

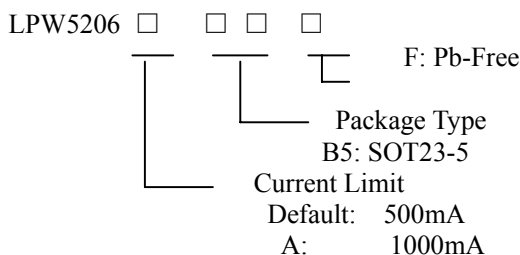
USB Power Loading Switch

General Description

The LPW5206/A is an integrated 160mΩ 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 (16μA) and small package (SOT-23-5) is particularly suitable in battery-powered portable equipment.

Several protection functions include soft start to limit inrush current during plug-in, current limiting at 500mA/1A to meet USB power requirement, and thermal shutdown to protect damage under over current conditions.

Order Information



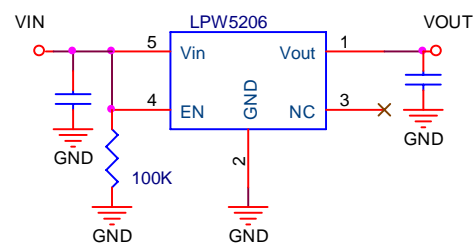
Applications

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

Features

- ✧ 160mΩ Low R_{dson}, High-side NMOSFET
- ✧ Guaranteed 500mA/1000mA Continuous Current
- ✧ 2.5V to 7V Input Voltage
- ✧ Low Quiescent Current: 16μA
- ✧ Soft Start Function
- ✧ Built-In Short-Circuit Protection
- ✧ Built-in Thermal Protection
- ✧ RoHS Compliant and 100% Lead (Pb)-Free

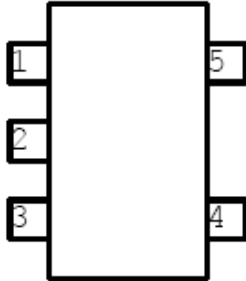
Typical Application Circuit



Marking Information

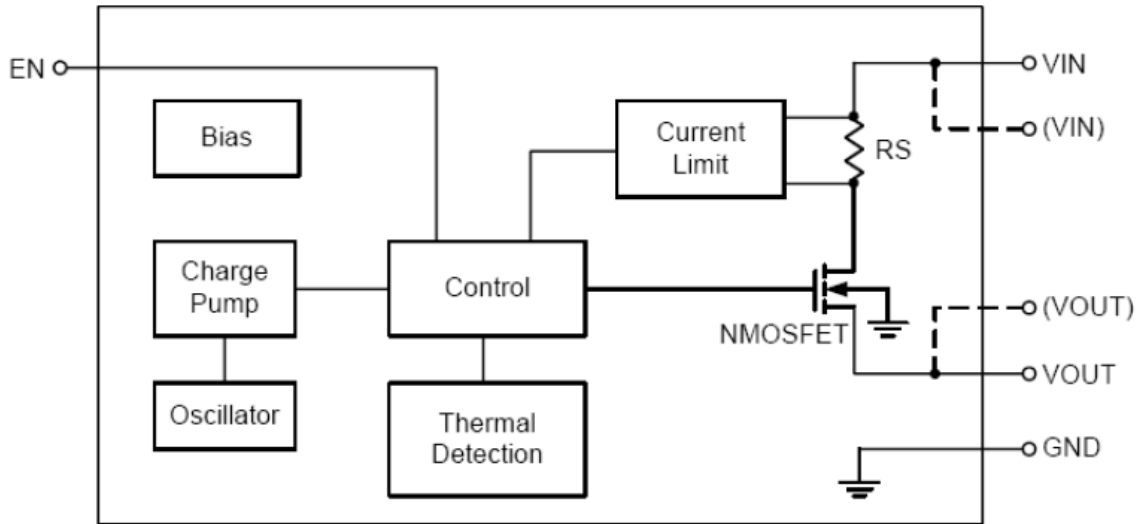
Please see website.

Functional Pin Description

Package Type	Pin Configurations
SOT23-5	

PIN	NAME	DESCRIPTION
1	VOUT	Output pin.
2	GND	Ground.
3	NC	No Connector.
4	EN	Device enable (active high).
5	VIN	Input pin.

Function Block Diagram



Absolute Maximum Ratings

- ✧ Input Voltage to GND (V_{INA}, V_{INB}) ----- 7V
- ✧ EN Voltage -----0.3V to 7V
- ✧ Operating Junction Temperature Range (T_J) ----- -20°C to 100°C
- ✧ Maximum Soldering Temperature (at leads, 1 0sec) ----- 300°C
- ✧ HBM(Human Body Mode)----- 2KV

Thermal Information

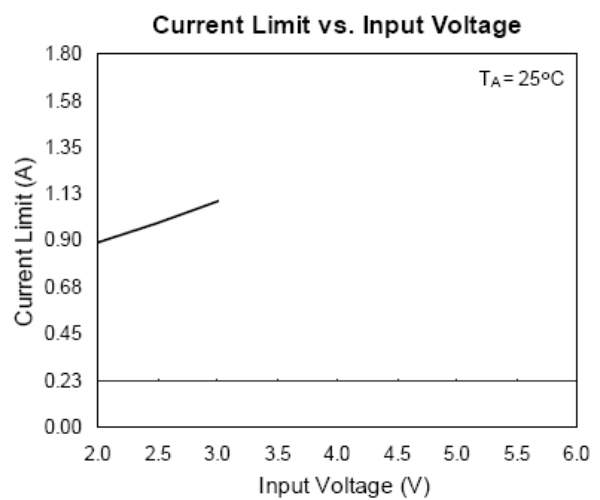
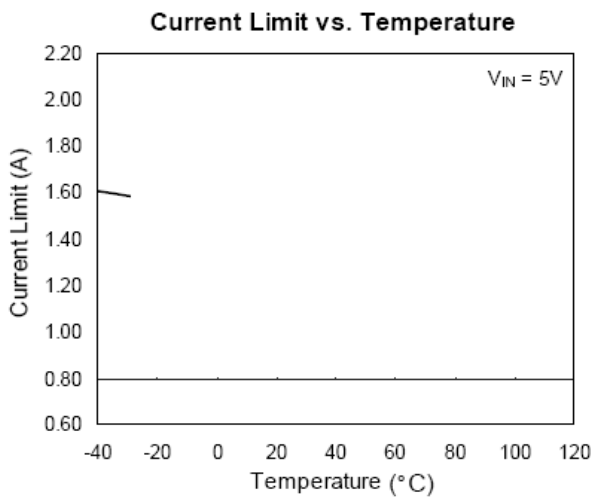
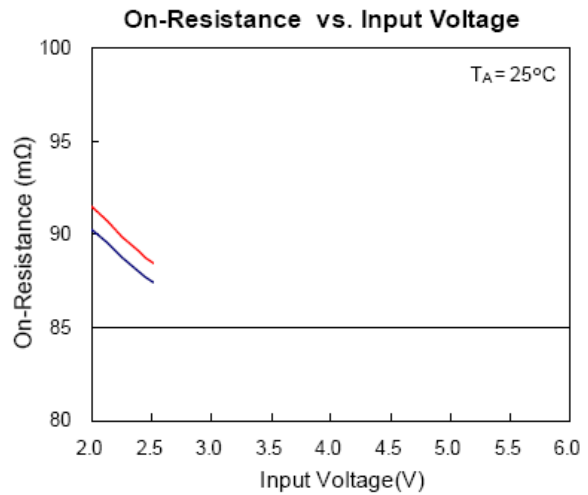
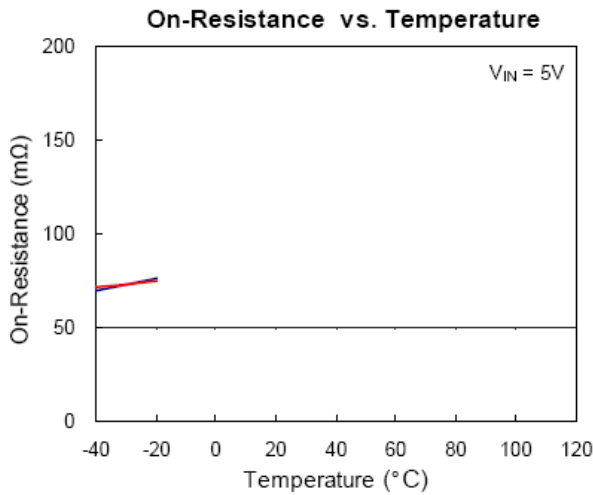
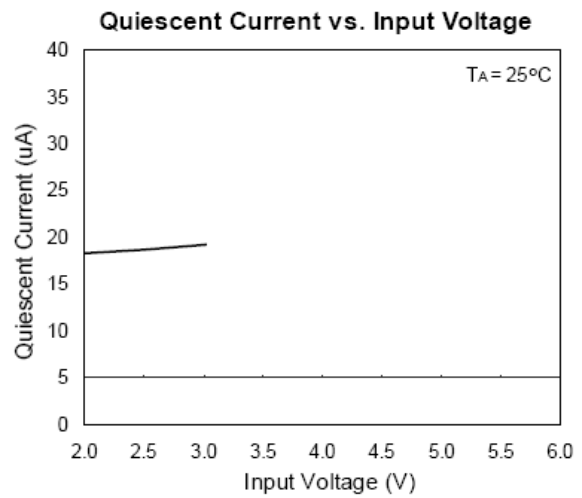
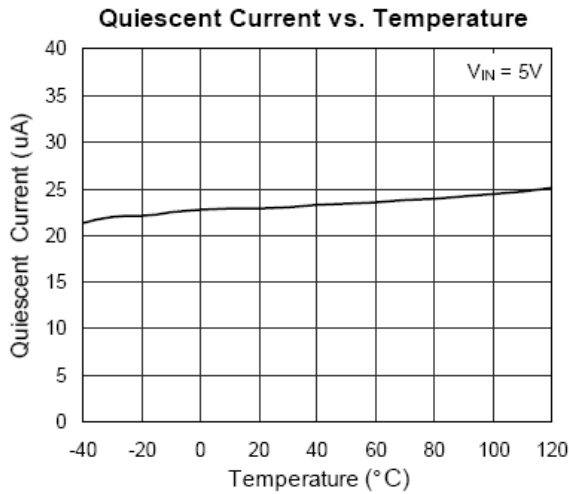
- ✧ Maximum Power Dissipation (P_D) -----0.25W
- ✧ Thermal Resistance (J_A) ----- $250^{\circ}\text{C}/\text{W}$

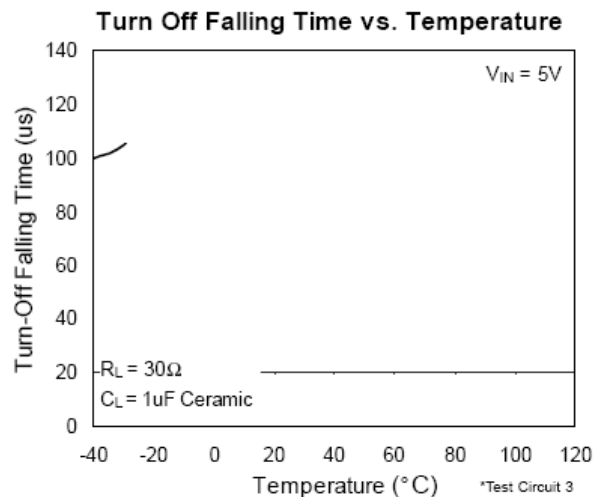
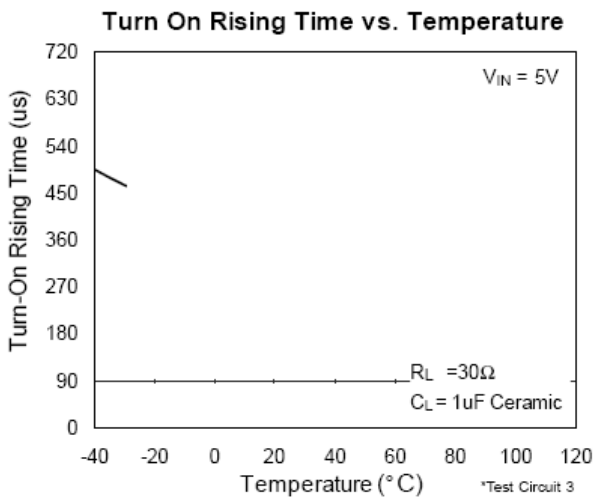
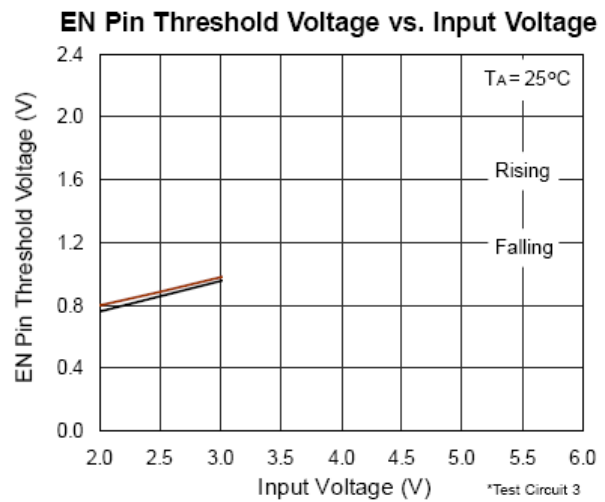
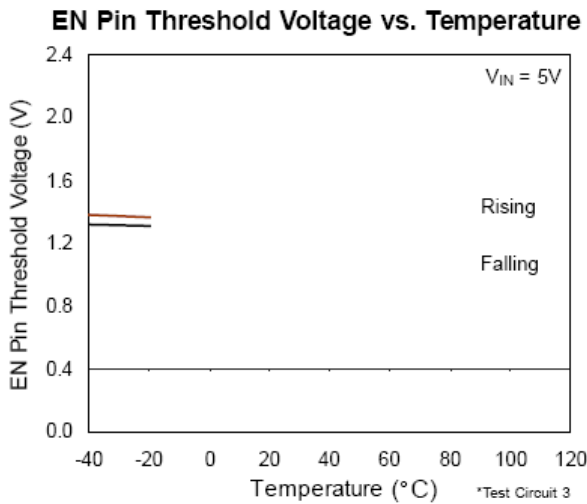
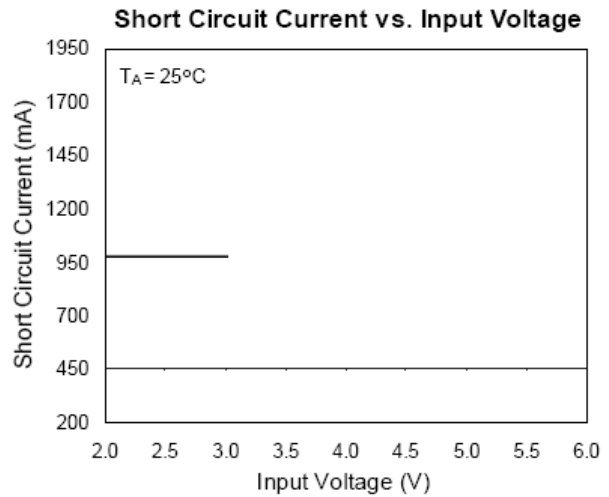
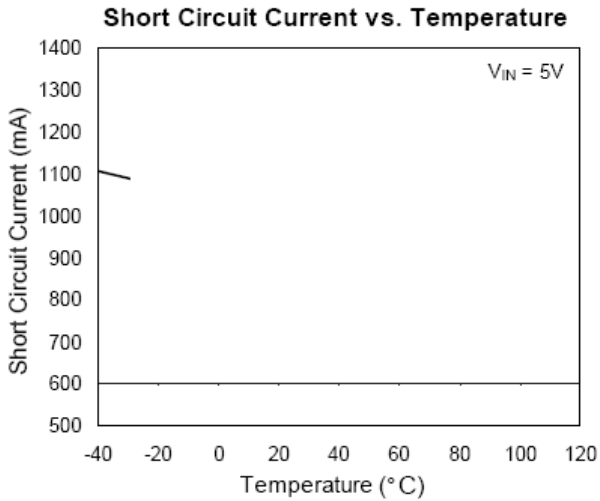
Electrical Characteristics

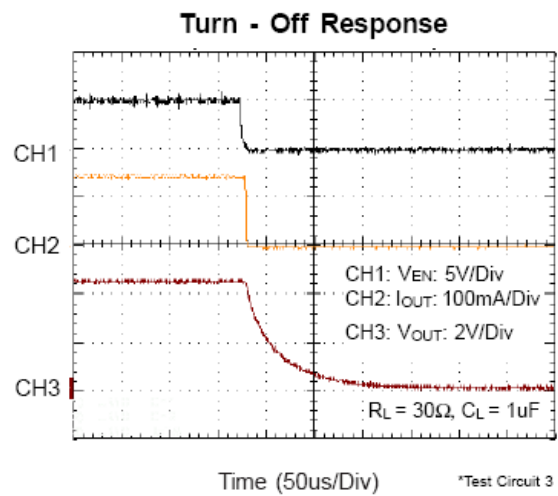
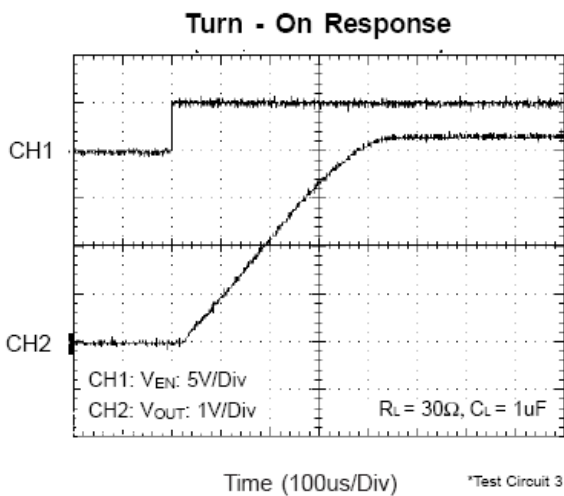
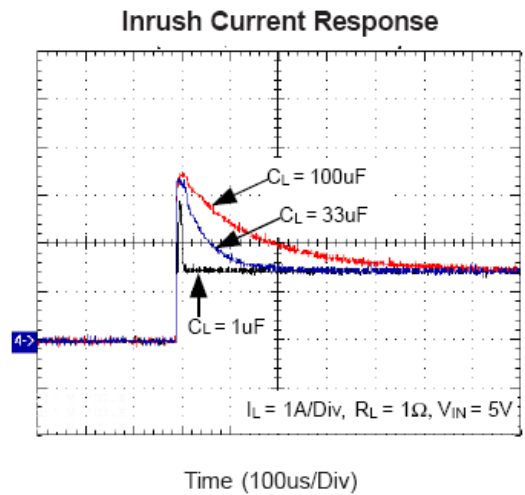
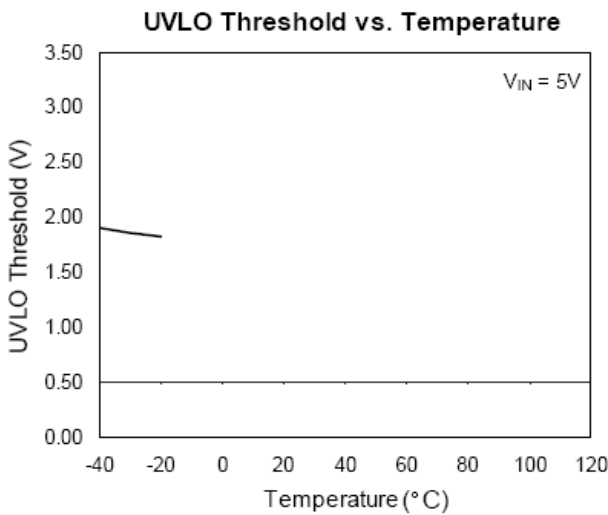
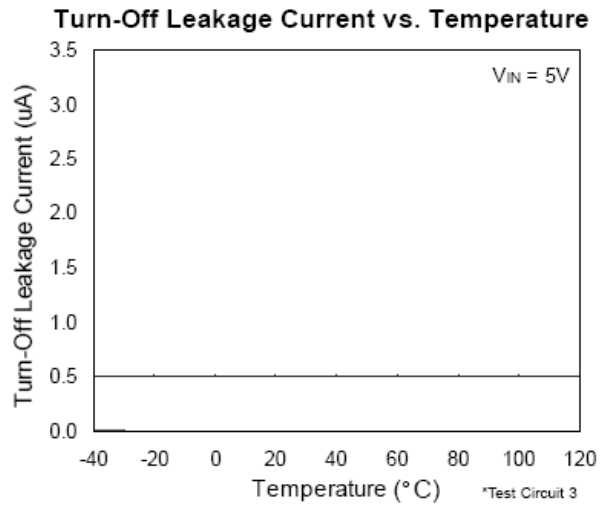
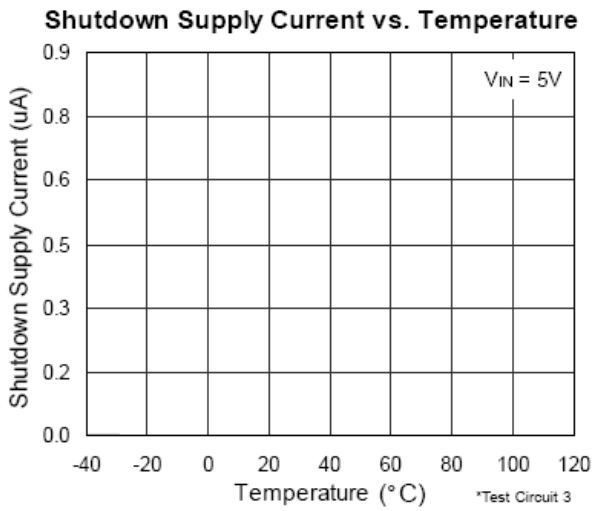
(Over recommended operating conditions unless specified otherwise) $V_{INA}=3.6\text{V}, \text{EN}=\text{High}, T_A=25^{\circ}\text{C}$)

Symbol	Parameter	Conditions	LPW5206			Unit
			Min.	Typ.	Max.	
V_{IN}	Input Voltage		2.5		6	V
I_{out}	Output Current Limited	LPW5206B5F	500		780	mA
		LPW5206AB5F	1000		1400	mA
$R_{DS(ON)}$	Output NMOSFET $R_{DS(ON)}$			160		m Ω
I_Q	Quiescent Current	$V_{in}=3\text{V}$		16	28	μA
I_{SHDN}	Shutdown Current	$\text{ENB} = \text{GND}$			1	μA
$V_{EN(L)}$	Enable Threshold Low				0.4	V
$V_{EN(H)}$	Enable Threshold High		1.4			V
I_{EN}	Input Low Current	$V_{INB} = V_{ENB} = 5.5\text{V}$	-1		1	μA

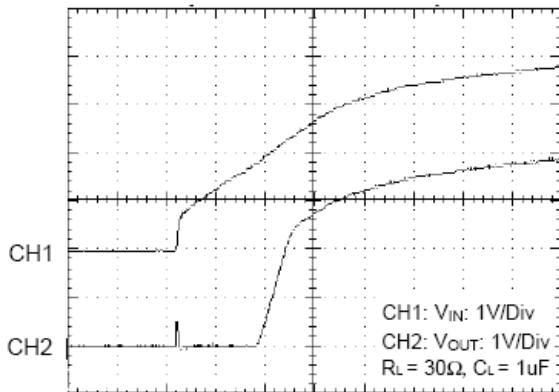
Typical Operating Characteristics





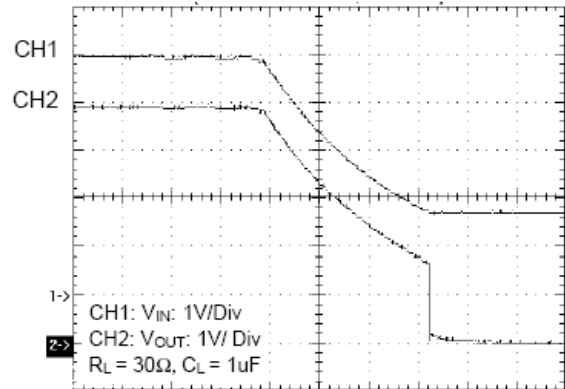


UVLO at Rising



Time (500us/Div)

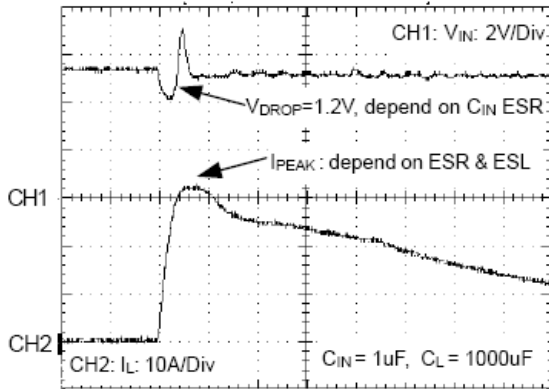
UVLO at Falling



Time (100ms/Div)

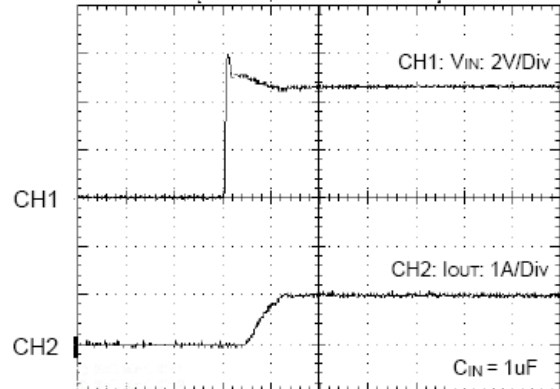
*Test Circuit 2

Inrush Short Circuit Response



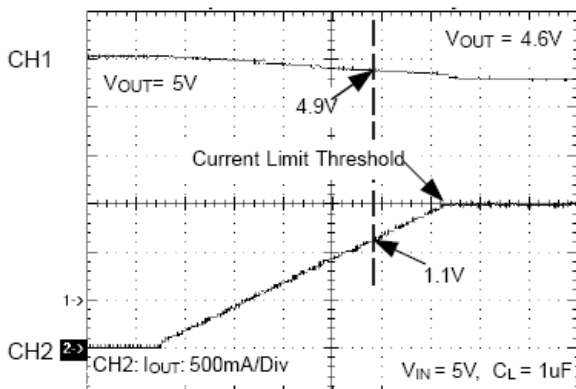
Time (25us/Div)

Soft - start Short Circuit Response



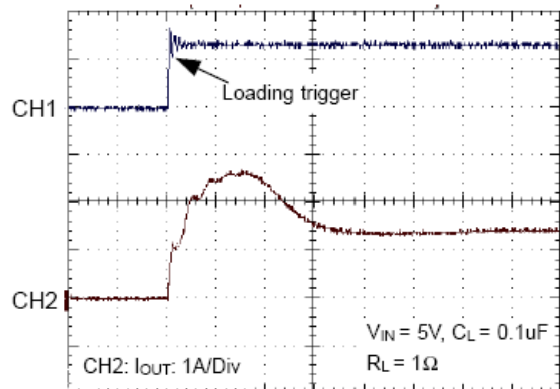
Time (5us/Div)

Ramped Load Response



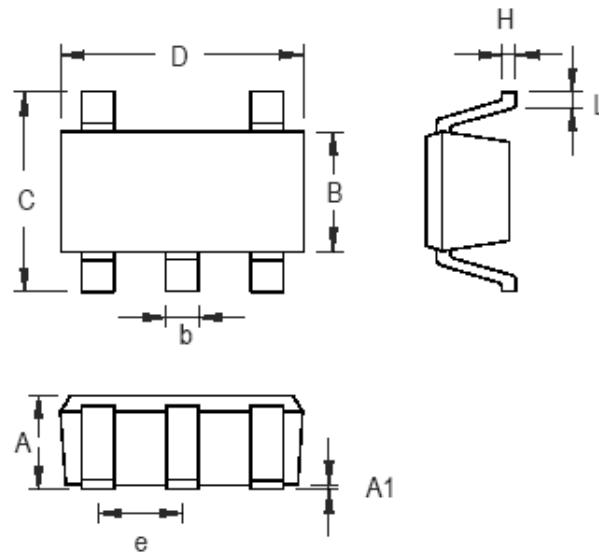
Time (1ms/Div)

Current Limit Response



Time (5us/Div)

Packaging Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT-23-5 Surface Mount Package