

Over voltage and over current protection IC

Description

AF4810 is an Over-Voltage-Protection (OVP) IC. The device will switch off internal MOSFET to disconnect VIN to OUT to protect load when any of input voltage, input current over the threshold. The Over temperature protection (OTP) function monitors chip temperature to protect the device.

4 Applications

- > PND
- > Tablet
- ➤ HD Player
- > OTT
- Digital Cameras
- Digital Videos

4 Device Information



Marking

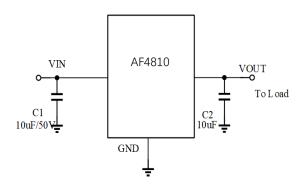
Top view

Package	Tape and Reel
SOT23-6L	3000 pcs

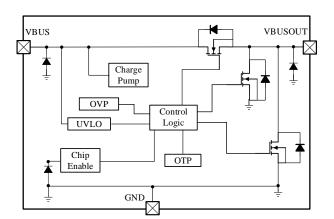
∔ Features

- High voltage technology
- > Maximum input voltage :50V
- > Output power ON time :8ms(Typ)
- > OVP threshold: 6.1V
- ➤ OVP response time :<1us
- Output auto discharge

Typical Application

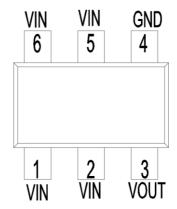


♣ Functional Block Diagram





Pin Configuration



Pin configuration (Top view)

NO.	Symbol	Description
1	VIN	Input pin. A 10uF low ESR ceramic capacitor or larger must be
2	VIN	connected as close as to this pin. It is recommended to use 50V capacitor or according to application.
3	VOUT	Output pin, Connect to load.
4	GND	Ground
5	VIN	Input pin. A 10uF low ESR ceramic capacitor or larger must be
6	VIN	connected as close as to this pin. It is recommended to use 50V capacitor or according to application.

Absolute Maximum Ratings(1)

(Unless otherwise specified, all voltage are with respect to GND, TA=25°C)

PARAMETER	SYMBOL	RATINGS	UNITS
Input voltage (ACIN pin)	$V_{ m IN}$	-0.3 ~ 50	V
Output voltage (VOUT pin)	$V_{ m OUT}$	-0.3 ~ 40	V
Junction temperature	Tı	150	$^{\circ}\!\mathbb{C}$
Storage temperature	Tstg	-55 ~ 150	$^{\circ}$ C
ESD Ratings	HBM	±3000	V
	MM	±200	V

^{(1) .} 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 under recommended operating conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods my affect device reliability.

4 Recommend Operating Conditions

(Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Input voltage	V_{IN}	3.5 ~ 50	V
Output current	Iout	2.0	A
Ambient operating temperature	Topr	-40 ~ 85	$^{\circ}$



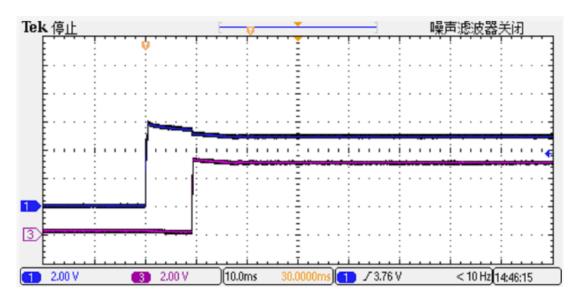
Lectrical Characteristics

(Ta=25°C, unless otherwise noted)

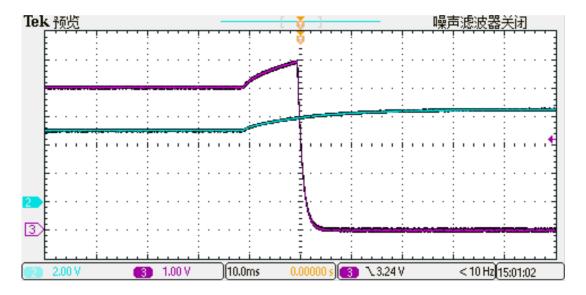
Parameter	Symbol	Test conditions	Min	Тур	Max	Unit
DC characteristics and Po	ower-ON-Reset					•
Input quiescent current	I_Q	V _{ACIN} =5V,Iout=0A		120	200	uA
IN-to-OUT ON resistance	R _{ON}	V _{ACIN} =5V,Iout=2A		80	120	mΩ
Output auto discharge resistance	RDISCHARGE			500		Ω
Under voltage lock out threshold	UVLO	V _{ACIN} increasing from 0~3.5V		3.4		V
Under voltage lock out hysteresis	VHYS-UVLO	V _{ACIN} decreasing from 3.5~0V		300		mV
Output power-on time	TON	V _{ACIN} =0 -> 5V to output ON	6	8	12	ms
EN Threshold Voltage	VENL				0.4	V
	VENH		1.2			V
EN to GND current	I_{EN}				2	uA
Input Over-Voltage-Prote	ection (OVP)				•	
PROADJ threshold	Vove(th)	V _{ACIN} increasing from 5~7V	5.7	6.1	6.3	V
PROADJ hysteresis	VHYS- PROADJ	V _{ACIN} decreasing from 7~5V		70		mV
OVP active time	Tovp	V _{ACIN} = 5 -> 10V			1	us
OVP recovery time	Ton(ovp)	V _{ACIN} =10 -> 5V to output ON	6	8	10	ms
Input Over-Current-Prote	ection (OCP)			•	•	•
OCP threshold	I_{OCP}		2.6	3	4	A
Over-Temperature-Protec	ction (OTP)					
OTP threshold	T_{OTP}			155		°C
OTP hysteresis	T_{OTPHYS}			40		°C
Power Switch Body Diode	•			•	•	
Forward peak surge current	Ifsm	Pulse Width=10ms			10	A
		Pulse Width=20us			35	A



4 Typical characteristic

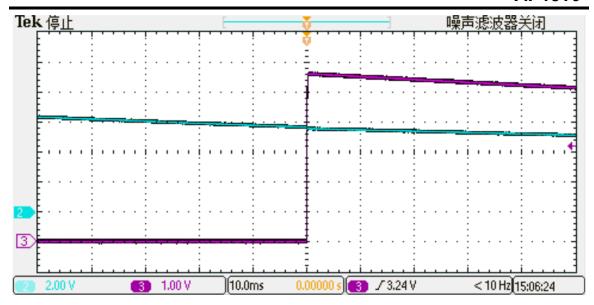


Power On

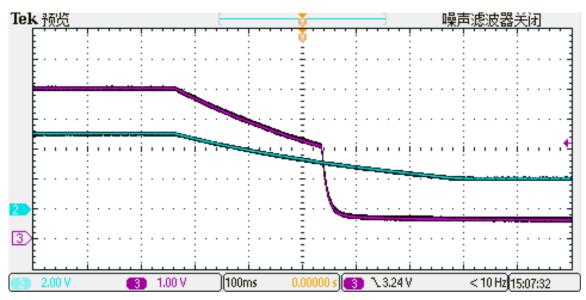


OVP Trigger





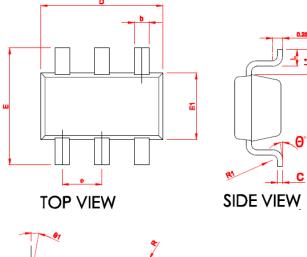
OVP Restore



UVLO Trigger



4 Package Outline



		0.4.00	MILLIMETER		
		SYMBOL	MIN	NOM	MAX
<u> </u> <u> </u>		Α	1.06	1.15	1.24
		* A1	0.01	0.05	0.09
	0°	* A2	1.05	1.10	1.15
		A3	0.65	0.70	0.75
[* b	0.30	0.35	0.45
. .	R1 C	* C	0.117	0.127	0.157
		* D	2.87	2.92	2.97
TOP VIEW	SIDE VIEW	* E	2.72	2.80	2.88
		* E1	1.55	1.60	1.65
0,		* е	0.90	0.95	1.00
•		* L	0.32	0.40	0.48
		* L1	0.55	0.60	0.65
· 		R	C).10 REF	•
\		R1	0.12 REF		
		* 0	0		8°
		0 1	8°	10°	12°
62		62	10°	12°	14°
SIDE VIEW					
SIDE VILVV					



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