

Power Switch with Fault Indication

General Description

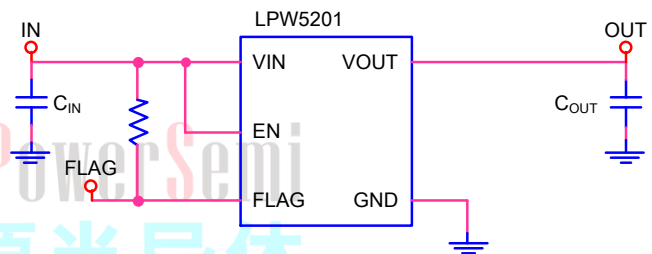
The LPW5201 is an integrated power switch for self-powered and bus-powered Universal Series Bus (USB) applications. A built-in charge pump is used to drive the N-Channel MOSFET that is free of parasitic body diode to eliminate any reversed current flow across the switch when it is powered off. Its low quiescent current (30µA) and small package (SOT23-5) is particularly suitable in battery-powered portable equipment.

Several protection functions include soft start to limit inrush current during plug-in, current limiting at 600mA, 1100mA or 2100mA to meet USB power requirement, and thermal shutdown to protect damage under over current conditions.

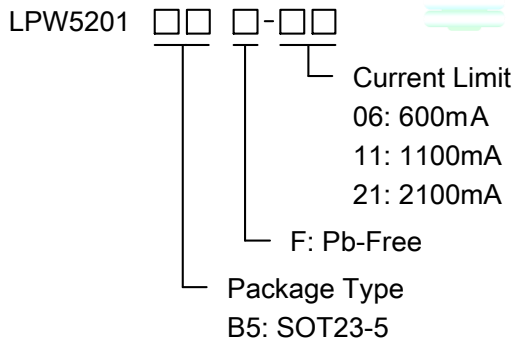
Features

- ◆ 80mΩ Low $R_{DS(ON)}$, High-side N-MOSFET
- ◆ 2.5V to 6V Input Voltage
- ◆ Low Quiescent Current:30µA
- ◆ Soft Start Function
- ◆ Built-In Short-Circuit Protection
- ◆ Built-in Thermal Protection
- ◆ RoHS Compliant and 100% Lead (Pb)-Free

Typical Application Circuit



Order Information



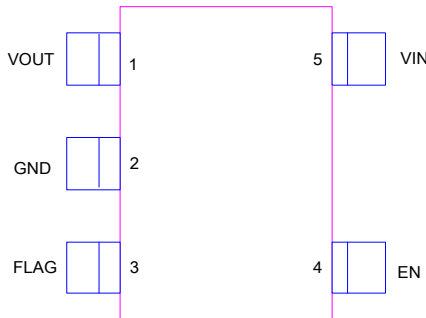
Applications

- ✧ Power Switch
- ✧ USB Device
- ✧ Battery Charger Circuits

Marking Information

Device	Marking	Package	Shipping
LPW5201B5F-06	LPS B2YWX	SOT23-5	3K/REEL
LPW5201B5F-11	LPS B1YWX	SOT23-5	3K/REEL
LPW5201B5F-21	LPS 1WYWX	SOT23-5	3K/REEL
Marking indication: Y:Production year W:Production week X:Production batch			

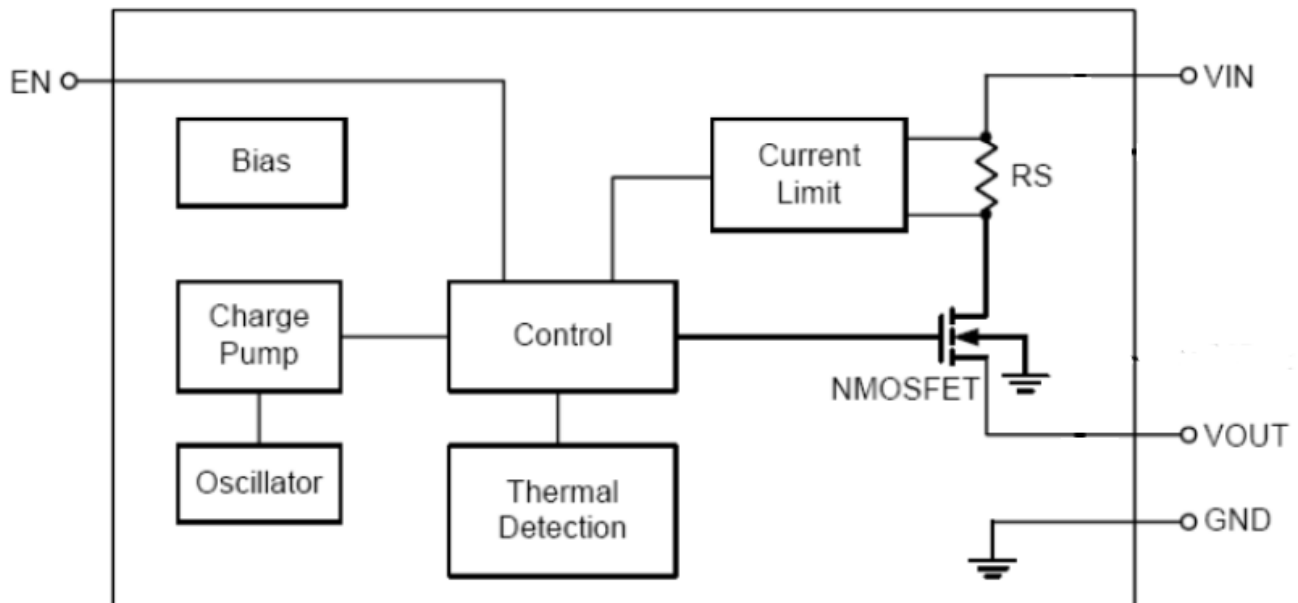
Functional Pin Description

Package Type	Pin Configurations
SOT23-5	<p>Top View</p> 

Pin Description

Pin	Name	Description
1	VOUT	Output To System pin.
2	GND	Ground.
3	FLAG	Over Current Flag pin.
4	EN	Device Enable pin (active High).
5	VIN	Input pin.

Function Block Diagram



Absolute Maximum Ratings Note 1

◇ Input Voltage to GND	-----	7V
◇ Output Voltage to GND	-----	7V
◇ Other pin to GND	-----	7V
◇ Maximum Junction Temperature	-----	150°C
◇ Operating Ambient Temperature Range (T _A)	-----	-40°C to 85°C
◇ Storage Temperature Range	-----	-60°C to 125°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 (SOT23-5, P _D , T _A =25°C)	-----	0.45W
◇ Thermal Resistance (SOT23-5, θ _{JA})	-----	250°C/W

ESD Susceptibility

◇ HBM(Human Body Mode)	-----	2KV
◇ MM(Machine Mode)	-----	200V

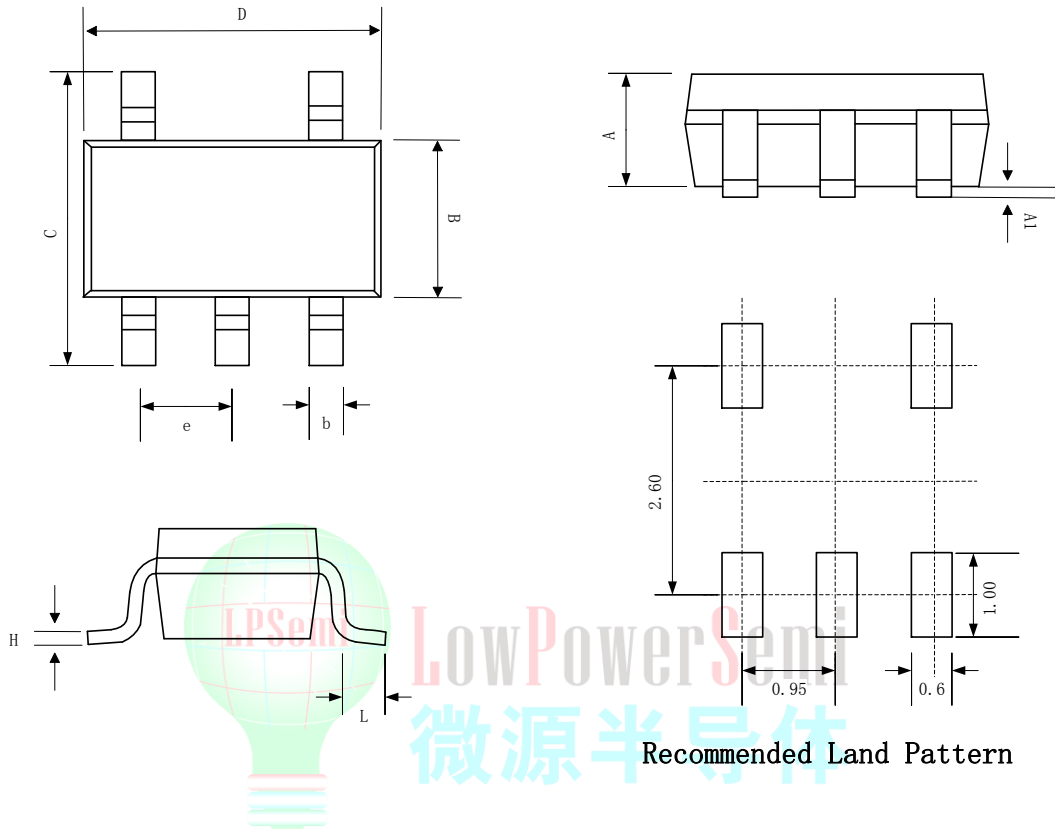
Electrical Characteristics

(Over recommended operating conditions unless specified otherwise, T_A=25°C)

Symbol	Parameter	Condition	Min	Typ	Max	Units
V _{IN}	Input Voltage		2.5		6	V
I _{OUT}	Output Current Limited	LPW5201B5F-06	500	600	720	mA
		LPW5201B5F-11	880	1100	1280	mA
		LPW5201B5F-21	1680	2100	2400	mA
R _{DS(ON)}	Output N-MOSFET R _{DS(ON)}			80	100	mΩ
I _Q	Quiescent Current	V _{IN} =3V		30	50	μA
I _{SHDN}	Shutdown Current	V _{EN} =GND		0.1	1	μA
V _{EN(L)}	Enable Threshold Low				0.4	V
V _{EN(H)}	Enable Threshold High		1.4			V
I _{EN}	Input High Current	V _{IN} =V _{EN} =5.0V		5		μA
T _{OTP}	Over Temperature Protection			150		°C
T _{OTP_HYS}	Over Temperature Hysteresis			20		°C

Packaging Information

SOT23-5



Recommended Land Pattern

SYMBOL	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.889	1.100	1.295
A1	0.000	0.050	0.152
B	1.397	1.600	1.803
b	0.28	0.35	0.559
C	2.591	2.800	3.000
D	2.692	2.920	3.120
e	0.95BSC		
H	0.080	0.152	0.254
L	0.300	0.450	0.610