

58mΩ, 2A High-Side Power Switch with Flag

General Description

The LT2542 is a cost-effective, low-voltage, single N-MOSFET high-side Power Switch IC for USB application. Low switch-on resistance and low supply current are realized in this IC. The LT2542 integrates an over-current protection circuit, a short fold back circuit, a thermal shutdown circuit and an under-voltage lockout circuit for overall protection. Besides, a flag output is available to indicate fault conditions to the local USB controller. Furthermore, the chip also integrates an embedded delay function to prevent miss-operation from happening due to inrush-current. The LT2542 is an ideal solution for USB power supply and can support flexible applications since it is available in SOT-23-5 and SOT-23-3 package.

Ordering Information

Part Number	Package	Note
LT2542	SOT-23-5	EN (Active High)
LT2542A	SOT-23-5	EN Bar (Active Low)
LT2542B	SOT-23-3	

Features

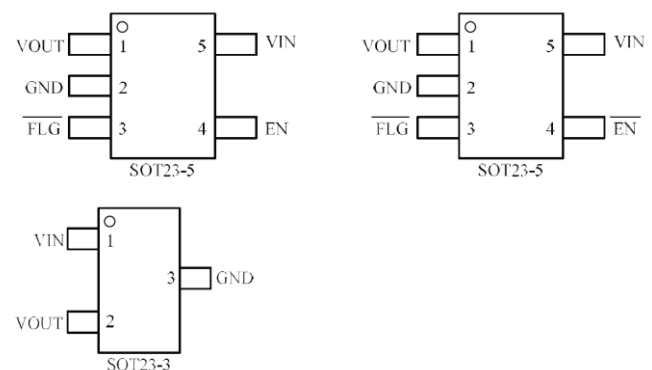
- 58mΩ (typ.) N-MOSFET Switch
- Operating Range: 2.5V to 5.5V
- Reverse Blocking Current
- Under Voltage Lockout (Power On Reset)
- Deglitched Fault Report (FLG)
- Thermal Protection
- Over Current Protection with Fold-back

2μS Response for Short Circuit Protection
Soft Start and Fast Turn off

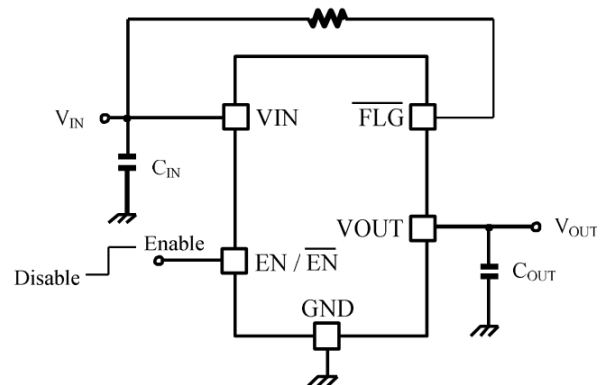
Applications

USB Peripherals
Notebook PCs

Pin Configuration



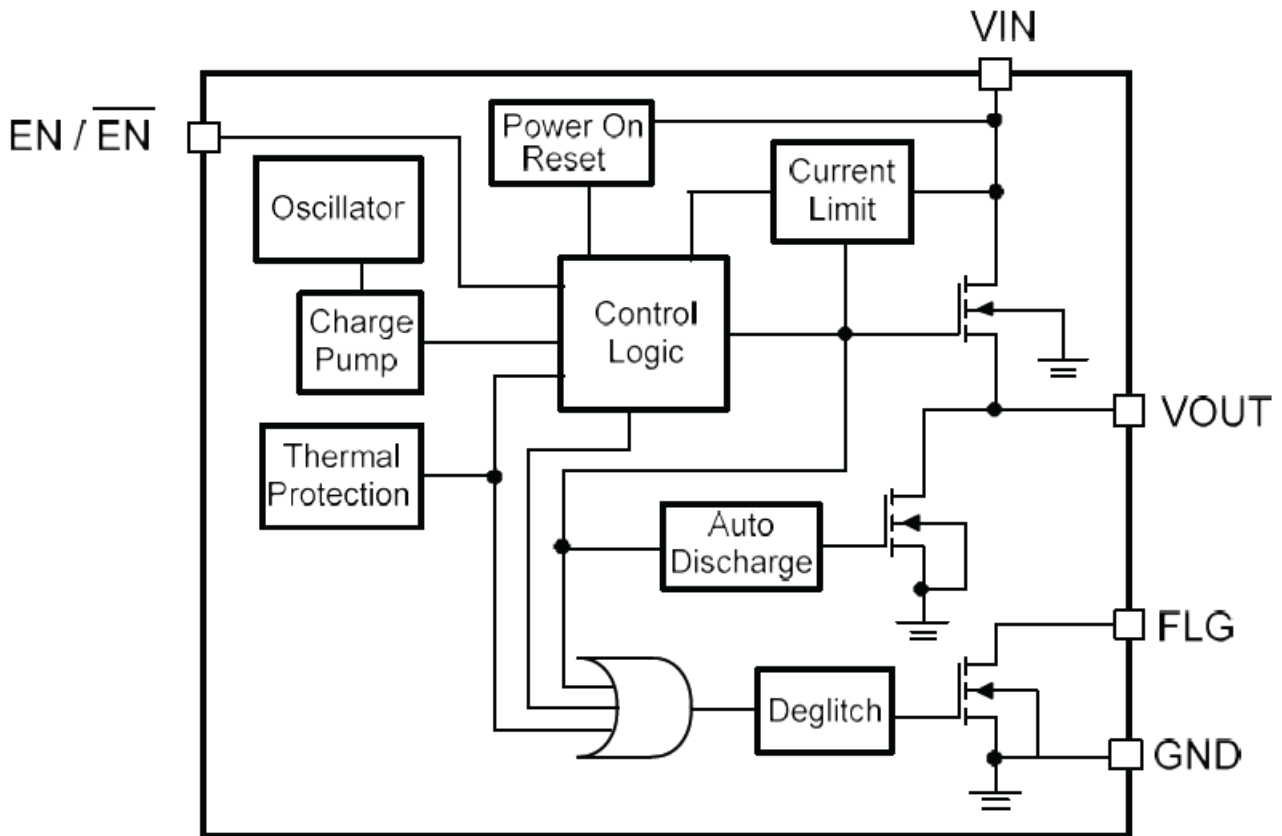
Typical Application Circuit



Pin Assignment

Pin Name	Pin No. SOT-23-5	Pin No. SOT-23-3	Pin Function
VOUT	1	2	Output Voltage
GND	2	3	Ground
FLGB	3	-	Fault FLAG Output Bar
EN / ENB	4	-	Chip Enable (Active High / Low)
VIN	5	1	Power Input Voltage

Function Block Diagram



Absolute Maximum Ratings (Note1)

VIN	-----	-0.3V to +6.0V
EN	-----	-0.3V to +6.0V
Other pins	-----	-0.3V to (VIN+0.3V)
Junction Temperature	-----	125°C
Lead Temperature (Soldering, 10 sec.)	-----	300°C
Storage Temperature	-----	65 C to 150°C

Recommended Operating Conditions

VIN	-----	+2.5V to +5.5V
EN	-----	0V to +5.5V
Junction Temperature	-----	0 C to 125°C

Electrical Characteristics

VIN=5V, CIN=10uF, COUT=0.1uF, TJ=25°C, unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Input Voltage VIN Range	VIN		2.5	--	5.5	V
VIN POR Threshold	VINPOR		--	2.2	2.5	V
Quiescent Current	I _Q	I _{out} = 0mA	--	60	80	uA
Shutdown Current	I _{SD}	ENB = 5V	--	0.1	1	uA
R _{DS} ON	R _{DSON}	I _{out} = 500mA	--	58	78	mΩ
Reverse Leakage Current	I _{REV}	Vin = 0V, Vout = 5V	--	0.1	2	uA
Soft Start Time	T _{SS}		--	1.5	2.5	mS
Enable High Level	V _{EN}		1.2	--	--	V
Shutdown Low Level	V _{SD}		--	--	0.5	V
EN input Current	I _{EN}	VIN=VCC= VEN =5V, IOU=0A, VOUT=VREF	--	0.1	1	uA
FLG Output Resistor	R _{FLG}	I _{SINK} = 1mA	--	20	80	Ω
FLG Off Current	I _{FLG_OFF}	V _{FLG} = 5V	--	0.1	1	uA
FLG Delay Time	T _{DELAY}		8	15	22	mS
VOUT Discharge Resistor	R _{DIS}		--	100	--	Ω
Over Current Threshold	I _{OC}		2.4	3.2	--	A
VOUT Short Circuit Current	I _{SC}		1.2	1.7	--	A
Thermal Shutdown Temperature	T _{SD}		--	160	--	°C
Thermal Shutdown Hysteresis	T _{SDHY}		--	30	--	°C

Typical Characteristics

VIN=5V, CIN=10uF, COUT=0.1uF, Tj=25°C, unless otherwise specified

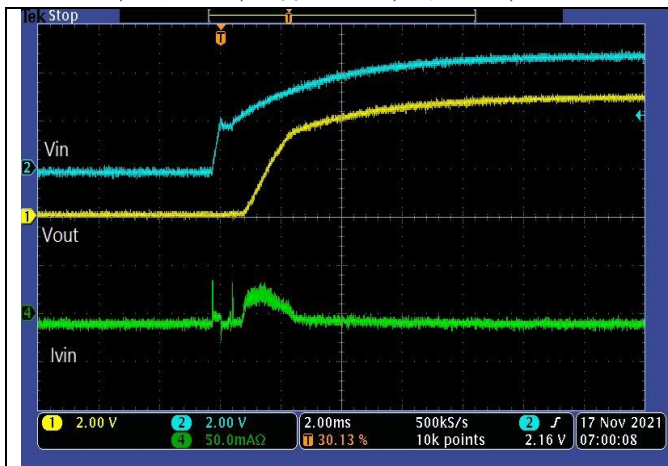


Fig 1. VIN Power ON (No load)

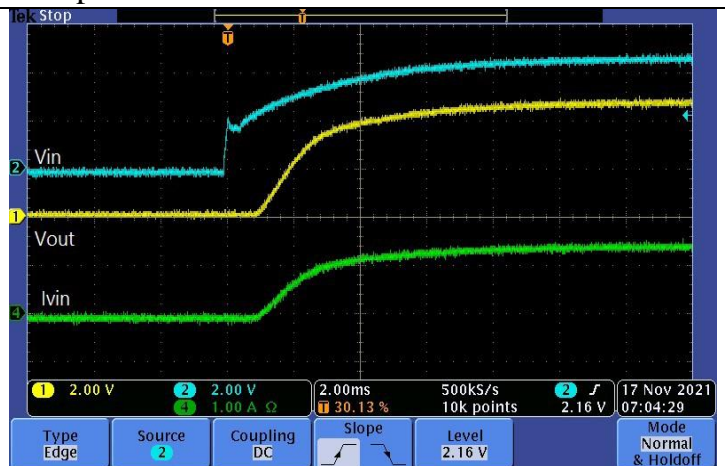


Fig 2. VIN Power ON (1.5A)

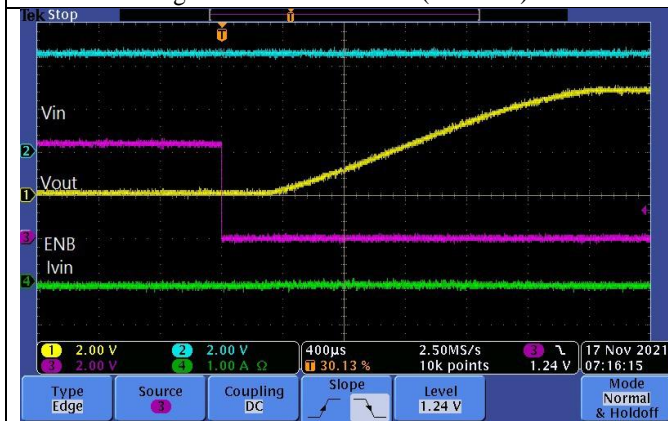


Fig 3. EN Power ON (No load)

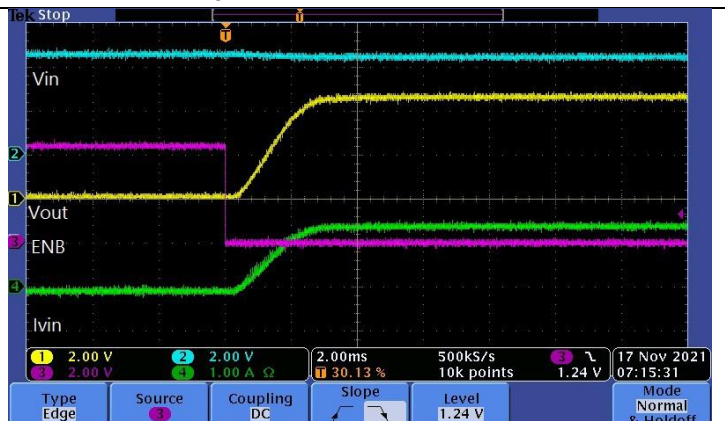


Fig 4. EN Power ON (1.5A)

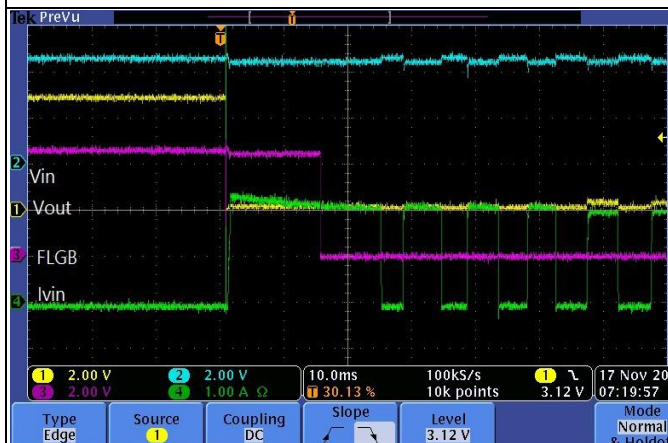


Fig 5. Vout Short to GND

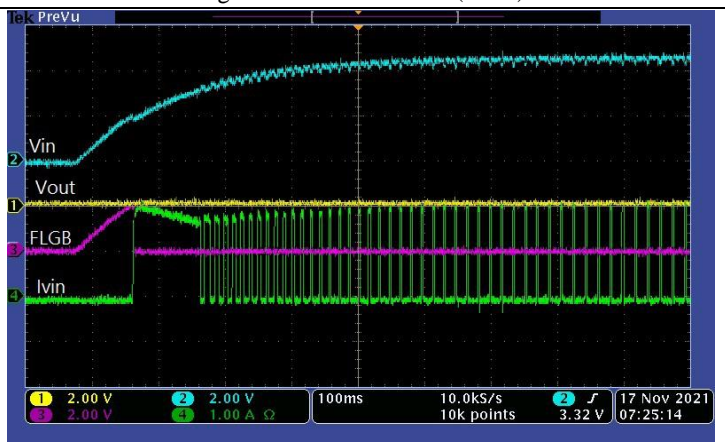


Fig 6. Vout Short to GND Start up

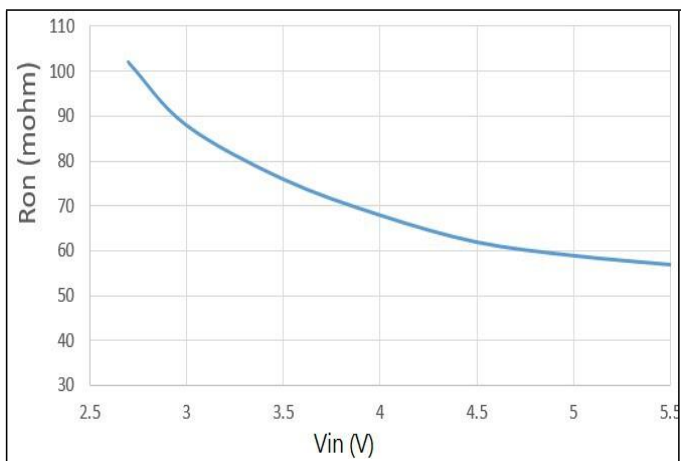


Fig 7. Ron vs Vin

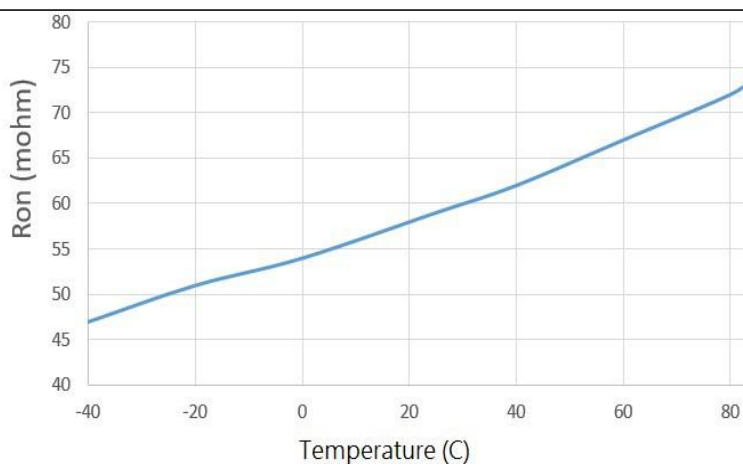


Fig 8. Ron vs Temperature

文档版本

版本	说明	日期
V1.0	内部初步版本	2023/3/11

声明

在未经列拓科技同意下不得以任何形式或途径修改本公司产品规格和数据表中的任何部分以及子部份。列拓科技在以下方面保留权利（包括但不限于如下的方面）：

修改数据单和/或产品、停产任一产品或者终止服务不做通知；建议顾客获取最新版本的相关信息，在下定订单前进行核实以确保信息的及时性和完整性。所有的产品都依据订单确认时所提供的销售合同条款出售，条款内容包括保修范围、知识产权和责任范围。

列拓科技保证在销售期间，销售的产品符合国家标准和行业要求，产品的性能按照本公司的标准进行保修和维护。公司认为有必要维持此项保修，会使用测试和其他质量控制技术。除了政府强制规定外，其他仪器的测量表没有必要进行特殊测试。

顾客认可本公司的产品的设计、生产的目的是不涉及与生命保障相关或者用于其他危险的活动或者环境的其他系统或产品中。出现故障的产品会导致人身伤亡、财产或环境的损伤（统称高危活动）。人为在高危活动中使用本公司产品，本公司据此不作保修，并且不对顾客或者第三方负有责任。

列拓科技将会提供与现在一样的技术支持、帮助、建议和消息，（全部包括关于购买的电路板或其他应用程序的设计，开发或调试）。特此声明，对于所有的技术支持、可销性或针对特定用途，及在支持技术无误下，电路板和其他应用程序可以操作或运行的，本公司将不作任何有关此类支持技术的担保，并对您在使用这项支持服务不负任何法律责任。