Over voltage and over current protection IC

Description

AF4802 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.

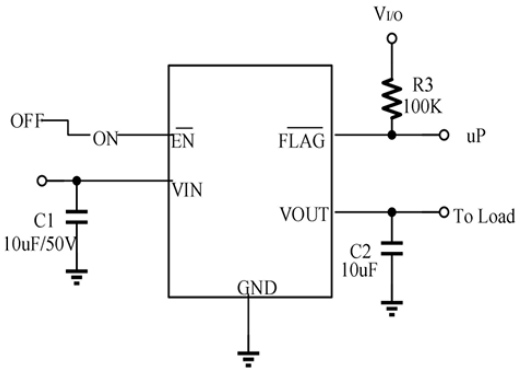
Features

- High voltage technology
- Maximum input voltage :30V
- Output power ON time :8ms(Typ)
- OVP threshold: 6.1V
- OVP response time :<1us
- Output auto discharge
- Small Package:DFN8L（0203-0.75-0.50）

Applications

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

Typical Application



Device Information

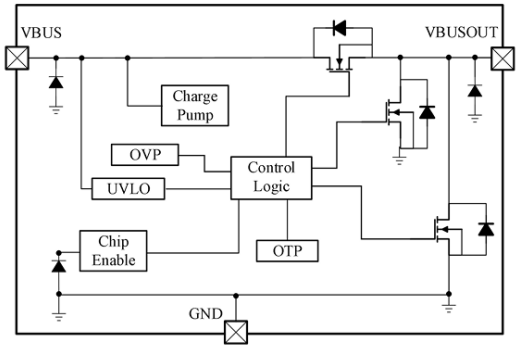
XX YY：part number

XXXXX.1：Wafer batch

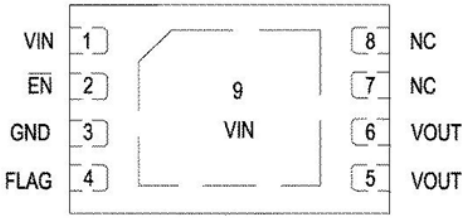
Top view

Package	DFN8 （0203-0.75-0.50）
MOQ	3000 pcs

Functional Block Diagram



Pin Configuration



AF4802

Pin configuration (Top view)

NO.	Symbol	Type	Description
1	PROADJ	INPUT	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	$\overline{EN}$	INPUT	Enable pin. Active Low.
3	GND	GROUND	Ground
4	FLAG	OUTPUT	Flag Pin. Open-Drain, Active low if any OVP, OTP occur.
5/6	VOUT	OUTPUT	Output pin. Connect to load.
7/8	NC		
9(Bottom pad)	VIN	POWER	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.

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)

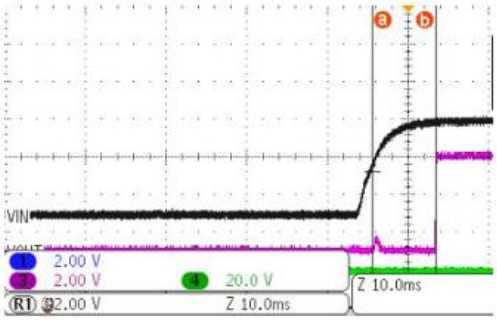
Parameter	Symbol	Value	Unit
Input voltage	V_{IN}	3.5 ~ 30	V
Output current	I_{OUT}	3	A
Ambient operating temperature	Topr	-40 ~ 85	℃

Electrical Characteristics

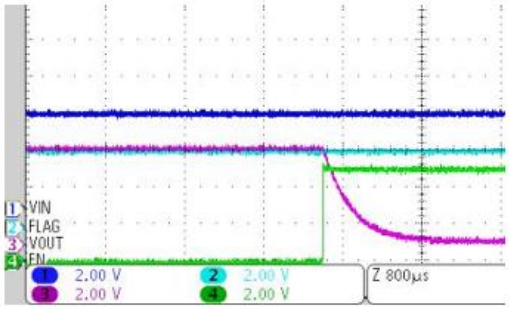
(Ta=25℃, unless otherwise noted)

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		40 @4.5V		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	10	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
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

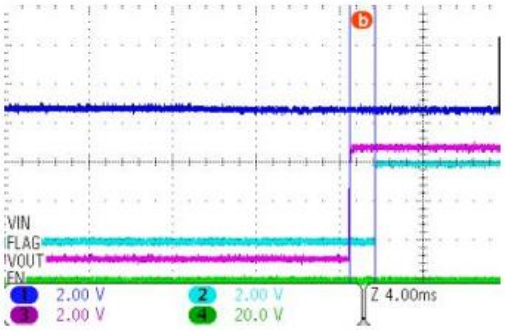
Typical characteristic



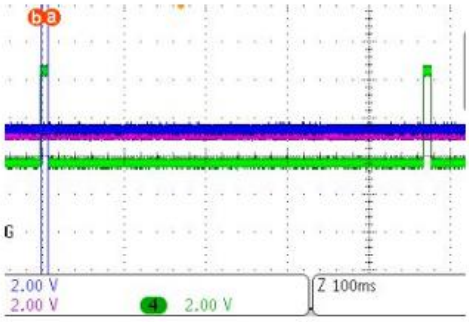
Power ON



UVLO_H

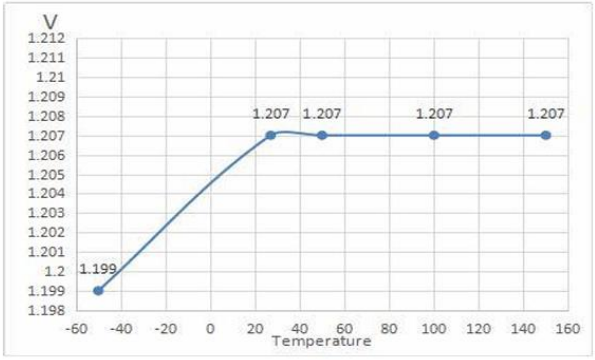


PROADJ_OVP



FLAG_DELAY

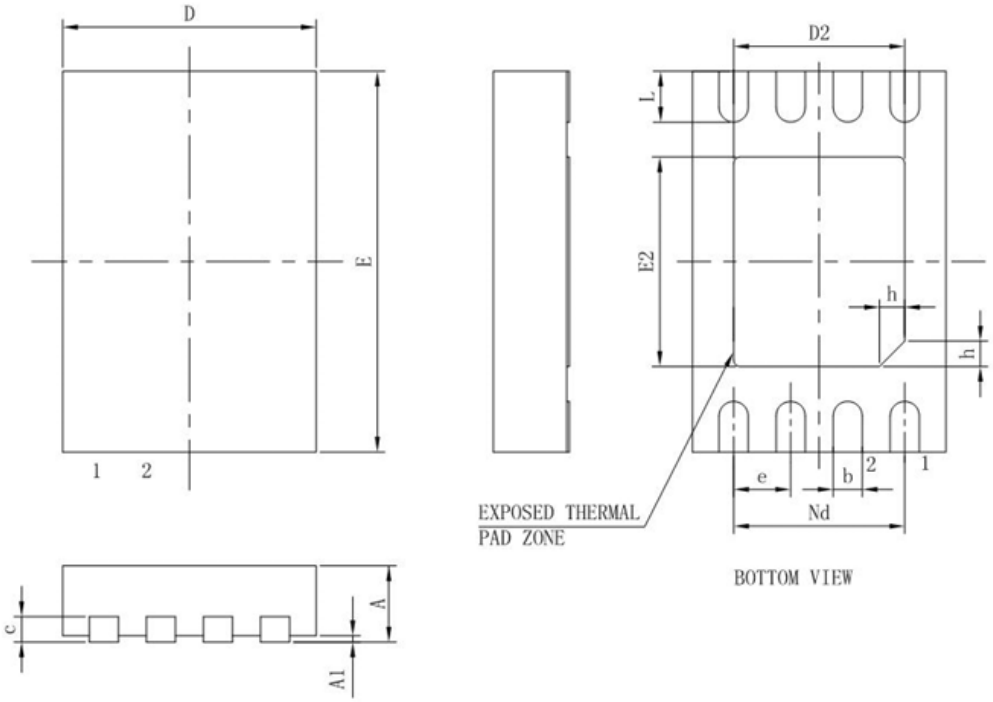
Temperature Stability



OVP threshold V-PROADJ & Temperature

Package Outline

DFN8L (0203-0.75-0.50)



Package outline

UNIT:mm

Symbol	Min	Type	Max
A	0.70	0.75	0.80
A1	-	0.02	0.05
b	0.20	0.25	0.30
c	0.18	0.20	0.25
D	1.90	2.00	2.10
D2	1.40	1.50	1.60
E	2.90	3.00	3.10
E2	1.50	1.60	1.70
e	0.50BSC		
Nd	1.50BSC		
L	0.30	0.40	0.50
h	0.20	0.25	0.30

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