● Description

The S-809 Series is a high-precision voltage detector with a delay circuit, which was developed using CMOS process technology. The release signal can be delayed by placing the condenser outside. The detector voltage is fixed internally with an accuracy of ± 2.0%. Two output forms are available, Nch opendrain and CMOS active low. Advantages over conventional detectors includes improved detection precision to preserve battery life and tighter hysteresis to allow the service life of the battery to be detected at two points - one to caution and the other to request indicated replacement. Lastly, the operating margin of power and the minimum operating voltage of the CPU are close, allowing excellent low voltage detection precision.

● Features

- Low current consumption 2.0μA typ (V_{DD} = 1.5V)
- High precision accuracy: ± 2.0%
- Minimum operating voltage 0.7V min
- Hysteresis width: 20mV typ ($-V_{DET}$ = 0.8V)
- Detection voltage range 0.8V - 1.8V (0.1V increments)
- 2 Output forms: Nch open drain and CMOS active "L"
- SOT-23-5 Package

● Applications

- Battery checker
- Microprocessor reset
- Power cut detector

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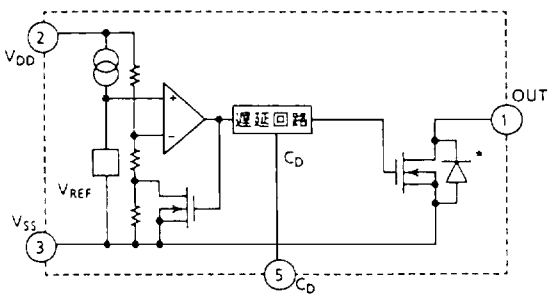
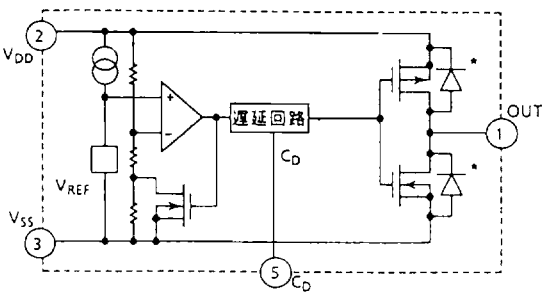
● Block Diagrams



Nch Opendrain



CMOS Active "L"

* In case (1) and (2), output is not delayed when it is detected.

● Product Selection

Detection Voltage Range (V)	Hysteresis width V_{HYS} typ (V)	Nch	CMOS (Low)
0.8V ± 2.0%	0.020	S-80908SNMP-D7Y-X	S-80908LMP-D5Y-X
0.9V ± 2.0%	0.026	S-80909SNMP-D7Z-X	S-80909LMP-D5Z-X
1.0V ± 2.0%	0.031	S-80910SNMP-D70-X	S-80910LMP-D50-X
1.1V ± 2.0%	0.037	S-80911SNMP-D71-X	S-80911LMP-D51-X
1.2V ± 2.0%	0.043	S-80912SNMP-D72-X	S-80912LMP-D52-X
1.3V ± 2.0%	0.049	S-80913SNMP-DDA-X	S-80913LMP-DAA-X
1.4V ± 2.0%	0.054	S-80914SNMP-DDB-X	S-80914LMP-DAB-X
1.5V ± 2.0%	0.060	S-80915SNMP-DDC-X	S-80915LMP-DAC-X
1.6V ± 2.0%	0.066	S-80916SNMP-DDD-X	S-80916LMP-DAD-X
1.7V ± 2.0%	0.071	S-80917SNMP-DDE-X	S-80917LMP-DAE-X
1.8V ± 2.0%	0.077	S-80918SNMP-DDF-X	S-80918LMP-DAF-X

● Ratings

(Unless otherwise specified: Ta = 25°C)

Parameter		Symbol	Rating
Power supply voltage		V_{DD} - V_{SS}	7V
Input voltage		V_{CD}	V_{SS} - 0.3V ~ V_{DD} + 0.3V
Output voltage	Opendrain	V_{OUT}	V_{SS} - 0.3V ~ V_{DD} + 7V
	CMOS		V_{SS} - 0.3V ~ V_{DD} + 0.3V
Output current		I_{OUT}	50mA
Power dissipation		P_d	150mW
Operating Temperature		T_{opr}	-20°C ~ 70°C
Storage Temperature		T_{stg}	-40°C ~ 125°C

● Electrical Characteristics

Unless otherwise specified: Ta = 25°C

Parameter	Symbol	Conditions	Min.	Typ.	Max.
Detection voltage	$-V_{DET}$		0.98 ($-V_{DET}$)	$-V_{DET}$	1.02 ($-V_{DET}$)
Release voltage	$+V_{DET}$		0.97 ($+V_{DET}$)	$+V_{DET}$	1.03 ($+V_{DET}$)
Hysteresis width	V_{HYS}		2% ($-V_{DET}$)	V_{HYS}	5% ($-V_{DET}$)
Current consumption	I_{SS}	V_{DD} = 1.5V	--	2.0μA	5.7μA
Operating voltage	V_{DD}		0.7V	--	5.0V
Output current	I_{OUT}	Nch, V_{DS} = 0.2V, V_{DD} = 0.7V	0.040mA	0.200mA	--
		CMOS, V_{DS} = 0.2V, V_{DD} = 3.0V	0.500mA	1.100mA	--
Leakage current	I_{LEAK}	Nch, V_{DS} = 5.0V, V_{DD} = 5.0V	--	--	60nA
Temperature characteristic of -Vdet per volt	Δ - V_{DET} ΔTa per volt	Ta = -20°C ~ 70°C	--	± 0.22mV/°C per volt	--
Delay time	t_d	V_{DD} = 1.5V, C_D = 0.1 μF	100ms	200ms	350ms