

1.5A Power Switch with Programmable Current Limit

General Description

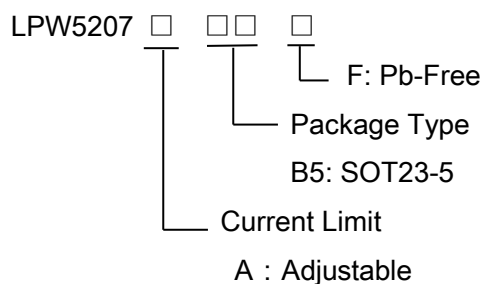
The LPW5207 is an integrated power switch for self-powered and bus-powered Universal Serial Bus (USB) applications. A built-in charge pump is used to drive the N-Channel MOSFET that is free of parasitic body diode to eliminate any reversed current flow across the switch when it is powered off. Its low quiescent current (30 μ A) 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 1500mA to meet USB power requirement, and thermal shutdown to protect damage under over current conditions.

Features

- ◆ 110m Ω Low Rdson, High-side NMOSFET
- ◆ Guaranteed 1500mA Continuous Current
- ◆ 2.5V to 6V Input Voltage
- ◆ Low Quiescent Current:30 μ A
- ◆ Soft Start Function
- ◆ Built-In Short-Circuit Protection
- ◆ Built-in Thermal Protection
- ◆ RoHS Compliant and 100% Lead (Pb)-Free

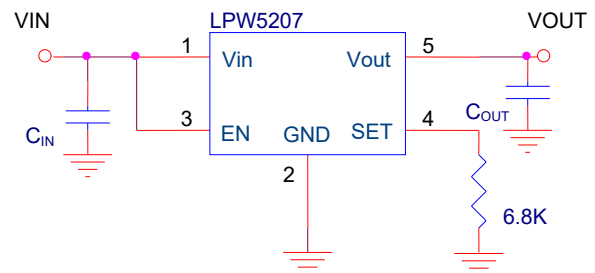
Order Information



Applications

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

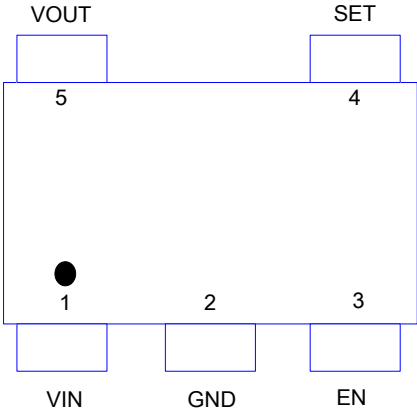
Typical Application Circuit



Marking Information

Device	Marking	Package	Shipping
LPW5207AB5F	LPS 2WYWX	SOT23-5	3K/REEL
Marking indication: Y:Production year W:Production week X:Production batch			

Functional Pin Description

Package Type		Pin Configurations
SOT23-5		
PIN No.	NAME	DESCRIPTION
1	VIN	Input pin.
2	GND	Ground.
3	EN	Chip enable (Active High).
4	SET	Connect a resistor to GND for setting current limit. $I_{LIMIT}(mA)=6800/R_{SET}(k\Omega)$.
5	VOUT	Output pin.

Absolute Maximum Ratings ^{Note 1}

- ◇ Input Voltage to GND ----- -0.3V to 7V
- ◇ Other pin to GND ----- -0.3V to 7V
- ◇ Maximum Junction Temperature ----- 150°C
- ◇ Operating Junction Temperature Range (T_J) ----- -40°C 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 (PD,TA=25°C) ----- 0.45W
- ◇ Thermal Resistance (JA) ----- 260°C/W

ESD Susceptibility

- ◇ HBM(Human Body Mode) ^{Note 2} ----- 2KV
- ◇ MM(Machine Mode) ^{Note 3} ----- 200V

Note 2. The Human body model (HBM) is a 100pF capacitor discharged through a 1.5kΩ resistor into each pin. The testing is done according JEDEC.

Note 3. Machine Model (MM) is a 200pF capacitor discharged through a 500nH inductor with no series resistor into each pin. The testing is done according JEDEC.

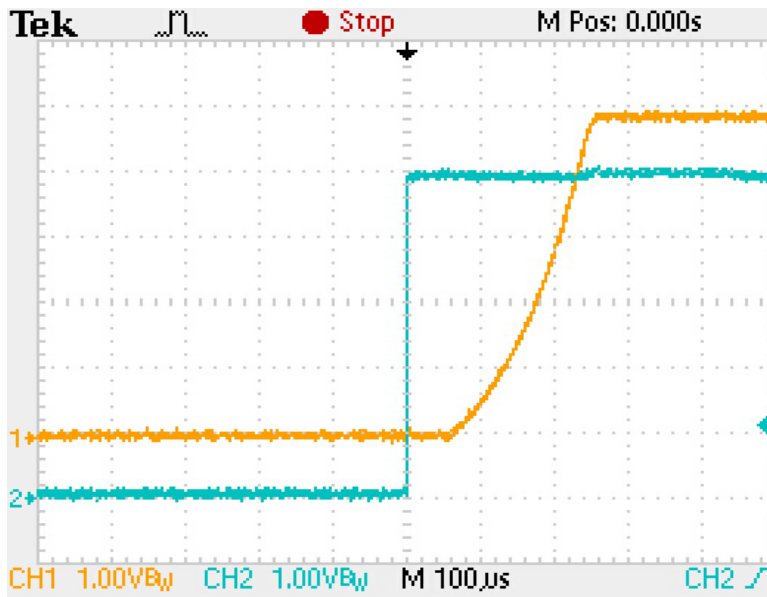
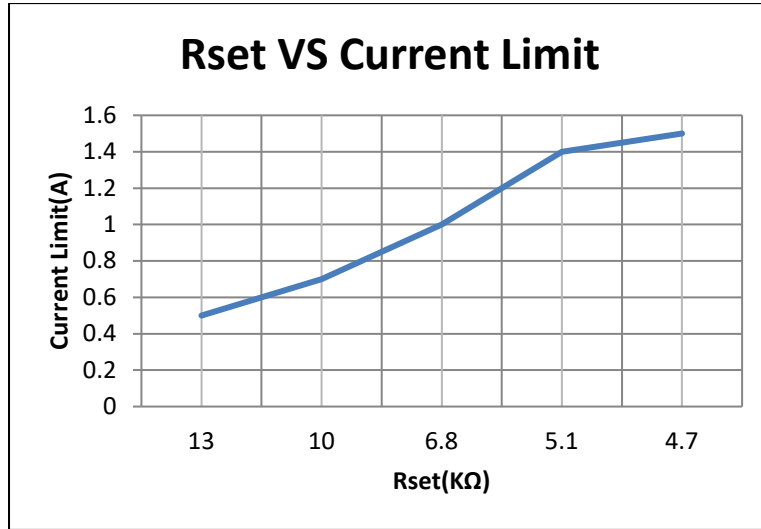
Electrical Characteristics

(Over recommended operating conditions unless specified otherwise) V_{IN}=5.0V, EN=High, T_A=25°C)

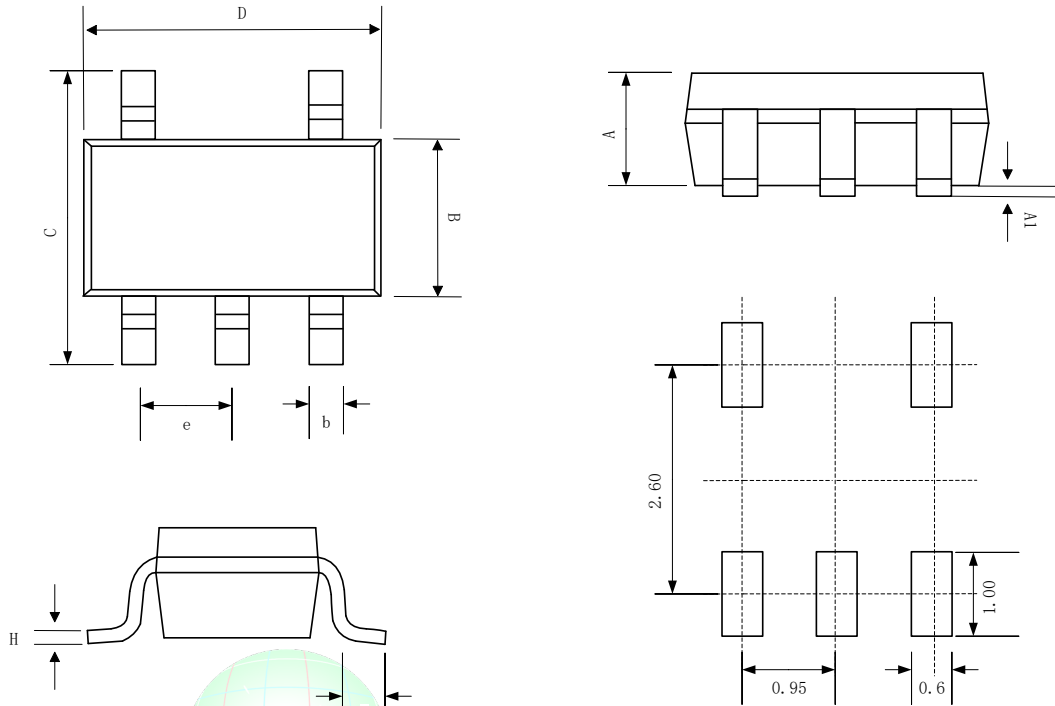
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{IN}	Input Voltage		2.5		6	V
I _{OUT}	Output Current Limited				1500	mA
R _{DS(ON)}	Output NMOSFET R _{DS(ON)}			110		mΩ
I _Q	Quiescent Current	V _{in} =3V		30		μA
I _{SHDN}	Shutdown Current	EN = GND			1	μA
V _{EN(L)}	Enable Threshold Low				0.4	V
V _{EN(H)}	Enable Threshold High		1.2			V
I _{EN}	Input High Current	V _{IN} = V _{EN} = 5.0V		5		μA



Typical Operating Characteristics



Packaging Information



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