

16mΩ Adjustable Current-Limited Power Switch

FEATURES

- 16 mΩ High-Side MOSFET in SOT23-6
- 2.0~4.0 A Adjustable Current Limit
- Built-in Soft-Start
- Available SOT23-6 package

APPLICATIONS

- USB Charger
- USB Wall Adapter
- Car Charger

DESCRIPTION

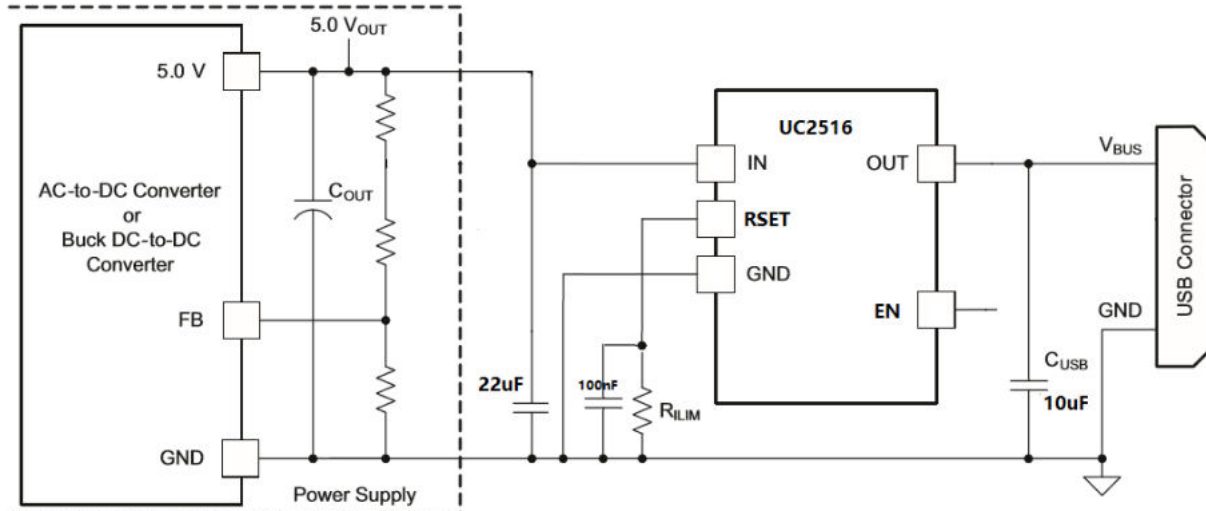
UC2516 is a 16mΩ adjustable current limited power switch intended for applications where

heavy capacitive loads and short-circuits are likely to be encountered. These devices offer a programmable current-limit threshold between 2.0A and 4.0A (typ) via an external resistor.

UC2516 will enter hiccup mode when OUT voltage is less than 3V or OTSD. It can significant reduce the output current and reduce thermal effect to the system.

UC2516 devices limit the output current to a safe level by switching into a constant-current mode when the output load exceeds the current-limit threshold.

PACKAGE AND APPLICATION

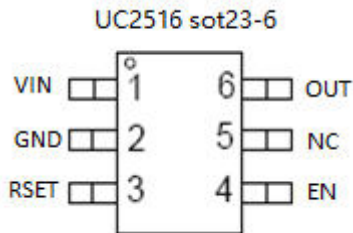


ORDING INFORMATION

Part Number	Package Type	Package Qty	Op Temp(°C)	Mark
UC2516	SOT23-6	3000	-40~85	UC2516 XXX

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PINOUT



PIN FUNCTIONS

Pin Name	TYPE ⁽¹⁾		DESCRIPTION
	SOT23-6		
VIN	1	P/I	Power supply/Input voltage connected to Power Switch; connect a 10μF or greater ceramic capacitor from IN to GND as close to the IC as possible
GND	2	G	Ground connection
RSET	3	I	External resistor used to set current-limit threshold;
EN	4	I	Enable input, logic low turns on UC2516
NC	5	I/O	NO connection
OUT	6	O	Power-switch output, connected to VBUS of USB; connect a 10μF or greater ceramic capacitor from OUT to GND as close to the IC as possible

(1) G = Ground, I = Input, O = Output, P = Power

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ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

Over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		MIN	MAX	UNIT
Supply Voltage Range	IN, OUT	-0.3	7.0	V
ESD rating, Human Body Model (HBM)	IN, OUT		6	kV
Operating Junction Temperature	T _J	-40	125	°C
Storage Temperature Range	T _{stg}	-65	150	

- (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 under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

over operating free-air temperature range (unless otherwise noted)

THERMAL METRIC			UNIT
θ _{JA}	SOT23-6 Package thermal impedance ⁽¹⁾	165	°C/W

- (1) The package thermal impedance is calculated in accordance with JESD 51-7.

RECOMMENDED OPERATING CONDITIONS

PARAMETER		MIN	MAX	UNIT
V _{IN}	Input voltage of IN	4.5	6.5	V
V _{DP/DM}	DP data line input voltage		5.5	
I _{DP/DM}	Continuous sink/source current		±10	mA
R _{SET}	Resistance of R _{SET}	13	100	kΩ
I _{OUT}	Continuous sink/source current	2000	4000	mA
T _J	Operating Junction Temperature	-40	125	°C

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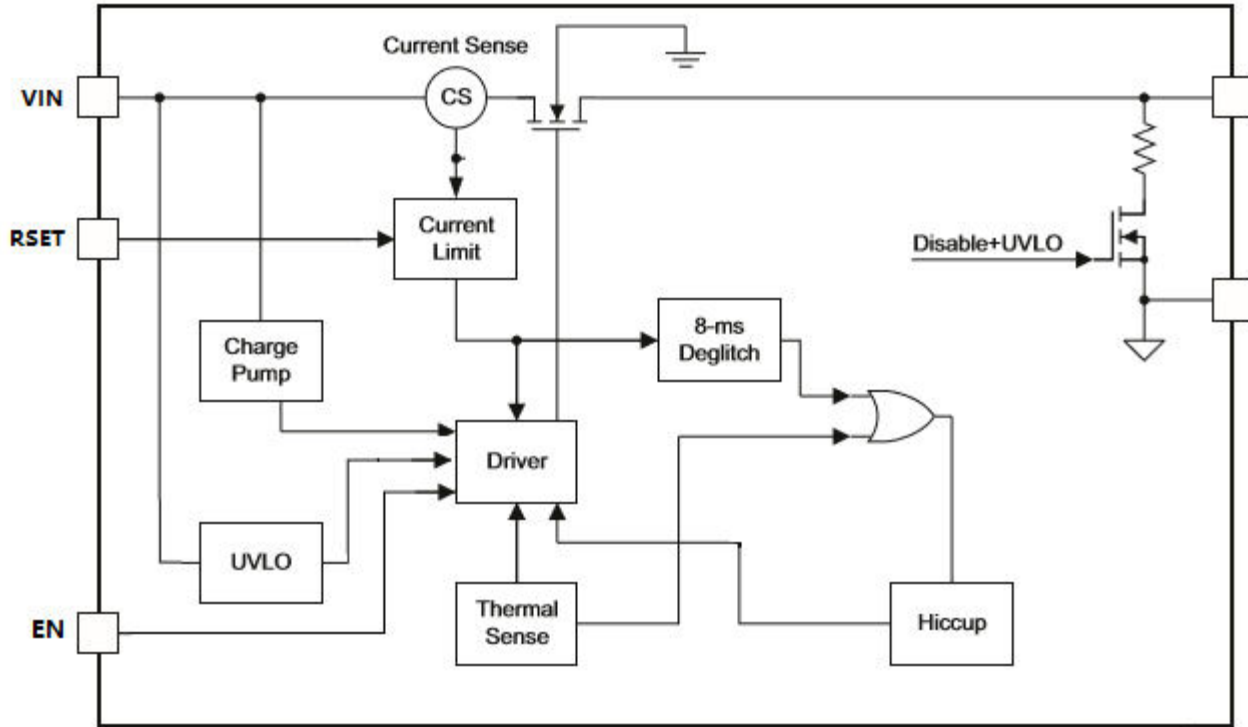
ELECTRICAL CHARACTERISTICS

Conditions are: TA = 25°C, IN = 5.0 V, Positive current are into pins. All voltages are with respect to GND (unless otherwise noted).

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Switch						
R _{DSON}	SOT23-6	I _{OUT} =2.4A		16		mΩ
Current Limit						
I _{OS}	OUT current limited	BIN1:R _{SET} =19.1k BIN2:R _{SET} =21.5K	2.50	2.70	2.90	A
Hiccup Mode						
V _{OUT_SHORT}	OUT Threshold Voltage to enter Hiccup mode			2.85		V
T _{ON_HICCUP}	ON Time of Hiccup mode		70	130	190	ms
T _{OFF_HICCUP}	OFF Time of Hiccup mode		0.7	1.3	1.9	s
Thermal Shutdown						
	Temperature Rising Threshold			150		°C
	Hysteresis			20		
UNDERVOLTAGE LOCKOUT						
V _{UVLO}	IN rising UVLO threshold voltage		3.75	3.95	4.15	V
	Hysteresis			100		mV
SUPPLY CURRENT						
I _{IN}	IN supply current	IN= 5.0V,		230	400	μA
I _{INL}	IN Disable Supply Current	IN= 5.0V		0	5	
Enable Pin(EN)						
V _{EN}	ENB threshold voltage, falling		0.7	1.33	2.0	V
V _{ENB_HYS}	Hysteresis			150		mV

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FUNCTION BLOCK DIAGRAM



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PCB LAYOUT NOTIFICATION

Input capacitance CIN(red position) of the pin 1 of uc2516:

The voltage entering the pin 1 must pass through the input capacitor CIN at a single point(单点过电容), the CIN must be close to the pin1.

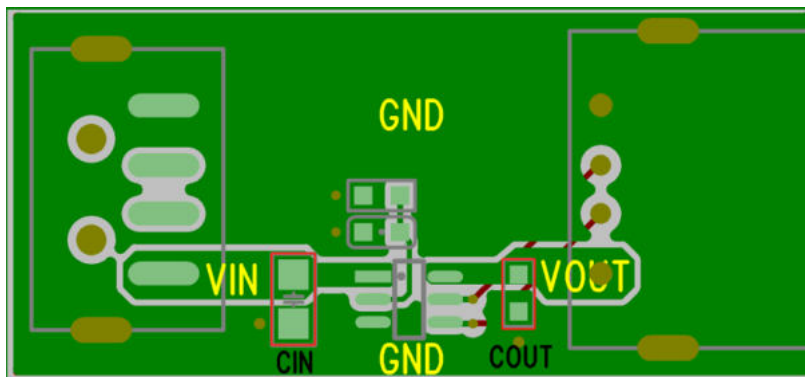
Output capacitance COUT(red position)of pin 6:

The pin6 to USB must pass through the output capacitor COUT and be close to pin 6.

Recommended capacitance CIN is 0805 size, value is 22uF;

Recommended capacitance COUT is 0805 size, value is 10uF;

Based the difference of AC/DC or DC/DC, the CIN and COUT can be bigger or smaller.



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PACKAGE INFORMATION

SOT23-6

