

## Over voltage and over current protection IC

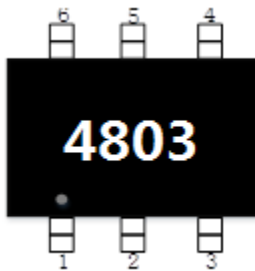
### Description

AF4803 is an Over-Voltage-Protection (OVP) and Over-Current-Protection (OCP) device. 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

- MID
- PMP
- Digital Cameras
- Digital Videos

### Device Information



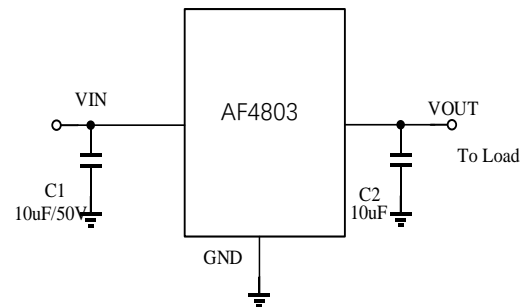
Top view

Package	SOT-23-6L
MOQ	3000 pcs

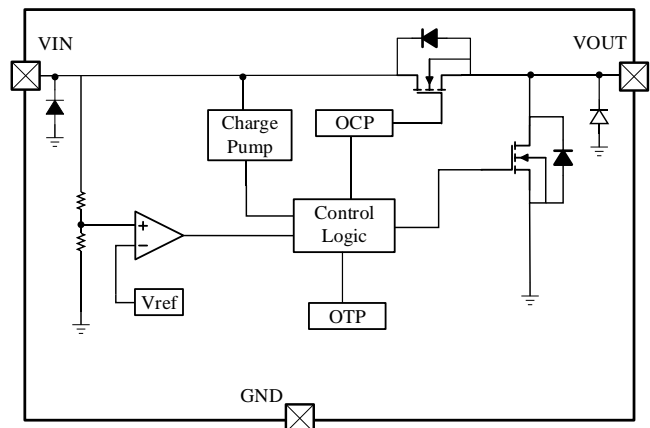
### Features

- High voltage technology
- Maximum input voltage :30V
- Output power ON time :8ms(Typ)
- OVP threshold: 6.1V
- OVP response time :<1us
- OCP threshold: 2A(Min)
- Output auto discharge
- Small Package:SOT23-6L

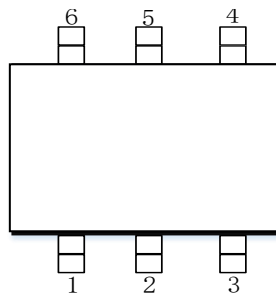
### Typical Application



### Functional Block Diagram



### Pin Configuration



AF4803

Pin configuration (Top view)

NO.	Symbol	Type	Description
1/2/5/6	GND	GROUND	Ground
3	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.
4	VOUT	POWER	Output pin, Connect to load.

### Absolute Maximum Ratings<sup>(1)</sup>

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

PARAMETER	SYMBOL	RATINGS	UNITS
Input voltage (ACIN pin)	V <sub>IN</sub>	-0.3 ~ 30	V
Output voltage (VOUT pin)	V <sub>OUT</sub>	-0.3 ~ 30	V
Power dissipation *1 *3	P <sub>D</sub>	0.5	W
Power dissipation *2 *3		0.3	W
Thermal resistance *1	R <sub>θJA</sub>	250	°C/W
Thermal resistance *2		416	°C/W
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 ~ 150	°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 may affect device reliability.

\*1: Surface mounted on FR-4 Board using 1 square inch pad size, dual side, 1oz copper

\*2: Surface mounted on FR-4 board using minimum pad size, 1oz copper

\*3: Power dissipation is calculated by  $P_D = (V_{IN} - V_{OUT}) \times I_{OUT}$

**Recommend Operating Conditions**

(Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Input voltage	V <sub>IN</sub>	3.5 ~ 25	V
Output current	I <sub>OUT</sub>	1.5	A
Ambient operating temperature	Topr	-40 ~ 85	°C

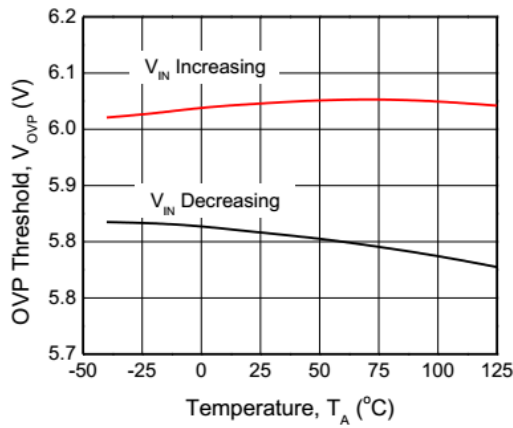
**Electrical Characteristics**

(Ta=25°C, unless otherwise noted)

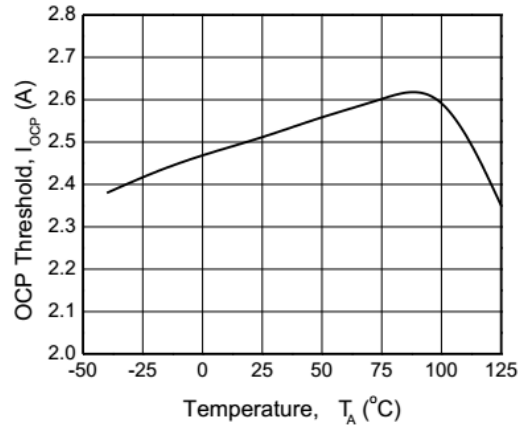
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>DC characteristics and Power-ON-Reset</b>						
Input quiescent current	I <sub>Q</sub>	V <sub>ACIN</sub> =5V, I <sub>out</sub> =0A		150	300	uA
IN-to-OUT ON resistance*3	R <sub>ON</sub>	V <sub>ACIN</sub> =4.5V, I <sub>out</sub> =3A		150	200	mΩ
Output auto discharge resistance	R <sub>DISCHARGE</sub>			500		Ω
Under voltage lock out threshold	UVLO	V <sub>ACIN</sub> increasing from 0~3V	2.3		2.8	V
Under voltage lock out hysteresis	V <sub>HYS-UVLO</sub>	V <sub>ACIN</sub> decreasing from 3.5~0V	200	250	300	mV
Output power-on time	T <sub>ON</sub>	V <sub>ACIN</sub> =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 <sub>EN</sub>				2	uA
<b>Input Over-Voltage-Protection (OVP)</b>						
OVP threshold	V <sub>OVP(th)</sub>	V <sub>ACIN</sub> increasing from 5~7V	5.8	6.1	6.4	V
OVP hysteresis	V <sub>HYS-OVP</sub>	V <sub>IN</sub> decreasing from 7~5V	200	300	400	mV
OVP active time	T <sub>OVP</sub>	V <sub>ACIN</sub> = 5 -> 10V			1	us
OVP recovery time	T <sub>ON(OVP)</sub>	V <sub>ACIN</sub> =10 -> 5V to output ON	6	8	10	ms
<b>Input Over-Current-Protection (OCP)</b>						
OCP threshold	I <sub>OCP</sub>		2.0	2.5	3	A
<b>Over-Temperature-Protection (OTP)</b>						
OTP threshold				165		°C
OTP hysteresis				40		°C

\*3: Single Pulse, Pulse width=10ms

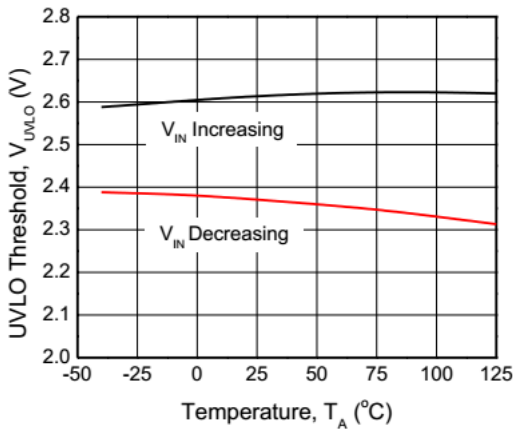
### Typical characteristic



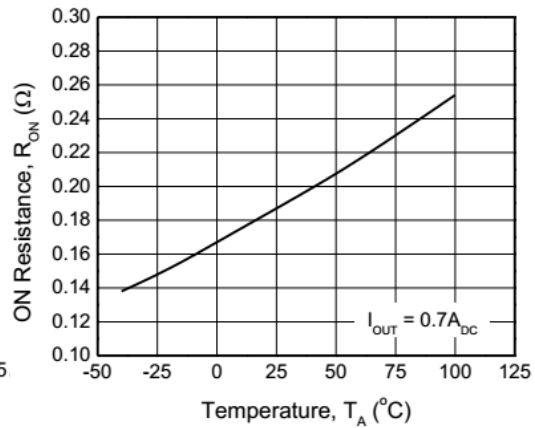
OVP threshold vs. Temperature



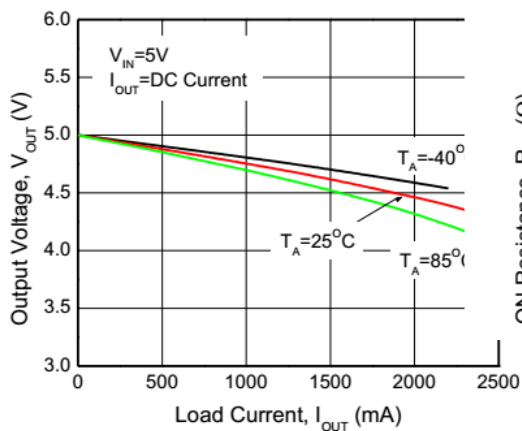
OCP threshold vs. Temperature



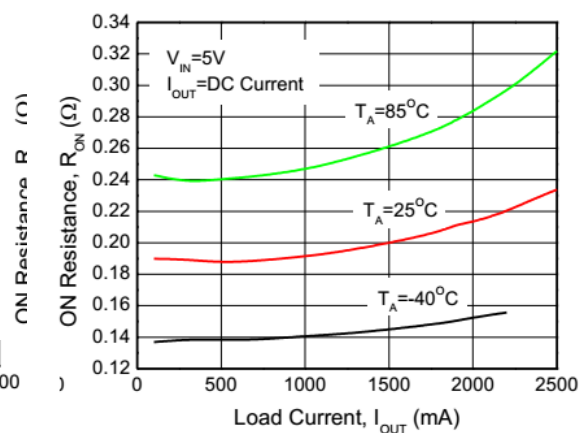
UVLO threshold vs. Temperature



IN-to-OUT ON resistance vs. Temperature



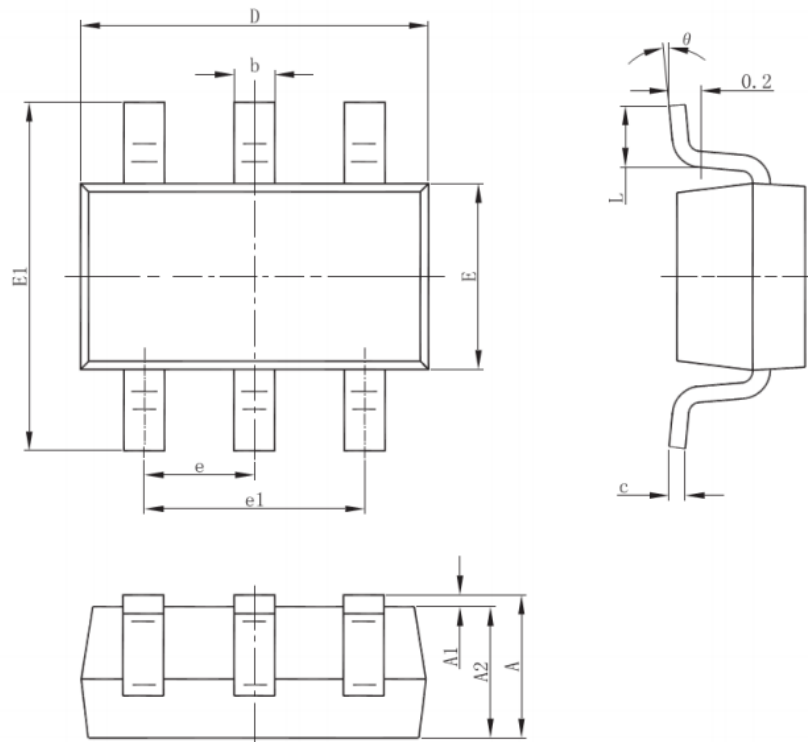
Output voltage vs. Output current



ON resistance vs. Output current

### Package Outline

SOT-23-6L



Package outline

UNIT:mm

Symbol	Min (mm)	Type(mm)	Max(mm)
A	1.050	-	1.250
A1	0.000	-	0.100
A2	1.050	-	1.150
b	0.300	0.400	0.500
c	0.100	-	0.200
D	2.820	2.900	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950Typ.		
e1	1.800	1.900	2.000
L	0.300	-	0.600
θ	0°	-	8°

DISCLAIMER



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