

1A USB Load Current Switch with 5V Output Voltage Limit

DESCRIPTION

The BL2556 is 1A USB Load Current Switch with output voltage limit at 5V, designed for high-side load switching applications. The internal current-limiting circuit protects the input supply against large output short circuit current which may cause the supply to fall out of regulation.

The output voltage limiting function protects the output over voltage when BL2556's Vin sees voltage surge.

The current limit is fixed around 1.4A which allow 1A USB application. The quiescent supply current is typically 15 μ A, making the device ideal for portable battery-operated equipment. In shutdown mode, the supply current decreases to less than 0.1 μ A.

Additional features include thermal shutdown and short-circuit protection and current fold-back.

The part is available in a tiny SOT23-5 package.

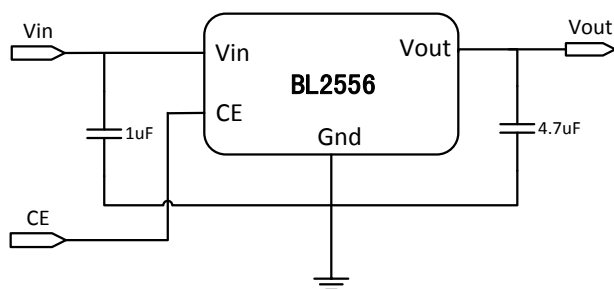
FEATURES

- Stand input voltage as high as 10V
- Output voltage limiting at 5V
- Controlled turn-on
- Fixed current limit large than 1A
- 0.25ohm on resistance
- Extremely low quiescent current at 15 μ A typ.
- Logic Control Shutdown (IQ<1 μ A)
- Thermal shutdown
- Short-circuit protection
- Short-circuit current fold-back
- SOT23-5 package

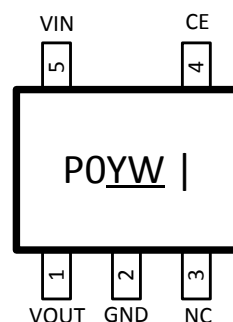
APPLICATIONS

- Portable Devices
- MID, MP4...
- Set top boxes
- Notebook and PC mother board
- USB supplied Devices

TYPICAL APPLICATION



PIN OUT & MARKING



SOT23-5

PO: product code;
YW: data code

ORDERING INFORMATION

PART No.	PACKAGE	Tape&Reel
BL2556CB5TR	SOT23-5	3000/Reel

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		10V
Max Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-40°C – 85°C
Maximum Power Dissipation	SOT23-5	0.35W
Storage Temperature(Ts)		-40°C - 150°C
Lead Temperature & Time		260°C, 10S
ESD (HBM)		>2000V

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

Parameter		Value
Input Voltage Range		Max. 5.5V
Operating Junction Temperature(Tj)		-20°C –125°C

ELECTRICAL CHARACTERISTICS

(Vin=5V, TA=25°C)

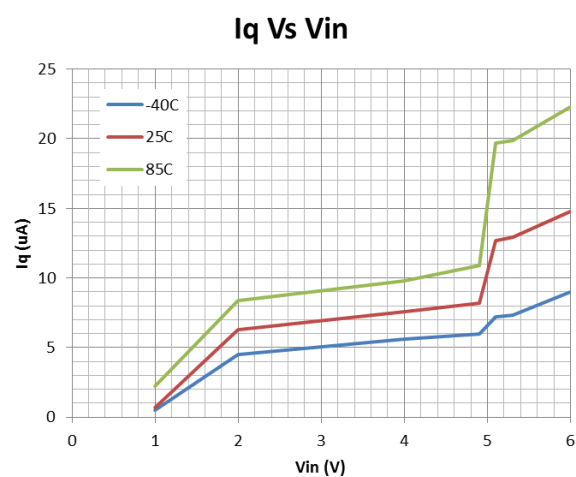
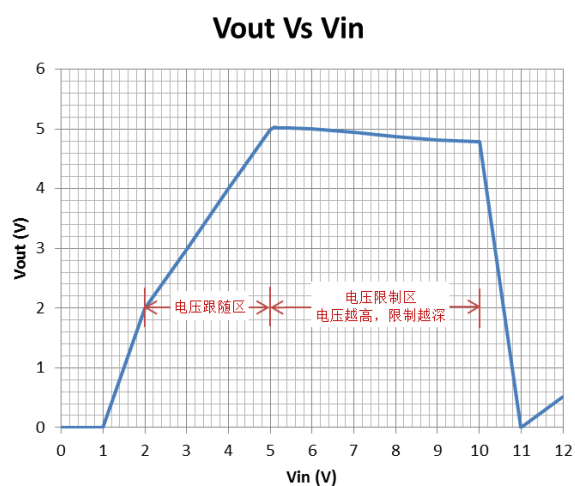
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vin	Input Voltage Range		1.5		5.5	V
Iq	Quiescent Current	Active, Vfb=0.65, No Switching		15	50	uA
		Shutdown			1	uA
Rdson	Switch Rdson	Iout=500mA		250	350	mohm
Ilimit	fixed current limit			1.5		A
Vovp	Output voltage limiting	Vin=6V	4.9	5	5.1	V
Vh_on	ON Input High Voltage		1.5			V
VI_on	ON Input Low Voltage				0.3	V
Tsd	Thermal shutdown Temp.			165		°C

PIN DESCRIPTION

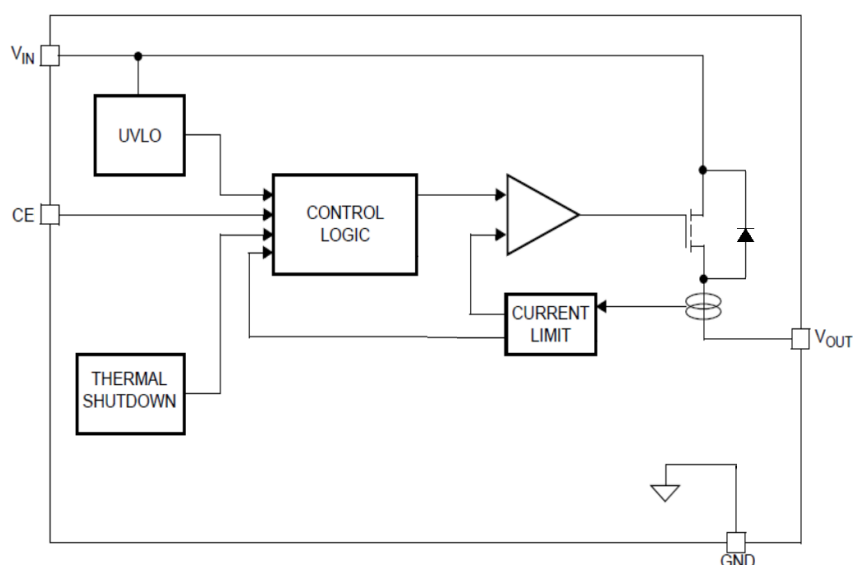
PIN #	NAME	DESCRIPTION
1	Vout	Switch Output, the output of power switch
2	GND	Ground
3	NC	Not connected
4	CE	Control input, enable pin, active high
5	Vin	Supply input voltage

ELECTRICAL PERFORMANCE

Tested under $T_A=25^{\circ}\text{C}$, $C_{in}=1\mu\text{F}$, $C_{out}=1\mu\text{F}$, unless otherwise specified



BLOCK DIAGRAM



DETAILED DESCRIPTION

Operation

The BL2556 is a current limited switch that protects systems and loads which can be damaged or disrupted by the application of high currents. The core of each device is a 0.25Ω P-channel MOSFET and a controller capable of functioning over a wide input operating range up to 10V. The chip protects against system malfunctions through current limiting, undervoltage lockout and thermal shutdown. The current limit is set around 1.5A and it offers an unique function to limit output voltage at 5V.

On/Off control

The CE pin controls the state of the switch. When CE is high, the switch is in the ON state. Activating CE continuously holds the switch in the on state so long as there is no fault. An under voltage on VIN or a junction temperature in excess of 165°C overrides the CE control to turn off the switch.

Output Over-Voltage Limiting

BL2556 provides an unique output voltage limiting function, to protect the load which follows it. When BL2556 find out input voltage higher than 5.3V, it will limit the output voltage, so the output will not exceed standard USB voltage even when input comes across a voltage surge.

Current limiting

The current limit is internally set around 1.5A to ensure a 1A application.

Thermal and Short Circuit Protection

BL2556 will shut off its output when its temperature higher than 165°C (typical value). And it has unique short circuit fold-back function to keep itself cold when output is shorted to GND.

PACKAGE OUTLINE

Package	SOT23-5	Devices per reel	3000	Unit	mm
Package specification:					
