

数据手册 DATASHEET

TP2602

(Over Voltage and Over Current Protection IC)

TP2602 Over Voltage and Over Current Protection IC

General Description / 概述

The TP2602 is an Over-Voltage-Protection (OVP) and Over-Current-Protection (OCP) device. The device will switch off internal MOSFET to disconnect VIN to VOUT 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.

The TP2602 is available in SOT-23-6L package. Standard products are Pb-free and Halogen-free.

Features/特点

- Absolute maximum input voltage: 32V;
- Maximum load current: 3A ;
- Low power path resistance: SOT23-6: 50mΩ (Typ.) ;
- OVP Threshold(default): 6.1V ;
- Protection Voltage Programmable by VFB=1.2V
- OVP response time: 50us ;
- SCP and OTP
- Thermal shutdown protection &Auto recovery;
- Output short-circuit protection;
- RoHS Compliant and 100% Lead (Pb)-Free ;
- SOT23-6 Package.

Application/应用领域

- GPS ,TWS;
- PAD ;
- Battery Supplied System;
- Driving record instrument;
- Car Camera;
- E-Cigarette;

Typical Application Circuit/典型应用图:

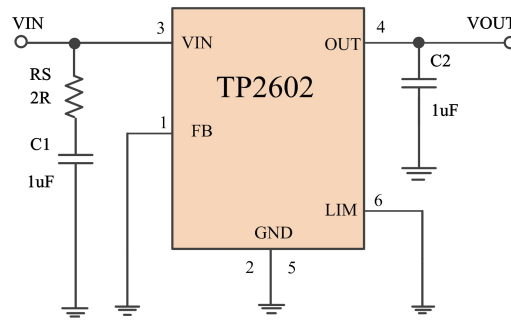


Figure 1: Typical Application Schematic

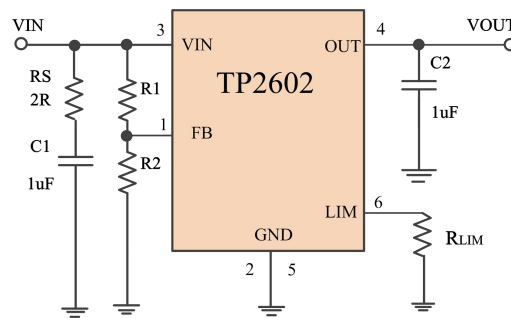


Figure 2: Typical Application Schematic (IOCP is adjustable)

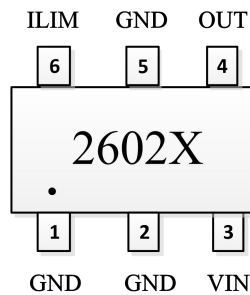
Ordering Information / 订购信息

<p>ILIM GND OUT 6 5 4 2602X 1 2 3 FB GND VIN SOT23-6 封装</p>	<p>订单型号</p> <p>TP2602-SOT236</p> <p>Marking Information: 2602X: </p>
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ABSOLUTE MAXIMUM RATINGS/绝对最大额定值

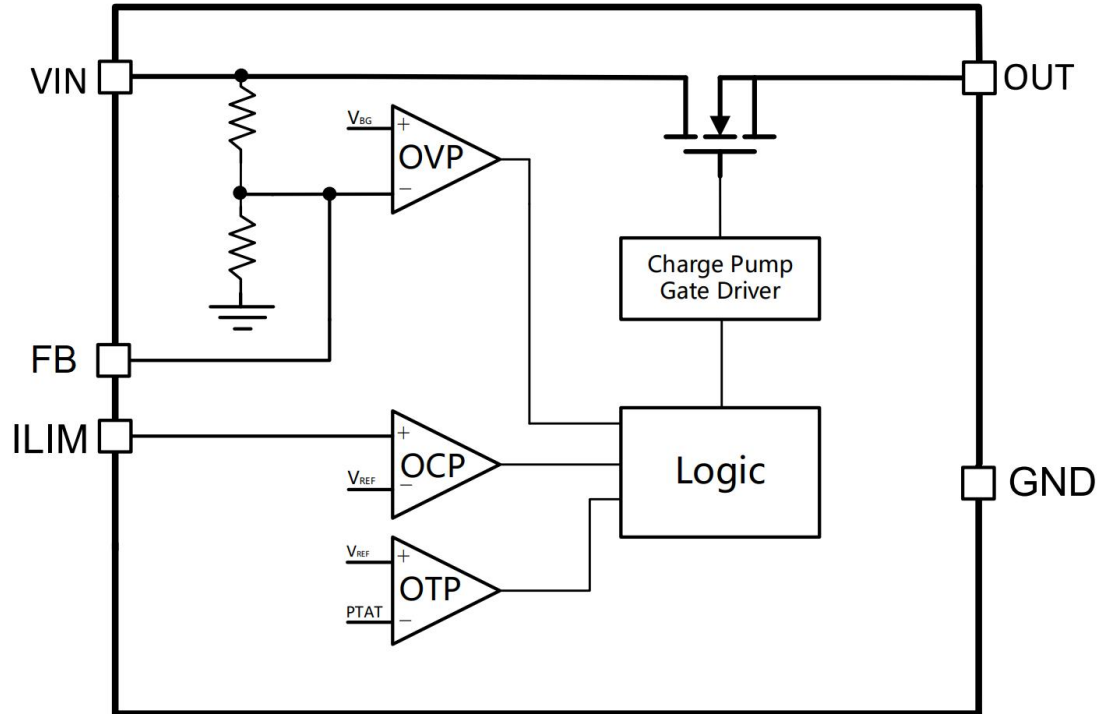
SYMBOL	ITEMS	VALUE	UNIT
V _{IN}	Input Voltage	-0.3~32	V
I _{OMAX}	Maximum Output Continues Load Current	3.1	A
P _{DMAX}	Power Dissipation	SOT23-6	0.6
			W
R _{θJA}	Thermal Resistance	SOT23-6	100
			°C/W
T _J	Junction Temperature	-40~125	°C
T _{stg}	Storage Temperature	-40~85	°C
T _{solder}	Package Lead Soldering Temperature (10s)	260	°C
HBM	ESD Susceptibility, Human Body Model	2	KV

Pin Description /引脚描述



PIN			SYMBOL	PIN DESCRIPTION
SOT23-6				
1			FB	OVP feedback input pin. A resistor divider from IN to AGND thru this pin. VFB=1.2V, When FB grounding , default OVP=6.1V.
2			GND	Power ground pin.
3			VIN	Power input pin. Decouple high frequency noise by connecting at least 1uF MLCC to ground.
4			OUT	Output voltage pin. Decouple high frequency noise by connecting at least 1uF MLCC to ground.
5			GND	Power ground pin.
6			ILIM	Regulating protection current, When LIM grounding , default IOCP=3.5A.

Functional Block Diagram/内部结构框图



Electrical Characteristics/电气特性参数

VIN =5V,C1=C2=1uF, TA=25°C, unless otherwise noted.

Parameter	Test Conditions	Min	Typ	Max	Units
Input Voltage			5.0	32.0	V
UVLO			2.9		V
OVP	Iout=10mA	5.8	6.1	6.4	V
VFB	Iout=10mA	1.15	1.2	1.25	V
OVP Range		4.0		20.0	V
T _{OVP}			50		ns
R _{on}	VCC=5V, Iout=1A		50	70	mΩ
I _q	Standby current, IN and Vcc < OVP voltage NO Load, VIN=5V NO Load, VIN=32V		60 150		uA uA
Thermal Shutdown			150		°C
T _{OTP_HYS}			20		°C
I _{OCP}	ILIM=GND		3.5	5.5	A
	ILIM=2Kohm	1.95	2.25	2.59	A
T _{OCP}		80	140	200	us
T _{SDD}			25		ms

Function Descriptions/功能说明

1. UVLO Over Current Protection (OCP)

If the load current rises to the OCP threshold, the device will cut off the output voltage. The OCP threshold is calculated by the equation:

$$I_{LIM} (A) = \frac{4500}{R_{LIM}} \pm 15\% \quad (\text{current in A, resistance in } \Omega)$$

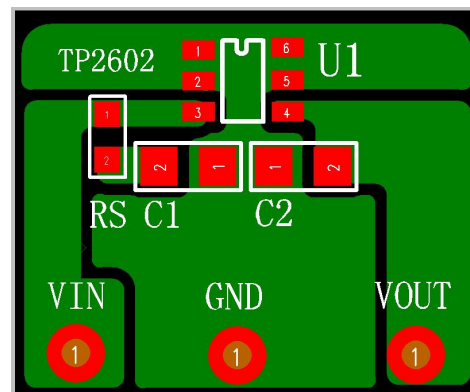
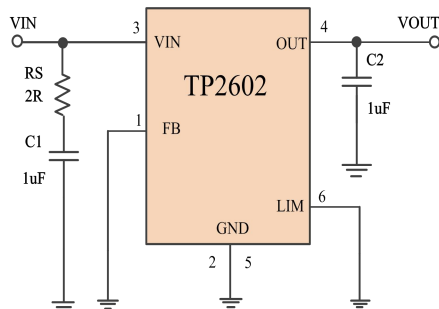
2. overvoltage protection (OVP)

OVP feedback input pin. A resistor divider from IN to AGND thru this pin. VFB=1.2V, When FB grounding, default OVP=6.1V. The OVP threshold is calculated by the equation:

$$OVP (V) = \frac{R1+R2}{R2} \times 1.2$$

TP2602 LAYOUT:

Typical Application Schematic(default)



Package Outline/外观尺寸

