output High Voltage	V_{CC} > V_{TH} (max), I_{SOURCE} = 500µA	0.8xV_{CC}	-	-	
V_{OL}	GSR803(L/M/J) Output Low Voltage	V_{CC} = V_{TH} (min), I_{SINK} = 3.2mA	-	-	0.4	V
	GSR803(T/S/R/Z) Output Low Voltage	V_{CC} = V_{TH} (min), I_{SOURCE} = 1.2mA	-	-	0.3	

Note 1: Production testing done at T_A = 25°C, over temperature limits specified by design only.

Application Information

Typical Application Circuit

The GSR803 is a supervisor circuit for microprocessor and digital systems. With a low supply current of only 10 µA is ideal for use in portable equipment.

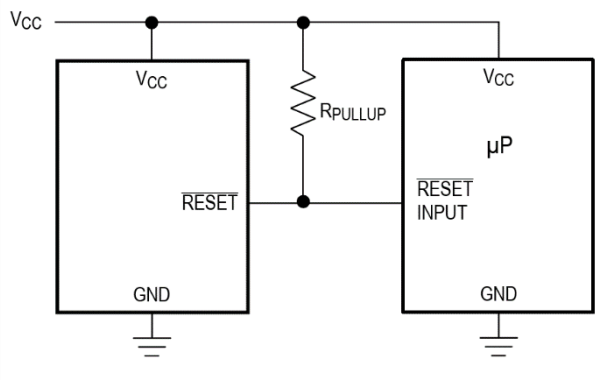


Figure. 1

Negative-Going VCC Transients

GSR803 is relatively immune to short negative-going transients or glitches on VCC. Figure 2 shows the maximum pulse width a negative-going VCC transient can have without causing a reset pulse. In general, as the magnitude of the transient increases, going further below the threshold, the maximum allowable pulse width decreases. Typically, for the 4.63V and 4.38V version of the GSR803, a VCC transient that goes 100 mV below the reset threshold and lasts 20 µs or less will not cause a reset pulse. A 0.1µF bypass capacitor mounted as close as possible to the VCC pin will provide additional transient rejection.

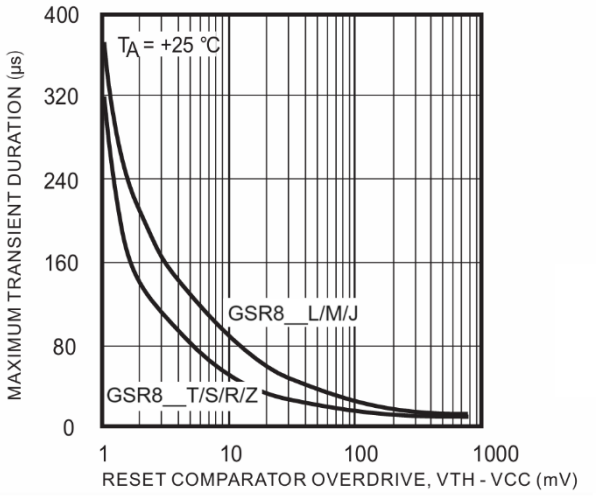


Figure. 2

Using with Multiple Supplies

Generally, the pullup connected to the GSR803 will connect to the supply voltage that is being monitored at the IC's VCC pin. However, some systems may use the open drain output to level-shift from the monitored supply to reset circuitry powered by some other supply (Figure 3). Note that as the GSR803's VCC decreases below 1.15V, so does the IC's ability to sink current at $\overline{\text{RESET}}$. Also, with any pullup, $\overline{\text{RESET}}$ will be pulled high as VCC decays toward 0. The voltage where this occurs depends on the pullup resistor value and the voltage to which it is connected.

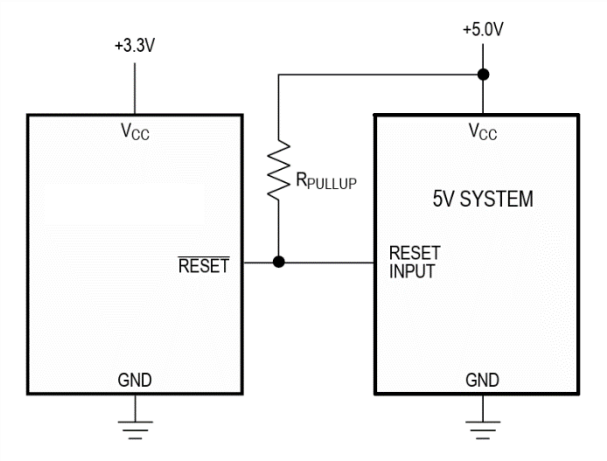


Figure. 3

Reference of Reset Curve

When Vcc supply voltage declines below the reset threshold, the active-low $\overline{\text{RESET}}$ output is Low.

When the Vcc supply voltage rises above the reset threshold, the active-low $\overline{\text{RESET}}$ output rises High after 240 ms typically.

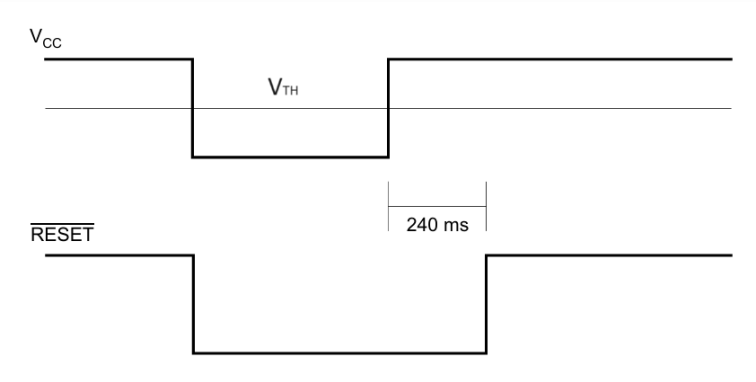
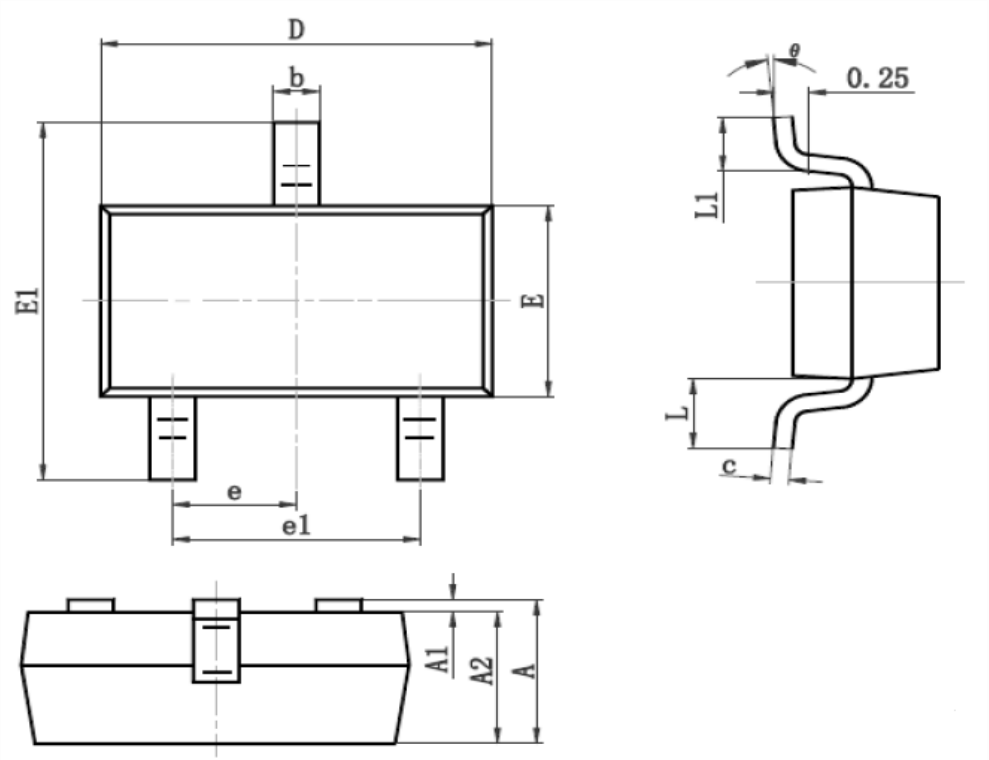


Figure. 4

Package Dimension

SOT-23-3L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 (TYP)		0.037 (TYP)	
e1	1.800	2.000	0.071	0.079
L	0.550 (REF)		0.022 (REF)	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
@	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587