

## 30mΩ Adjustable Current-Limited Power Switch

### FEATURES

- 30 mΩ High-Side MOSFET
- 2.0~4.0 A (typ.) Adjustable Current Limit
- Low Current under OUT shorted GND
- Support single layer PCB layout
- Built-in Soft-Start
- 2.7 ~ 5.5V Single Supply Operation
- Available SOT23-5 package.

### APPLICATIONS

- USB Charger
- Power Distribution

### DESCRIPTION

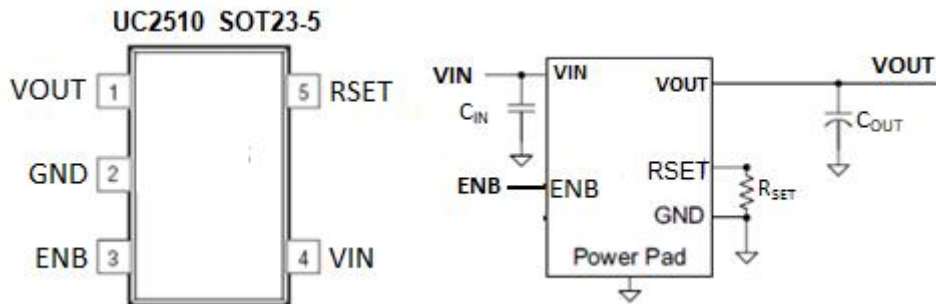
UC2510 is a 30mΩ adjustable current limited power

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. The power-switch rise and fall times are controlled to minimize current surges during turn on/off.

UC2510 will enter hiccup mode when OUT voltage is less than 2.85V or OTSD. It can significant reduce the output current and reduce thermal effect to the system.

UC2510 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

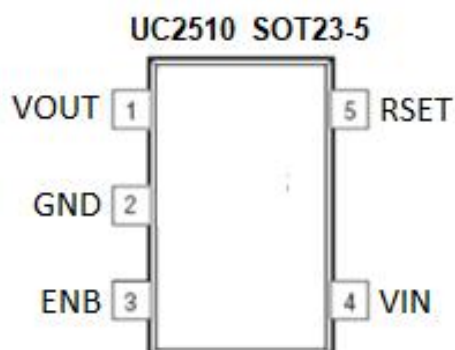


### ORDING INFORMATION

Part Number	Package Type	Package Qty	Op Temp(°C)	Mark
UC2510	SOT23-5	3000	-40~85	UC2510 xxx

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### PINOUT



### PIN FUNCTIONS

NO.	NAME	TYPE <sup>(1)</sup>	DESCRIPTION
1	VOUT	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; These pins need to be shorted on PCB board;
2	GND	G	Ground connection
3	ENB	I	Enable input, logic low turns on UC2510
4	VIN	P/I	Power supply/Input voltage connected to Power Switch; connect a 22 μF or greater ceramic capacitor from IN to GND as close to the IC as possible
5	RSET	I	External resistor used to set current-limit threshold;

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

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### ABSOLUTE MAXIMUM RATINGS <sup>(1)</sup>

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

PARAMETER		MIN	MAX	UNIT
Supply Voltage Range	V <sub>IN</sub> , V <sub>OUT</sub> , RSET, ENB	-0.3	7.0	V
ESD rating, Human Body Model (HBM)	V <sub>IN</sub> , V <sub>OUT</sub> , RSET, ENB		2	kV
Operating Junction Temperature	T <sub>J</sub>	-40	125	°C
Storage Temperature Range	T <sub>stg</sub>	-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 <sub>JA</sub>	SOT23-5 Package thermal impedance	165	°C/W

(1) The package thermal impedance is based on two layer PCB.

### RECOMMENDED OPERATING CONDITIONS

PARAMETER		MIN	MAX	UNIT
V <sub>IN</sub>	Input voltage of IN	2.7	5.5	V
V <sub>OUT</sub>	Output voltage of OUT	2.7	5.5	
I <sub>OUT</sub>	Continuous OUT current	2000	4000	mA
T <sub>J</sub>	Operating Junction Temperature	-40	125	°C

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**ELECTRICAL CHARACTERISTICS**

Conditions are:  $T_A = 25^\circ\text{C}$ ,  $V_{IN} = 5.0\text{ V}$ ,  $ENB = \text{GND}$  and  $R_{SET} = 20.0\text{ k}\Omega$ . Positive current are into pins. All voltages are with respect to GND (unless otherwise noted).

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>Power Switch</b>						
$R_{DSON}$		$I_{OUT}=1\text{ A}$		30	40	$\text{m}\Omega$
$T_r$	OUT voltage rise time	$CL = 1\ \mu\text{F}, RL = 100\ \Omega,$		2.97	4.0	ms
$T_f$	OUT voltage fall time			0.70	1.5	
$T_{on}$	OUT voltage turn-on time			4.35	8.0	
$T_{off}$	OUT voltage turn-off time			2.83	5.0	
<b>Current Limit</b>						
$I_{os}$	OUT current limited	$R_{set}=19.1\text{ k}$	2.43	2.87	3.33	A
		$R_{set}=20.0\text{ k}$	2.30	2.74	3.20	
<b>Enable Pin (ENB)</b>						
$V_{ENB}$	ENB threshold voltage, falling		0.8	1.59	2.3	V
$V_{ENB\_HYS}$	Hysteresis			200		mV
<b>Thermal Shutdown</b>						
	Temperature Rising Threshold			150		°C
	Hysteresis			20		
<b>UNDERVOLTAGE LOCKOUT</b>						
$V_{UVLO}$	IN rising UVLO threshold voltage		2.05	2.35	2.55	V
	Hysteresis			100		mV
<b>SUPPLY CURRENT</b>						
$I_{IN}$	IN supply current	$V_{IN}=5.0\text{ V}, ENB=0\text{ V}$		200	350	μA
$I_{INL}$	IN Disable Supply Current	$V_{IN}=ENB=5.0\text{ V}$		0	5	

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**PACKAGE INFORMATION**

**SOT23-5**

