## Features

- Input 6.1V Over Voltage Protection

- Low RDS(ON): 135mΩ @ 5V /1A

- Output Discharge

- Adjustable Over Current Protection

- High Accuracy Protection Thresholds

- Under Voltage Lockout

- Output Short-Circuit Protection

- Over-Temperature Protection

- RoHS Compliant and 100% Lead (Pb)-Free

- SOT23-6 Package

Description

The LP5301F is an Over-Voltage-Protection (OVP) and adjustable 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.

Other features include over temperature protection and under-voltage lockout (UVLO).
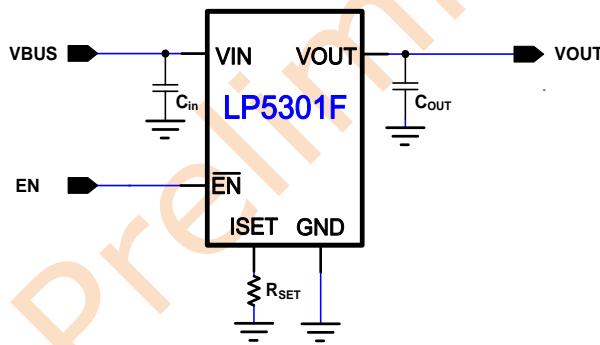
The LP5301F is available in SOT-23-6 package. Standard products are Pb-free and Halogen-free.


SOT23-6
0.95mm pin pitch
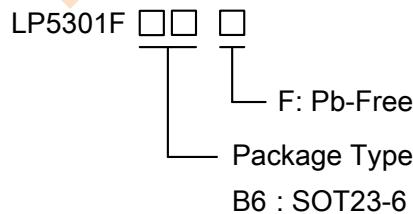
Applications

- Portable Devices

- GPS

- Digital Cameras

- Tablets

- Mobile Phones

Ordering Information

LP5301F ☐☐ ☐

F: Pb-Free

Package Type

B6 : SOT23-6

Typical Application Circuit
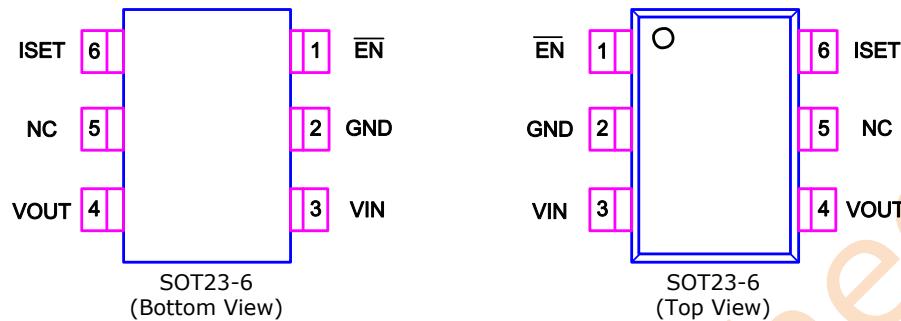
Marking Information

Device	Marking	Package	Shipping
LP5301FB6F	LPS 8FYWX	SOT23-6	3K/REEL
Marking indication:			
Y is year code. W is week code. X is series number.			

Pin Configuration

SOT23-6
(Bottom View)

SOT23-6
(Top View)
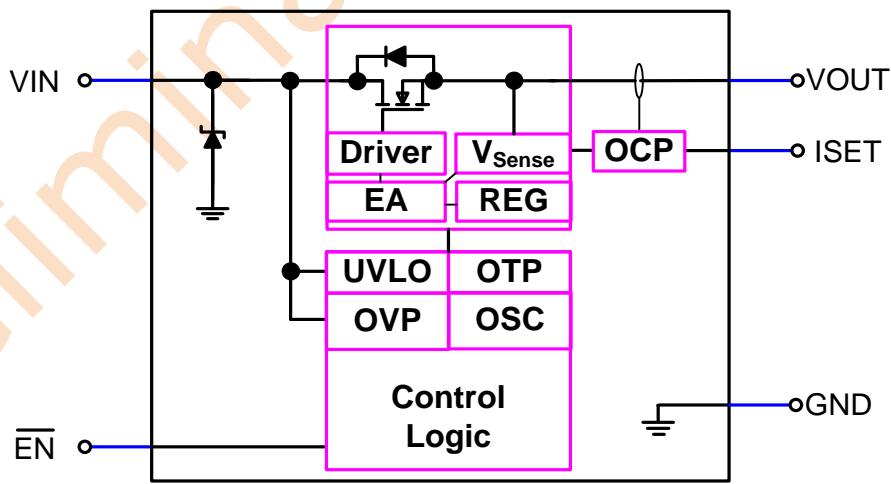
Pin Description

Pin No.	Name	Description
1	$\overline{EN}$	Enable pin. Connect it to logic high voltage to close power MOSFET.
2	GND	Ground pad. Connect EP to GND is suggested.
3	VIN	Power source input. Connect a ceramic capacitor between VIN and GND.
4	VOUT	Output through the power MOSFET. Bypass VOUT to GND with a ceramic capacitor.
5	NC	No connector. These pin must be floating without connecting to GND or HIGH voltage.
6	ISET	OCP level setting by an external resistor to GND. Connect a resistor to ground to set the overload current protection threshold: $I_{OCP}=68000 \div R_{SET}$

Functional Block Diagram

Absolute Maximum Ratings [(Note 1)]

- VIN to GND --- -0.3V to 26V
- VOUT to GND -- -0.3V to 7V
- All Other Pin to GND --- -0.3V to 7V
- Maximum Junction Temperature (T_J) --- 125°C
- Operating Ambient Temperature Range (T_A) -- -40℃ to 85°C
- Maximum Soldering Temperature (At leads, 10 sec) --- 260°C

*Note 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 in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Thermal Information

- Maximum Power Dissipation (P_D, $T_A <= 25℃$) -- 0.4W
- Thermal Resistance (θ_{JA}) [(Note 2)] --- 250℃/W

Electrical Characteristics
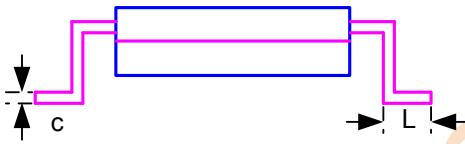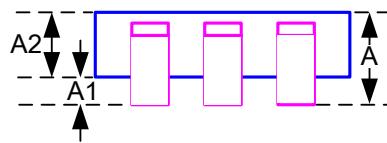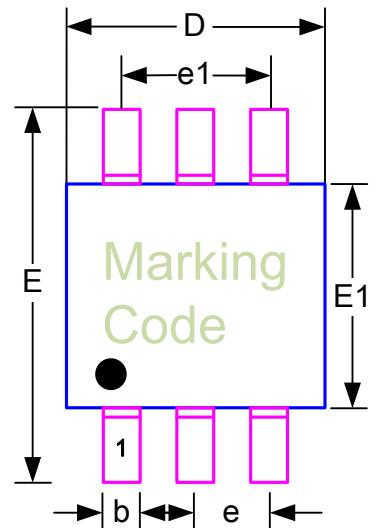
The parameters are measured under conditions V_{IN} = 5V, V_{EN} = 0V, C_{IN} = C_{OUT} = 1µF, T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Units
General Function						
Input Voltage	V_{IN}	T_J= +25 °C	3.3	5	20	V
Input UVLO Threshold	V_{UVLO}	V_{IN} Rising		3.5		V
UVLO Threshold Hysteresis	ΔV_{UVLO}	Falling Hysteresis		100		mV
Soft Start Time	T_{SS}			35		ms
Input Quiescent Current	I_Q	No loading		250		µA
Shutdown Current	I_{SD}	V_{IN}=5V, V_{TS}=0V		5		uA
Thermal Shutdown Threshold	T_{SD}	No loading		130		°C
Thermal Shutdown Threshold Hysteresis	ΔT_{SD}			20		°C
Power MOS						
Switch On Resistance	$R_{DS(ON)}$	I_{OUT}=1A		135		mΩ
Output Discharge Resistance	R_{DIS}			2		kΩ
Protection Functions						
Input Over Voltage Protect threshold	V_{IOVP}	V_{IN} from 5V to 8V		6.1		V
Input OVP threshold Hysteresis	ΔV_{IOVP}	V_{IN} from 8V to 5V		150		mV
Input OVP propagation delay	T_{OVP}	VIN=5V → 8V to output off			1	us
OVP recovery time	$T_{ON(OVP)}$	VIN=8V → 5V to output on		8		ms
Over Current Protect threshold	I_{OCP}	R_{ISET}=NC		3		A
		RISET=68kΩ		1		A
OCP active time	T_{OCP}			30		ms
ISET Voltage	V_{ISET}			0.8		V
OCP recovery time	$T_{ON(OCP)}$			1		s

Package Dimensions

SOT23-6 Package (Unit: mm)

SYMBOLS UNIT	DIMENSION IN MILLIMETER		
	MIN	NOM	MAX
A	--	--	1.350
A1	0.040	--	0.150
A2	0.900	1.100	1.300
b	0.300	--	0.480
c	0.080	--	0.210
D	2.720	2.920	3.120
E	2.600	2.800	3.000
E1	1.400	1.600	1.800
e	0.950 BSC		
e1	1.800	1.900	2.000
L	0.300	--	0.610