上海贝岭
SHANGHAI BELLING

BL8518

Low Voltage Detector with Built-in Delay Circuit

DESCRIPTION

BL8518 is a series of high precision voltage detector with ultra-low current consumption (4.5uA typ. at V_{DD}=3.0V) and a built-in delay circuit. It can work at very low voltage, which makes it perfect for system reset.

BL8518 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.

Two types of output, CMOS and N-channel open-drain are available.

BL8518 is available in SOT23 package which is Pb-free.

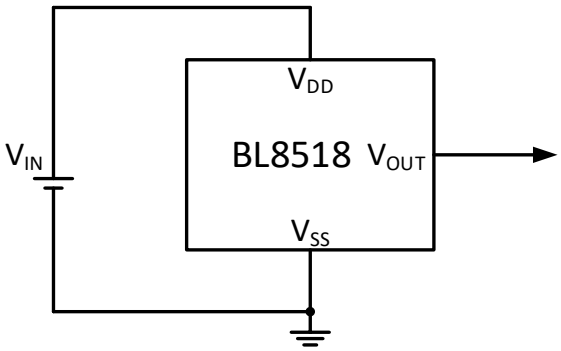
FEATURES

- High-precision detection voltage: ±2%
- Detection voltage: 2.63V and 2.93V (customized other voltages)
- 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 V_{DD}=3.0V)
- Two output forms: CMOS (active low) or N-channel open-drain (active low)

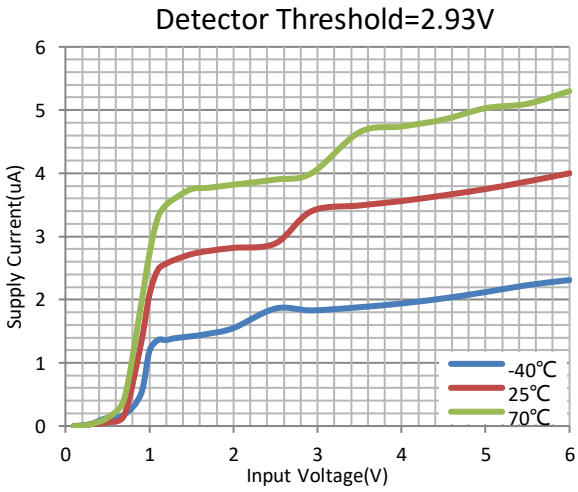
APPLICATIONS

- 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

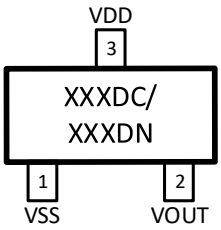
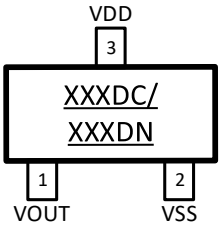


ORDERING INFORMATION

BL8518 1 2 3 4 5 6

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 N: Nch

PIN CONFIGURATION

Product classification		BL8518CB3TR□□□
Marking		SOT23(A)
XXXDC/ XXXDN	XXX: Detector voltage D: Delay time D: 200ms C: CMOS N: Nch	
Product classification		BL8518CB3BTR□□□
Marking		SOT23(B)
XXXDC/ XXXDN	XXX: Detector voltage D: Delay time D: 200ms C: CMOS N: Nch	
VSS	Ground pin	
VDD	Supply voltage input	
VOUT	Voltage detection output pin	

ABSOLUTE MAXIMUM RATING

Parameter		Value
Input voltage		-0.3V to 8V
Output voltage range		-0.3V to 8V
Maximum output current		70mA
Ambient temperature (T_A)		-40°C to 85°C
Power dissipation	SOT23	250mW
Storage temperature (T_S)		-40°C to 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	Units
Input voltage range	1.2		6	V
Ambient temperature (T_A)	-40	25	85	°C

ELECTRICAL CHARACTERISTICS

BL8518CXXTR263DC/N (2.63V)

(T_{OPT}＝25°C, unless otherwise specified.)

Symbol	Parameter	Conditions	Reference data			Units
			Min	Typ	Max	
$-V_{DET}$	Detector threshold		2.577	2.63	2.683	V
I_{SS}	Current consumption	V_{DD}=4.63V		4.5	10	uA
V_{DDH}	Maximum operating voltage				6	V
V_{DDL}	Minimum operating voltage			0.5		V
I_{OUT}	Output current	Pch V_{DS}=-2.1V，V_{DD}=4.5V	1.0	2.0		mA
T_{DET}	Output delay time	V_{DD} drops from V_{DET}+100mV to V_{DET}-100mV		8		us

BL8518CXXTR293DC/N (2.93V)

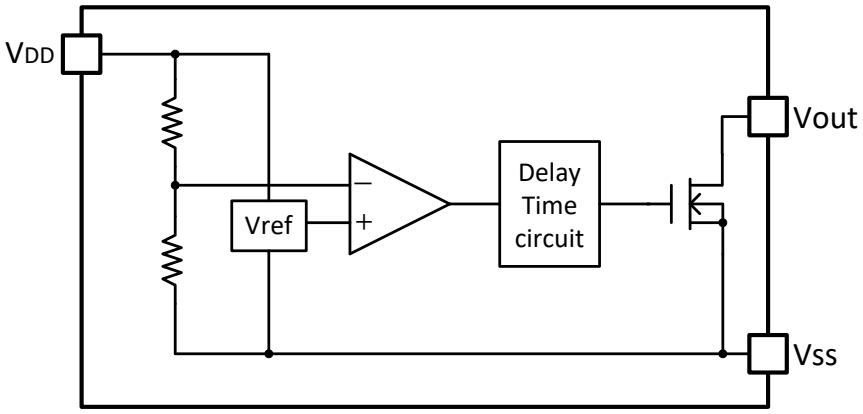
(T_{OPT}＝25°C, unless otherwise specified.)

Symbol	Parameter	Conditions	Reference data			Units
			Min	Typ	Max	
$-V_{DET}$	Detector threshold		2.871	2.93	2.989	V
I_{SS}	Current consumption	V_{DD}=4.93V		4.5	10	uA
V_{DDH}	Maximum operating voltage				6	V
V_{DDL}	Minimum operating voltage			0.5		V
I_{OUT}	Output current	Pch V_{DS}=-2.1V，V_{DD}=4.5V	1.0	2.0		mA
T_{DET}	Output delay time	V_{DD} drops from V_{DET}+100mV to V_{DET}-100mV		8		us

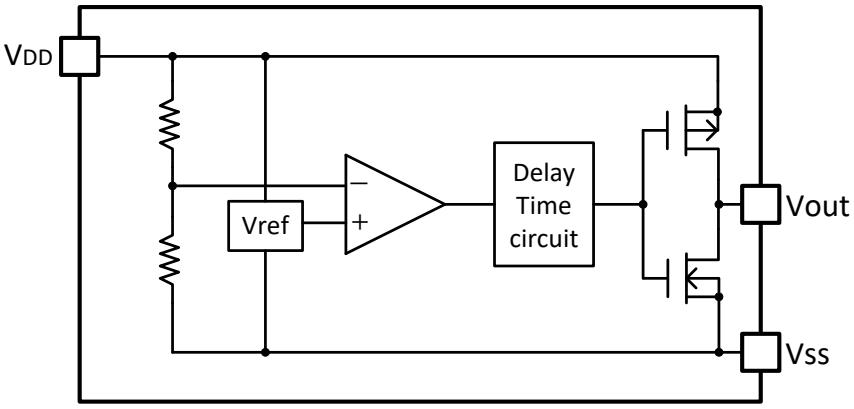
ELECTRICAL CHARACTERISTICS BY OUTPUT DELAY TIME

Part Number	Test Condition	Output Delay Time			Units
		Min	Typ	Max	
BL8518CXXTRXXXDC/N	V_{DD}=1.0V to V_{DET}+1.0V	140	200	300	ms

BLOCK DIAGRAM

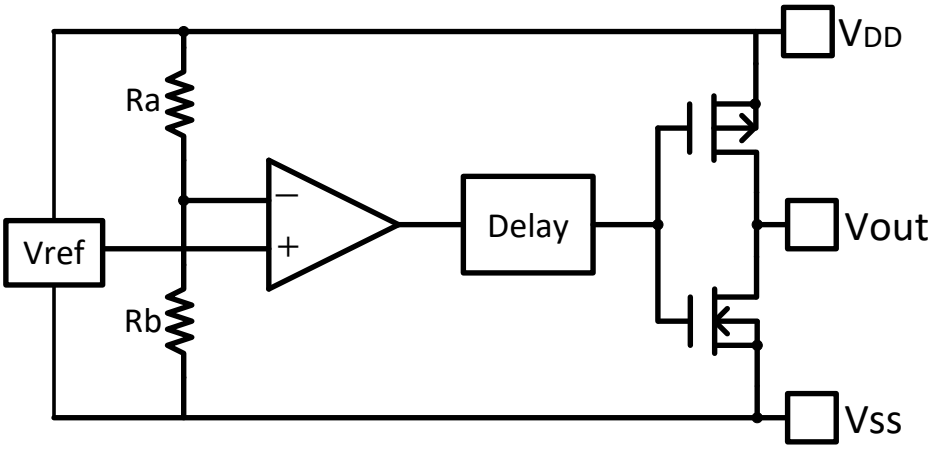


N-channel open-drain output



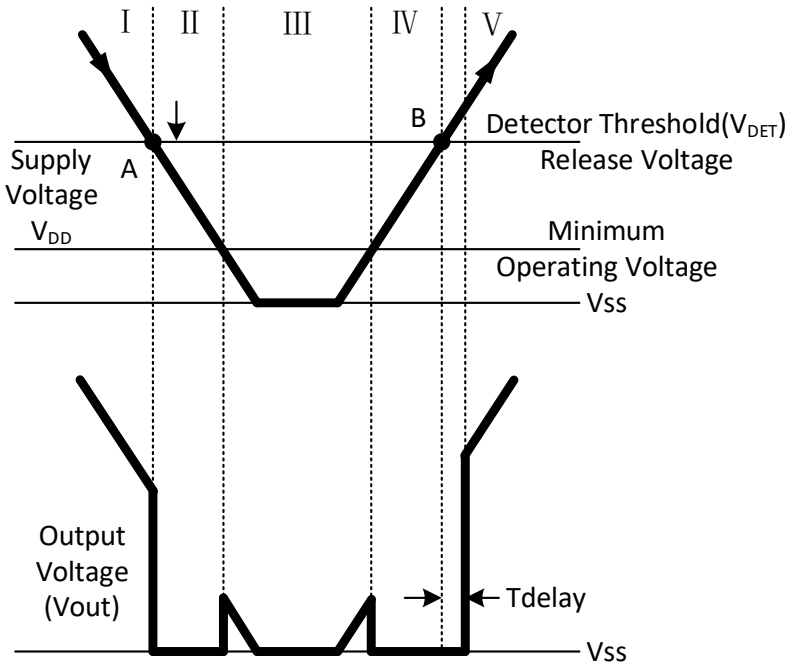
CMOS output

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.

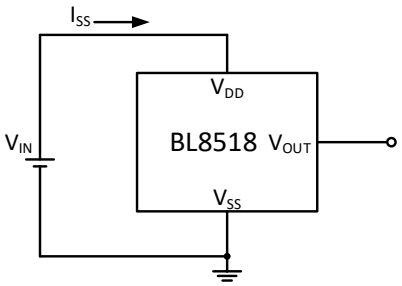
$$V_{DET} = V_{REF} * (1 + Ra/Rb)$$



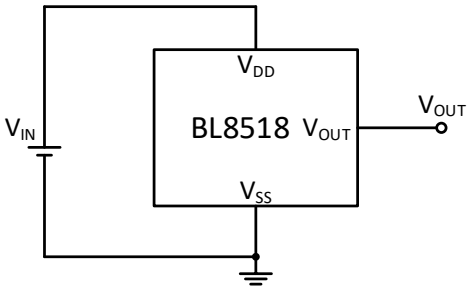
No.	Operation status	Output status
I	V_{DD}>V_{DET}	Output voltage is equal to the supply voltage.
II	V_{DD} drops below V_{DET}	Output voltage equals to V_{SS} level.
III	V_{DD} drops further below V_{DDL}	Output voltage is undefined.
IV	V_{DD} rises above V_{DDL}	Output voltage equals to V_{SS} level.
V	V_{DD} rises above V_{DET}	Output voltage equals to supply voltage after Tdelay.

TEST CIRCUITS

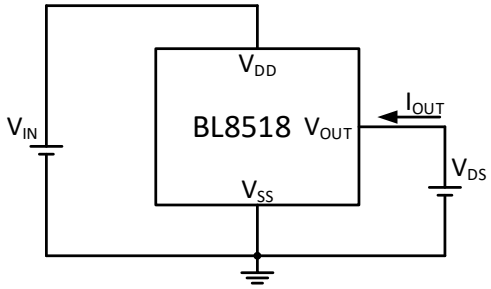
(1) Supply Current Test Circuit



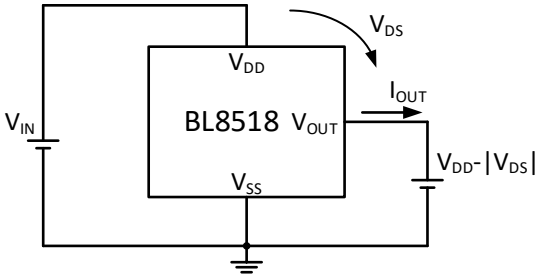
(2) Detector Threshold Test Circuit



(3) NCH Drive Output Current Test Circuit

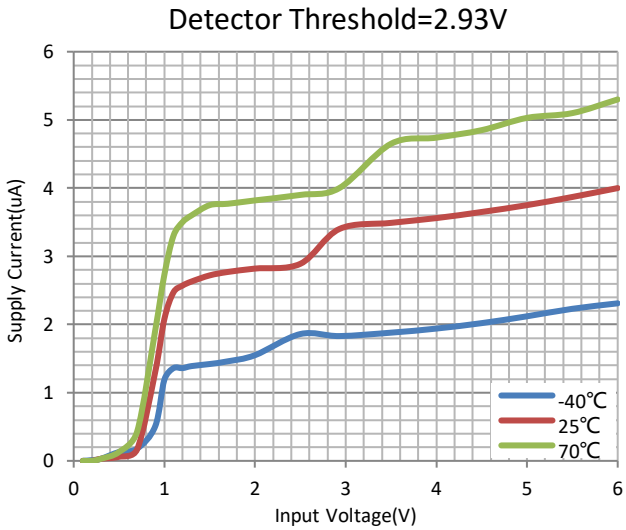


(4) PCH Drive Output Current Test Circuit

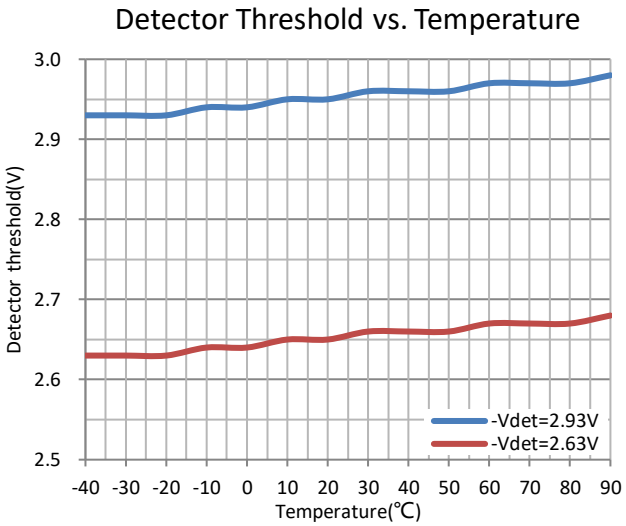


TYPICAL PERFORMANCE CHARACTERISTICS

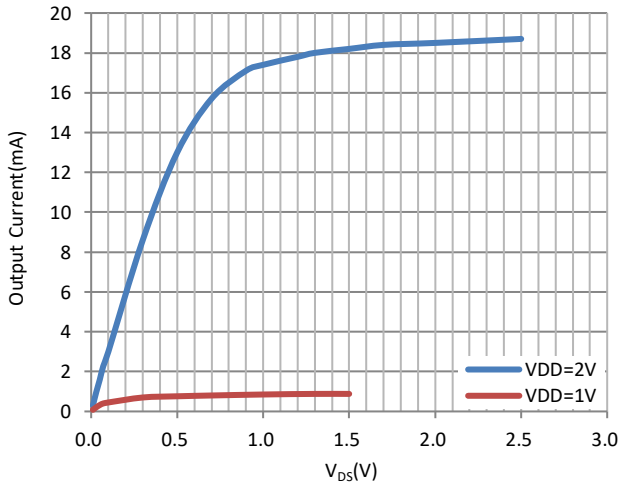
1) Supply Current vs. Input Voltage



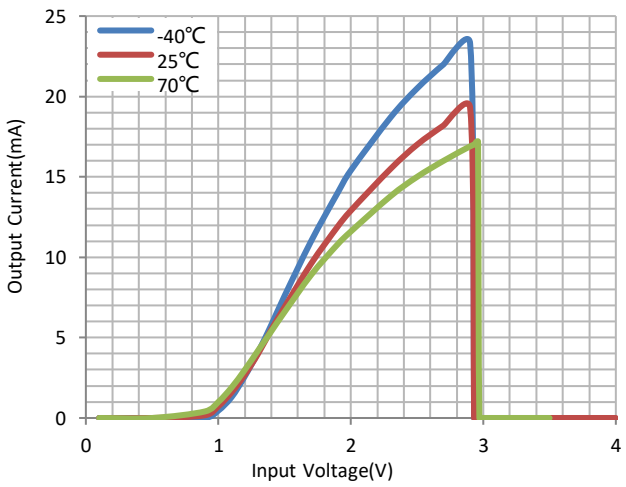
2) Detector Threshold vs. Temperature



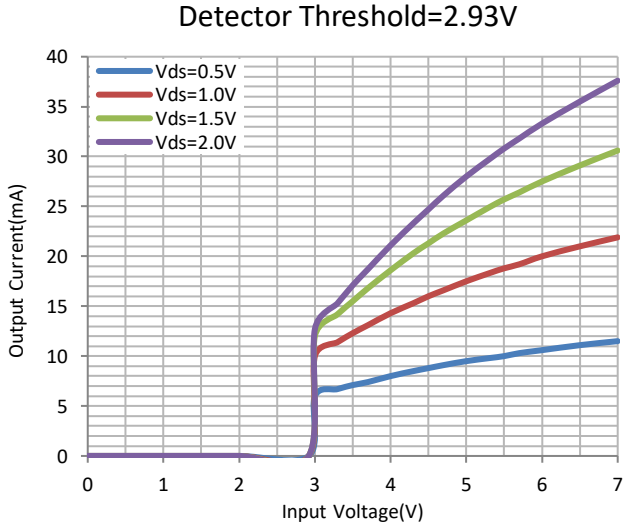
3) NCH Driver Output Current vs. V_{DS}



4) NCH Driver Output Current vs. Input Voltage



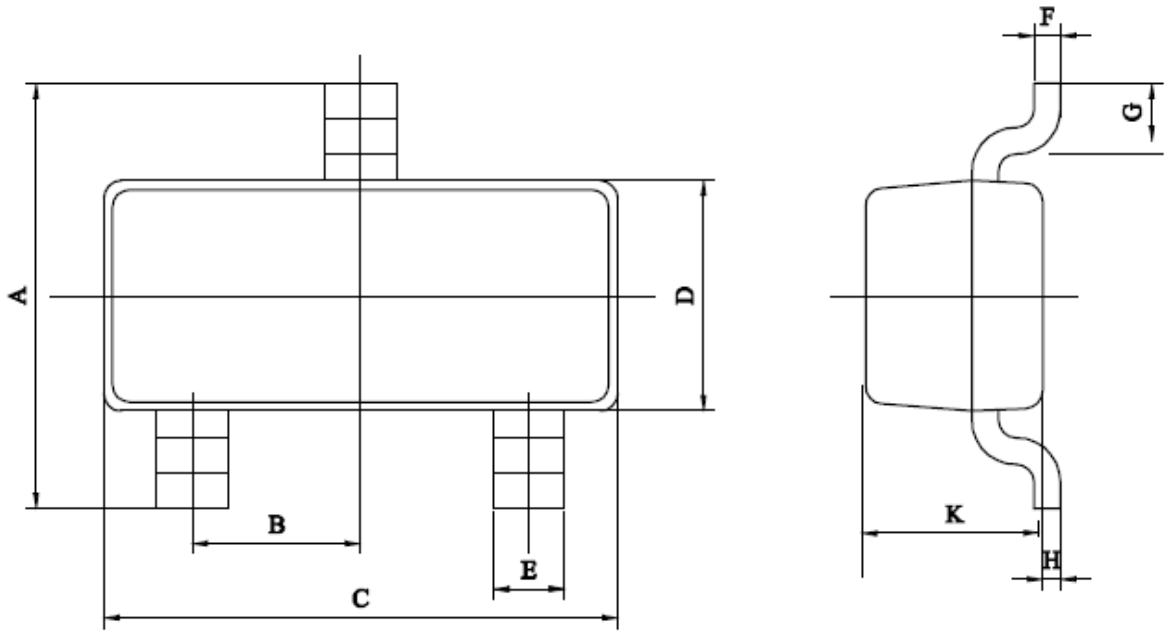
5) PCH Driver Output Current vs. Input Current



PACKAGE OUTLINE

Package	SOT23	Devices per reel	3000pcs

Package dimension:



	A	B	C	D	E	F	G	H	K
出厂标准	2.4±0.15	0.95±0.05	2.9±0.1	1.3±0.1	0.40±0.1	0.15±0.08	0.4±0.1	0.07±0.07	1.00±0.05

Unit: mm