上海贝岭 SHANGHAI BELLING

BL8509C

Low Voltage Detector With Built-in Delay Circuit

DESCRIPTION

BL8509C is a series of high precision voltage detector with ultra-low current consumption (4.5uA typ. at Vin=3.0V) and a built-in delay circuit. It can work at very low voltage, which makes it perfect for system reset.

BL8509C is composed of high precision voltage reference, comparator, delay circuit, output driver and resistor array. Internally preset detect voltage has a low temperature drift and requires no external trimming. Only CMOS type is available.

BL8509C is available in small size SOT-23 package which is Pb free.

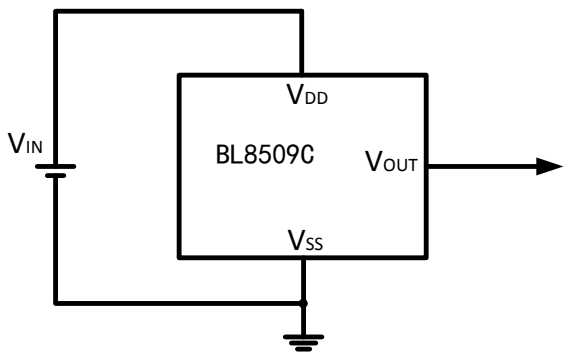
FEATURES

- High-Precision Detection Voltage： ±5%
- Detection Voltage：2.63V and 2.93V
- Built-in Power on Reset Delay time circuit: Refer to Selection Guide
- Operating Voltage Range:1.2V~6V
- Ultra-low current consumption: 4.5uA typ. (at Vin＝3.0V)
- Output Forms: CMOS (Active Low)

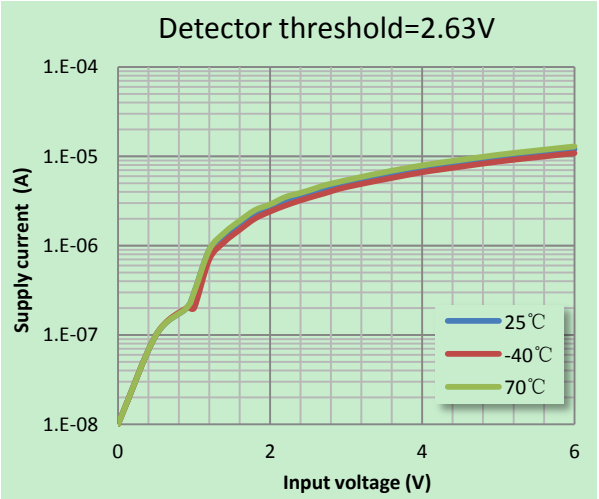
APPLICATIONS

- Power monitor for portable equipment such as PDA,DSC,Mobile phone,Notebook,MP3
- CPU and Logic Circuit Reset
- Battery Checker
- Battery Back-up Circuit
- Power Failure Detector

TYPICAL APPLICATION



ELECTRICAL CHARACTERISTICS

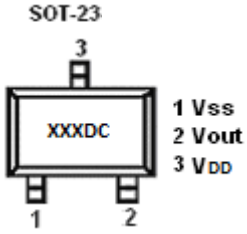
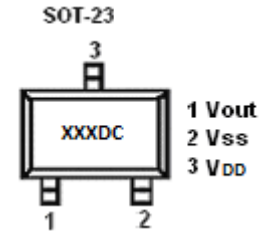


ORDERING INFORMATION

BL8509C ①②③④⑤⑥

Code	Description
①	Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std.
②	Package type: B3:SOT23(A) B3B:SOT23(B)
③	Packing type: TR:Tape&Reel (Standard)
④	Detector Voltage: e.g. 263=2.63V 293=2.93V
⑤	Delay time: D:200mS
⑥	Output forms: C:CMOS

PIN CONFIGURATION

Product Classification		BL8509CCB3TR□□□
Marking		
XXXDC	XXX: Detector Voltage	
	D:Delay time D:200mS	
	C:CMOS	
Product Classification		BL8509CCB3BTR□□□
Marking		
XXXDC	XXX: Detector Voltage	
	D:Delay time D:200mS	
	C:CMOS	
Vss	Ground Pin	
VDD	Supply Voltage Input	
Vout	Voltage detection output pin	

ABSOLUTE MAXIMUM RATING

Parameter		Value
Input Voltage		-0.3V-8V
Output Voltage range		-0.3V- 8V
Maximum Output current		70mA
Ambient Temperature(Ta)		-40°C -85°C
Power Dissipation	SOT-23	250mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

Note:
Exceed these limits to damage to the device.
Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

Item	Min	Recommended	Max.	Unit
Input Voltage Range	1.2		6	V
Ambient Temperature	-40	25	85	°C

ELECTRICAL CHARACTERISTICS

BL8509CCXXTR263DC/N（2.63V）

(Topt＝25℃,Unless otherwise specified.)

Symbol	Parameter	Conditions	Reference data			Unit
			Min.	Typ.	Max.	
-VDET	Detector Threshold		2.499	2.63	2.765	V
ISS	Current consumption	VDD=4.63V		4.5	10	uA
VDDH	Maximum operating voltage				10	V
VDDL	Minimum Operating voltage			0.5		V
IOUT	Output current	Pch VDS=-2.1V，VDD=4.5V	1.0	2.0		mA

BL8509CCXXTR293DC/N（2.93V）

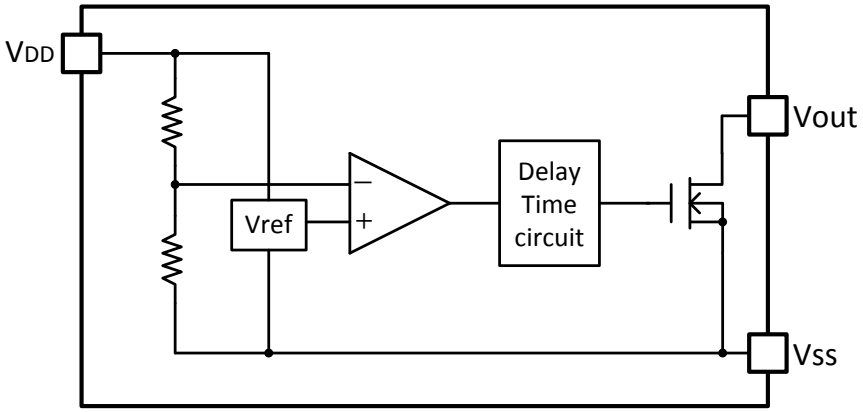
(Topt＝25℃,Unless otherwise specified.)

Symbol	Parameter	Conditions	Reference data			Unit
			Min.	Typ.	Max.	
-VDET	Detector Threshold		2.784	2.93	3.077	V
ISS	Current consumption	VDD=4.93V		4.5	10	uA
VDDH	Maximum operating voltage				10	V
VDDL	Minimum Operating voltage			0.5		V
IOUT	Output current	Pch VDS=-2.1V，VDD=4.5V	1.0	2.0		mA

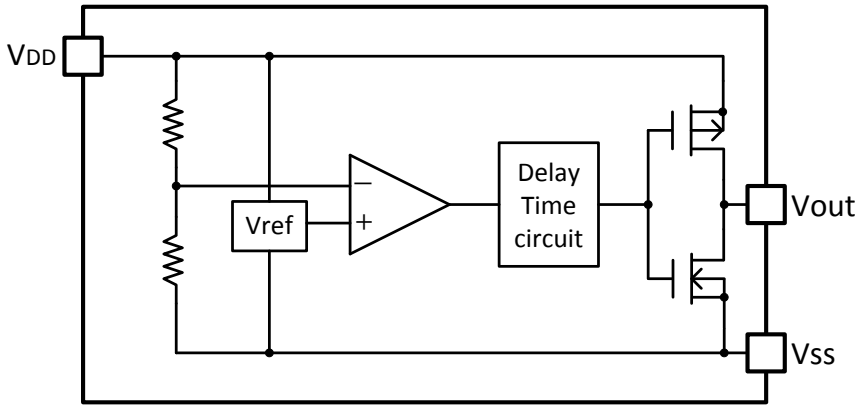
ELECTRICAL CHARACTERISTICS BY OUTPUT DELAY TIME

Part Number	Test Condition	Output Delay Time			Unit
		Min.	Typ.	Max.	
BL8509CCXXTRXXXDC/N	VDD=1.0V to Vdet+1.0V	140	200	300	ms

BLOCK DIAGRAM

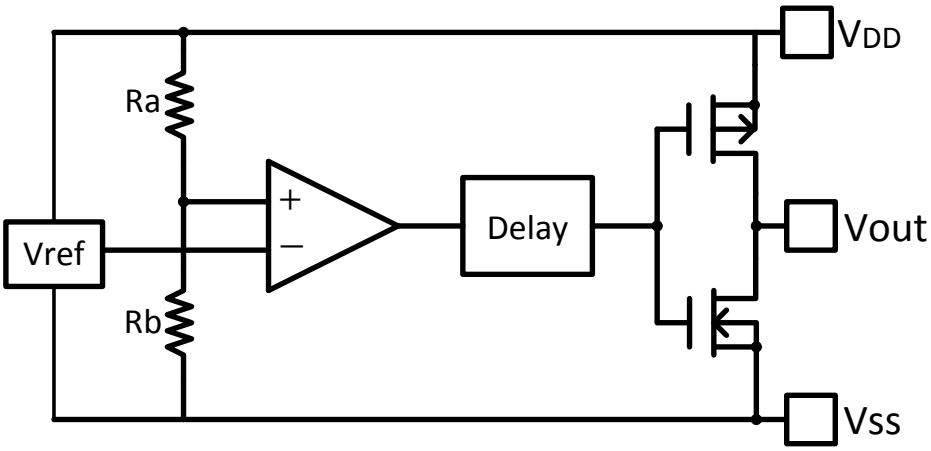


N Channel Open Drain



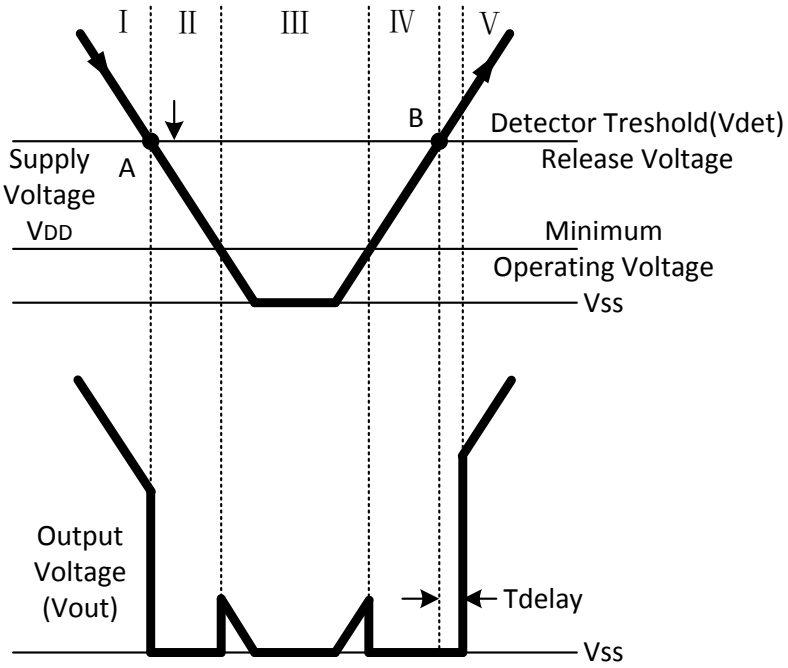
CMOS Output

FUNCTION DESCRIPTION



High precision low temperature co-efficiency reference voltage is applied to the negative input of a comparator. Input voltage, divided by resistor array of Ra and Rb, is applied to the positive input of the comparator. Output of the comparator passes a delay circuit and a series of buffer to drive the output CMOS pair.

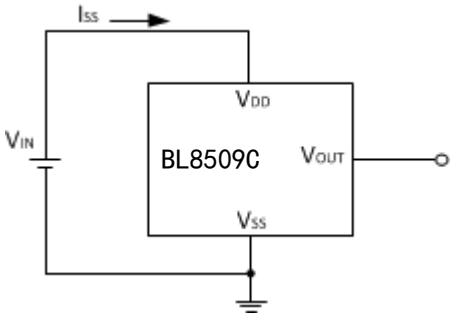
VDET =VREF*(1+Ra/Rb)



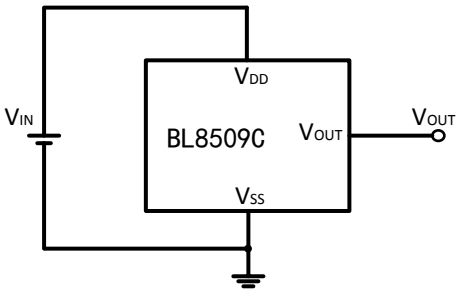
No.	Operation status	Output status
I	VDD>Vdet	Output voltage is equal to the supply voltage
II	VDD drops below Vdet	Output voltage equals to GND level
III	VDD drops further below VDDL	Output voltage is undefined
IV	VDD rises above VDDL	Output voltage equals to GND level
V	VDD rises above Vdet	Output voltage equals to supply voltage after Tdelay

TEST CIRCUITS

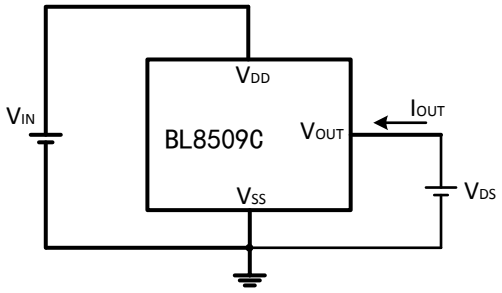
（1）Supply current test circuit



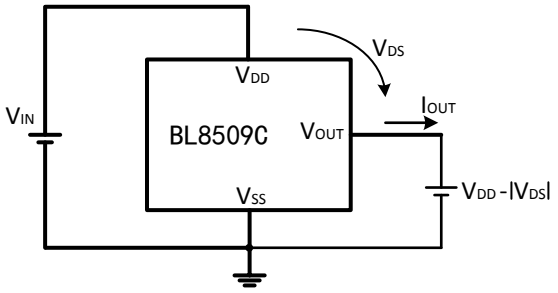
（2）Detector threshold test circuit



（3）NCH Drive Output Current Test Circuit

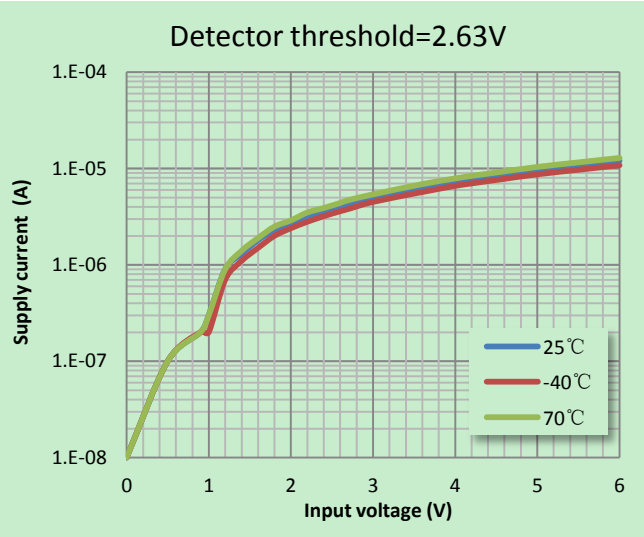


（4）PCH Drive Output Current Test Circuit

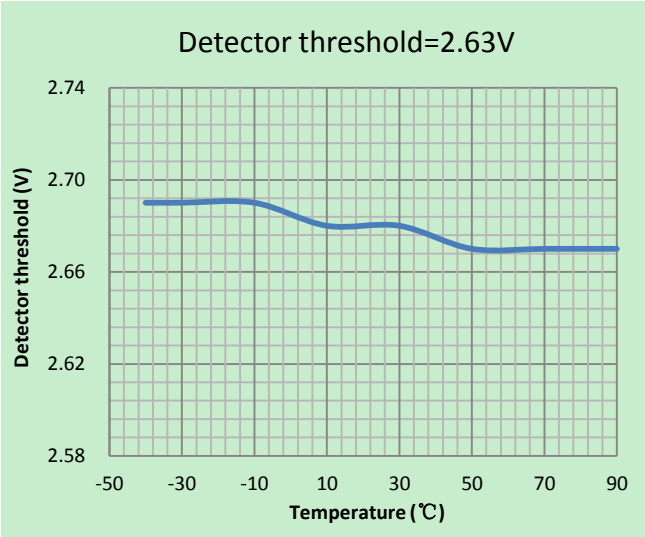


TYPICAL PERFORMANCE CHARACTERISTICS

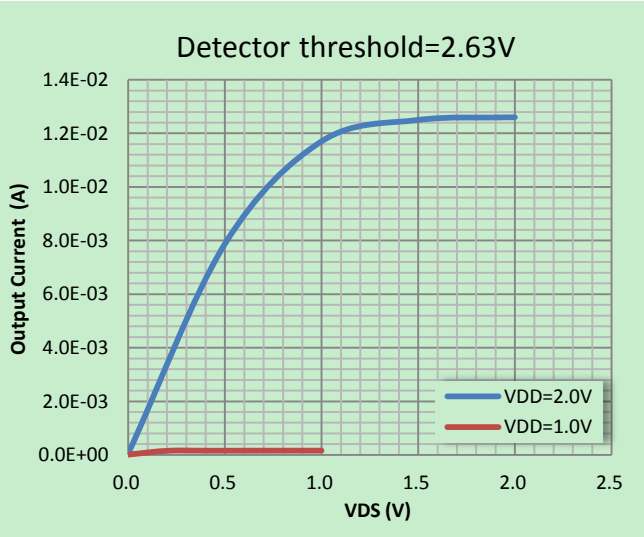
1) Supply current VS. Input voltage



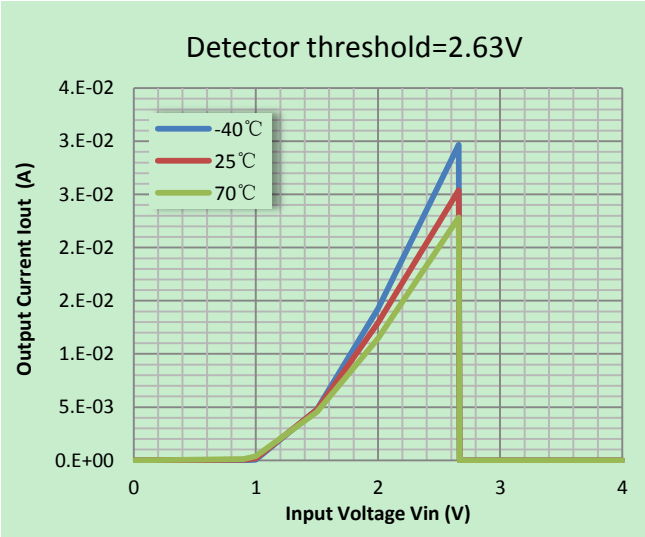
2) Detector Threshold VS. Temperature



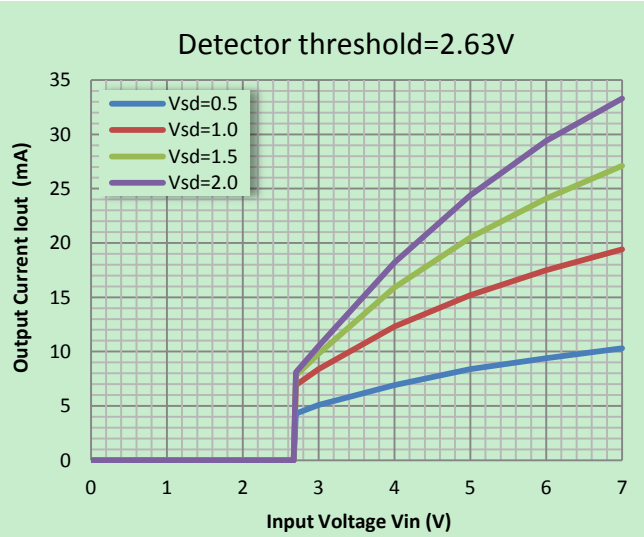
3） Nch Driver Output Current VS. VDS



4） NCH Driver Output Current vs. Input Voltage



5） PCH Driver Output Current vs. Input Current



PACKAGE LINE

Package	SOT-23	Devices per reel	3000Pcs	Unit	mm

Package dimension：

