Over voltage and over current protection IC

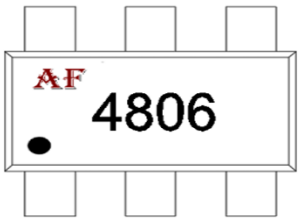
Description

AF4806 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.

Applications

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

Device Information



Marking

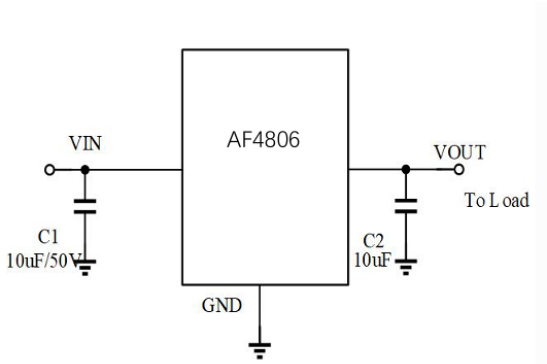
Top view

Package	Tape and Reel
SOT23-6L	3000 pcs

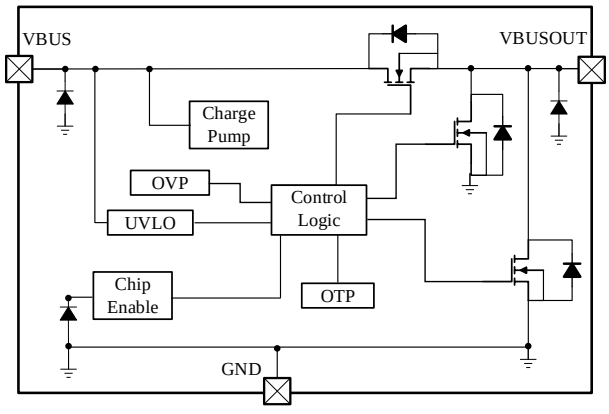
Features

- High voltage technology
- Maximum input voltage :30V
- Output power ON time :8ms(Typ)
- OVP threshold: 6.1V
- OVP response time :<1us
- Output auto discharge

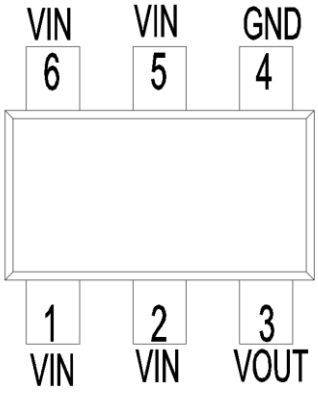
Typical Application



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 connected as close as to this pin. It is recommended to use 50V capacitor or according to application.
2	VIN	
3	VOUT	Output pin, Connect to load.
4	GND	Ground
5	VIN	Input pin. A 10uF low ESR ceramic capacitor or larger must be connected as close as to this pin. It is recommended to use 50V capacitor or according to application.
6	VIN	

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_{IN}	-0.3 ~ 30	V
Output voltage (VOUT pin)	V_{OUT}	-0.3 ~ 30	V
Junction temperature	T_J	150	℃
Storage temperature	Tstg	-55 ~ 150	℃
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.

Recommend Operating Conditions

(Ta=25℃, unless otherwise noted)

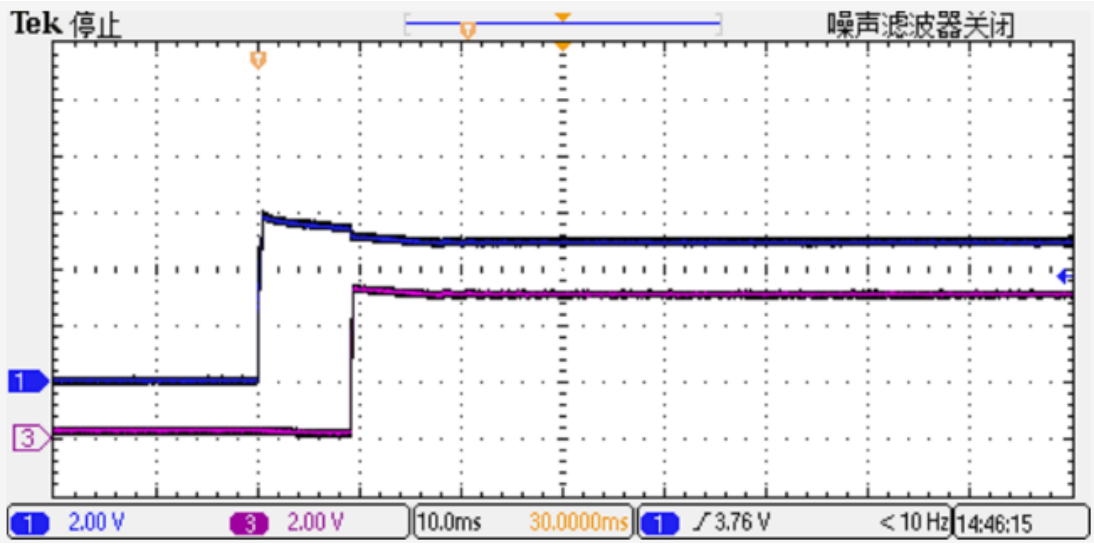
Parameter	Symbol	Value	Unit
Input voltage	V_{IN}	3.5 ~ 30	V
Output current	I_{OUT}	2.0	A
Ambient operating temperature	Topr	-40 ~ 85	℃

Electrical Characteristics

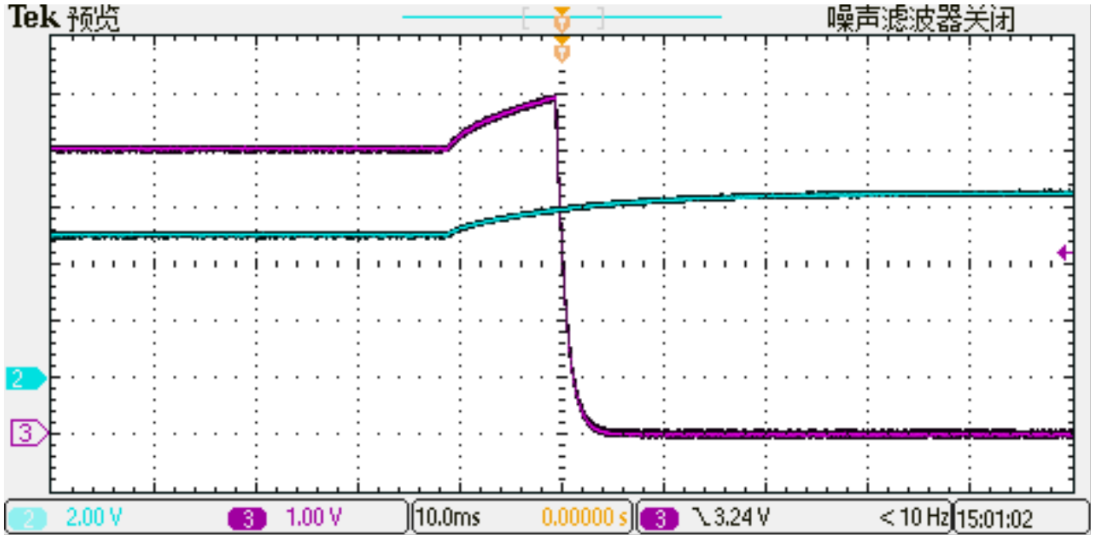
(Ta=25℃, unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC characteristics and Power-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=3A		30		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-Protection (OVP)						
PROADJ threshold	$V_{OVP}(th)$	V_{ACIN} increasing from 5~7V	5.7	6.1	6.3	V
PROADJ hysteresis	$V_{HYS-PROADJ}$	V_{ACIN} decreasing from 7~5V		70		mV
OVP active time	T_{OVP}	V_{ACIN}= 5 -> 10V			1	us
OVP recovery time	$T_{ON(OVP)}$	V_{ACIN}=10 -> 5V to output ON	6	8	10	ms
Input Over-Current-Protection (OCP)						
OCP threshold	I_{OCP}		6	7	8	A
Over-Temperature-Protection (OTP)						
OTP threshold	T_{OTP}			155		℃
OTP hysteresis	T_{OTPHYS}			40		℃
Power Switch Body Diode						
Forward peak surge current	I_{FSM}	Pulse Width=10ms			15	A
		Pulse Width=20us			50	A

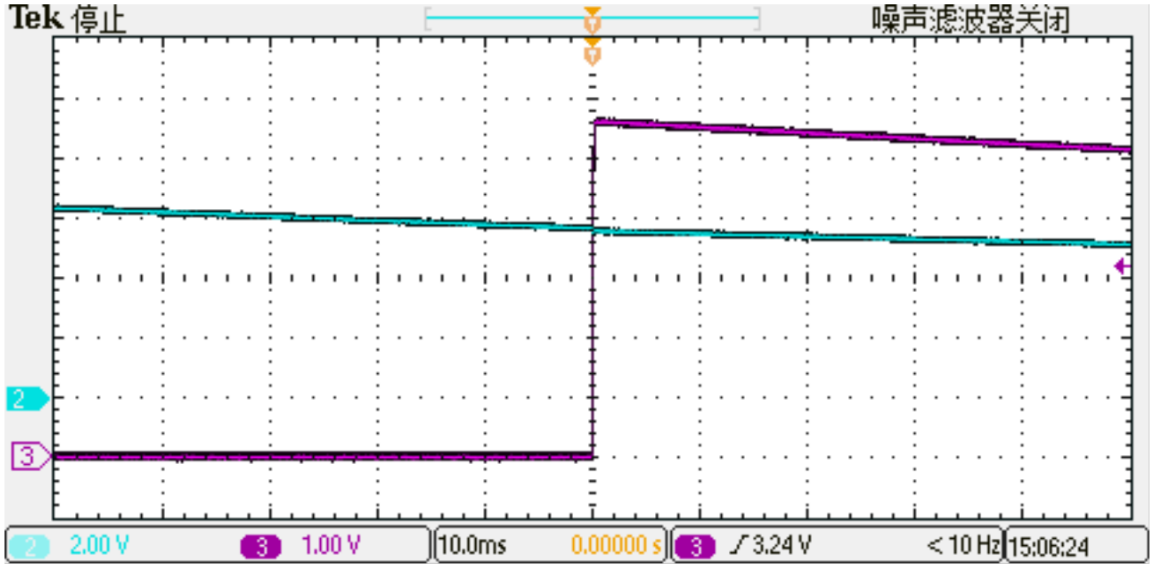
- **Typical characteristic**



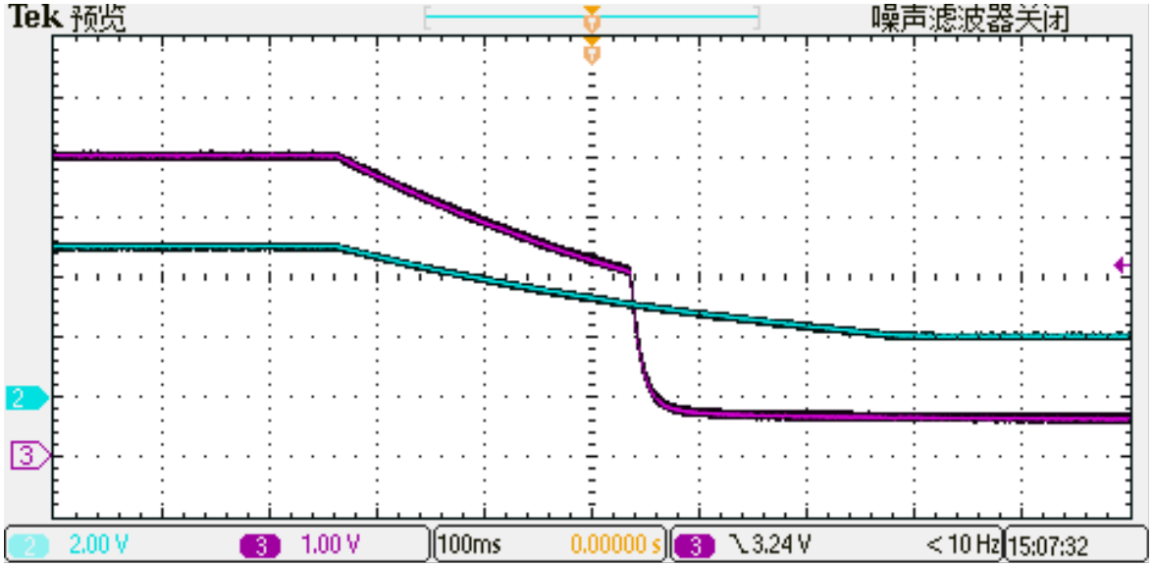
Power On



OVP Trigger

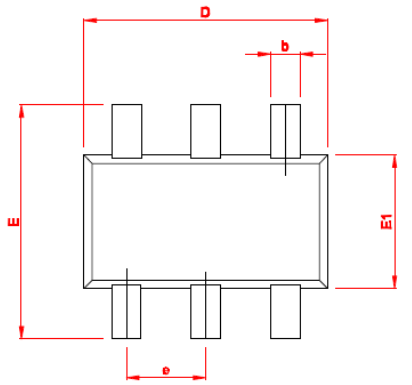


OVP Restore

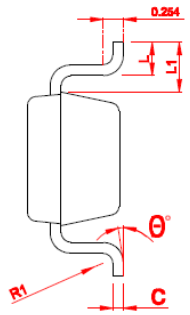


UVLO Trigger

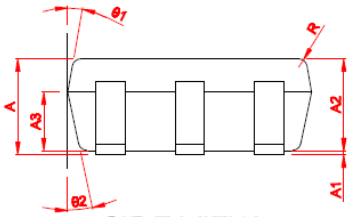
Package Outline



TOP VIEW



SIDE VIEW



SIDE VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.06	1.15	1.24
* A1	0.01	0.05	0.09
* A2	1.05	1.10	1.15
A3	0.65	0.70	0.75
* b	0.30	0.35	0.45
* c	0.117	0.127	0.157
* D	2.87	2.92	2.97
* E	2.72	2.80	2.88
* E1	1.55	1.60	1.65
* e	0.90	0.95	1.00
* L	0.32	0.40	0.48
* L1	0.55	0.60	0.65
R	0.10 REF		
R1	0.12 REF		
* θ	0	--	8°
θ1	8°	10°	12°
θ2	10°	12°	14°

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