

## Power Distribution Switches

### General Description

The LPW5202 is an integrated 120mΩ 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 (19μA) 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 1.5A to meet USB power requirement, and thermal shutdown to protect damage under over current conditions.

### Order Information

LPW5202 -    F: Pb-Free  
 Package Type  
 B5: SOT23-5

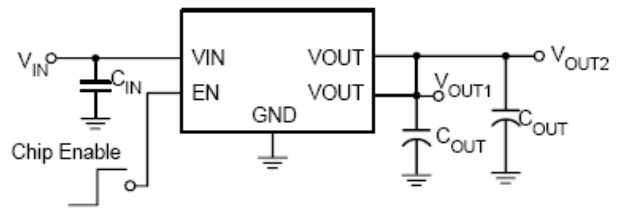
### Applications

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

### Features

- ✧ 120mΩ Low R<sub>dson</sub>, High-side NMOSFET
- ✧ Guaranteed 0.8A Continuous Current
- ✧ 2.1V to 6V Input Voltage
- ✧ Low 19μA Supply Current
- ✧ Soft Start Function
- ✧ Built-In Short-Circuit Protection
- ✧ Built-in Thermal Protection
- ✧ RoHS Compliant and 100% Lead (Pb)-Free

### Typical Application Circuit



### Marking Information

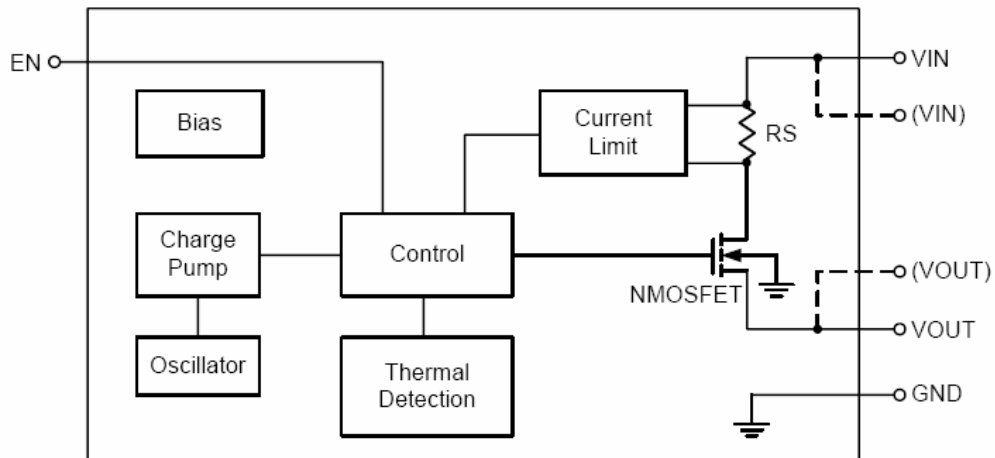
Please see website.

### Functional Pin Description

Package Type	Pin Configurations
SOT23-5	<p style="text-align: center;">SOT-23-5</p>

PIN	NAME	DESCRIPTION
1,5	Vout	Output pin
2	GND	Ground
3	VIN	Charge pump input, connect to battery or supply
4	EN	Device enable (active high).

### 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)----- 8KV

### Thermal Information

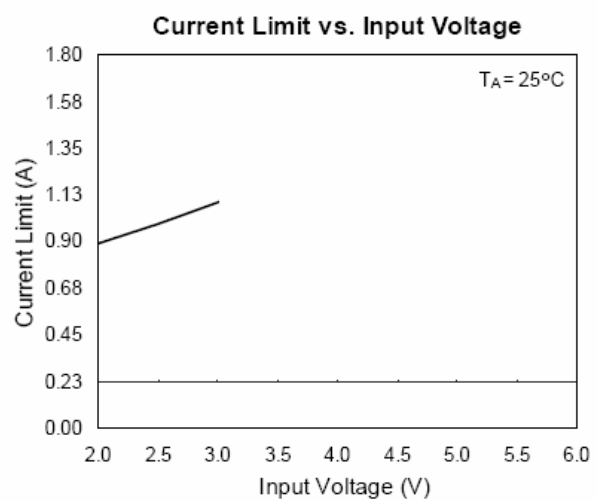
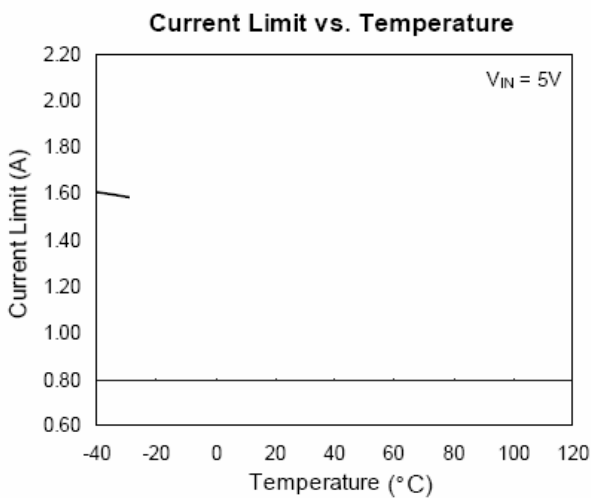
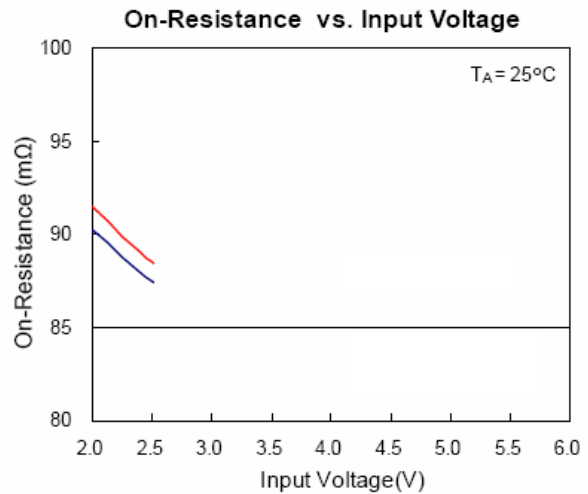
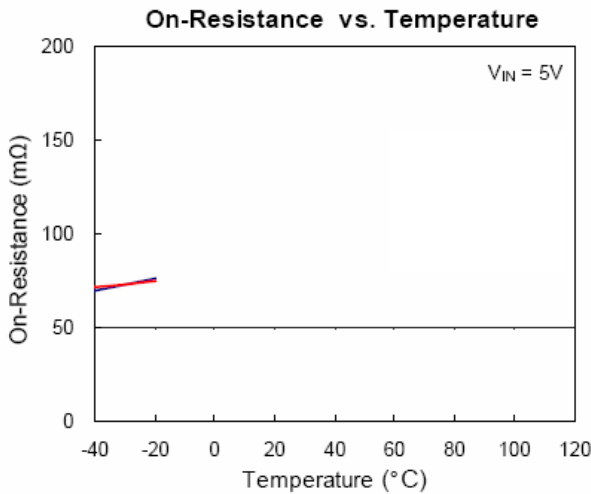
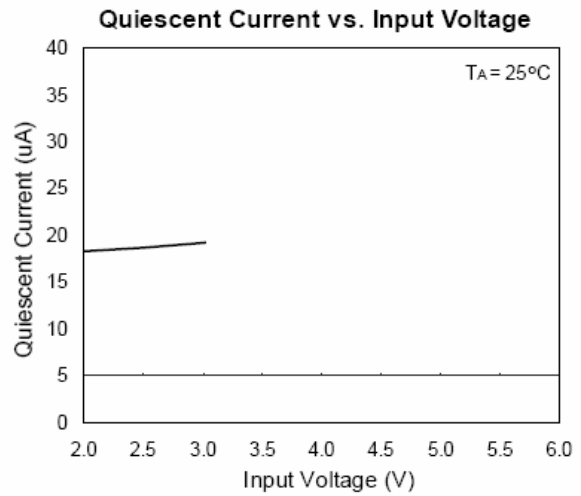
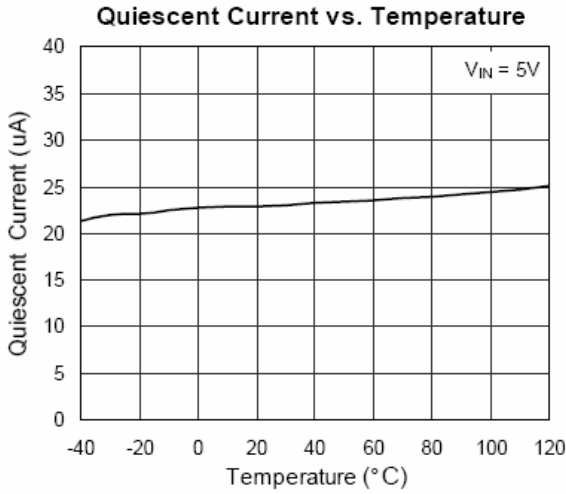
- ✧ Maximum Power Dissipation ( $P_D$ ) -----0.25W
- ✧ Thermal Resistance ( $J_A$ ) ----- 250°C/W

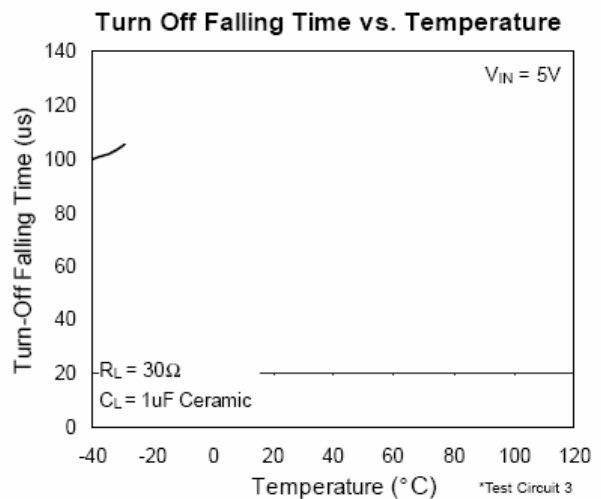
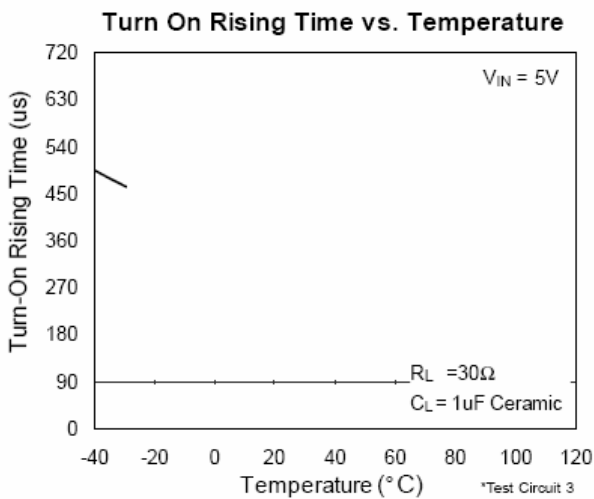
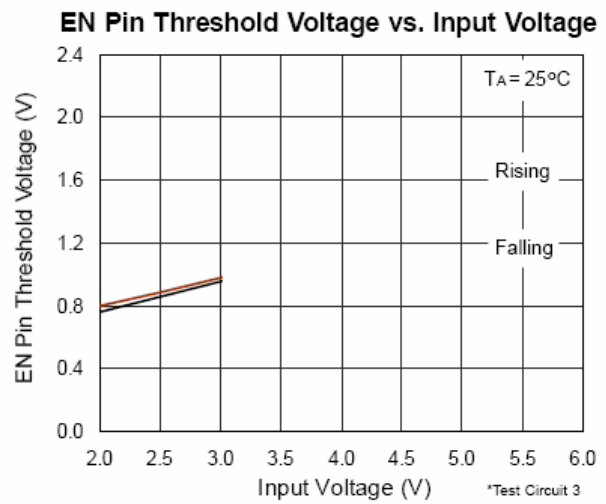
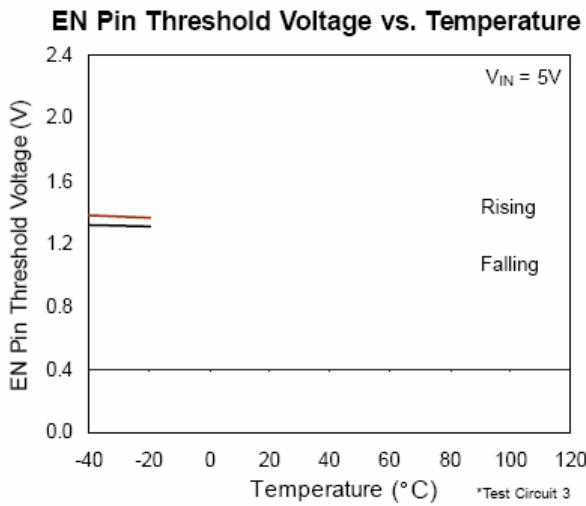
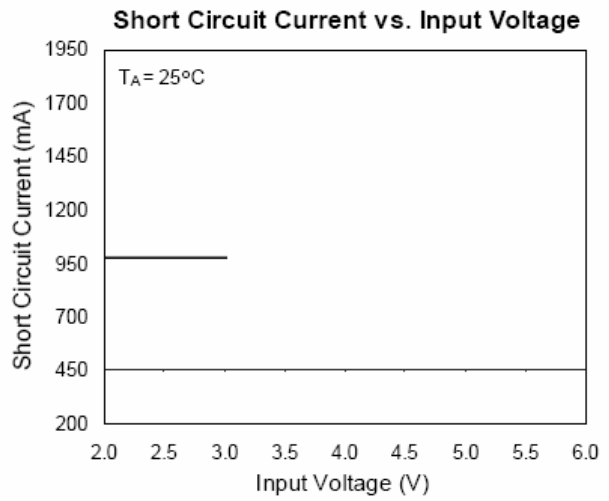
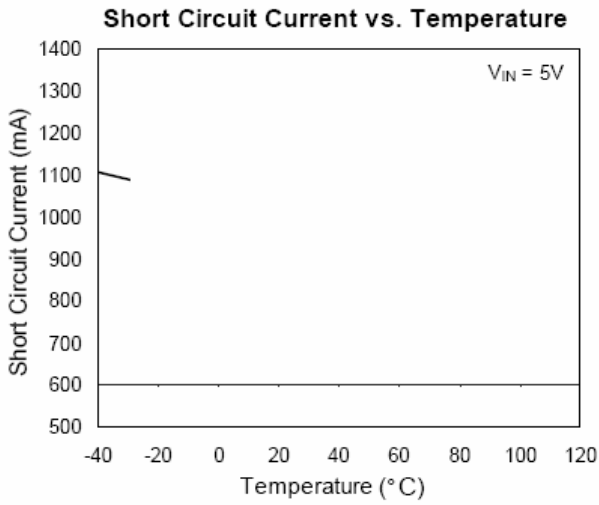
## Electrical Characteristics

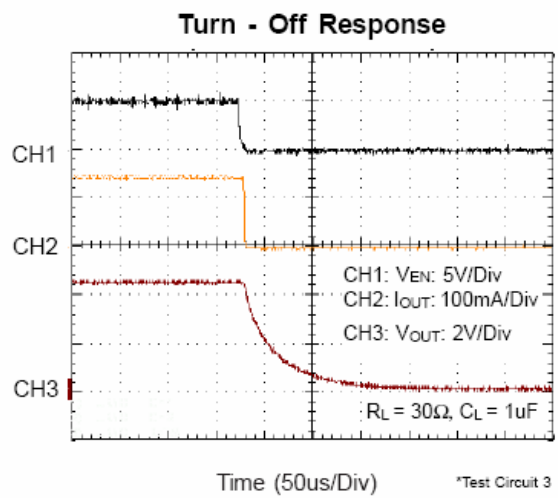
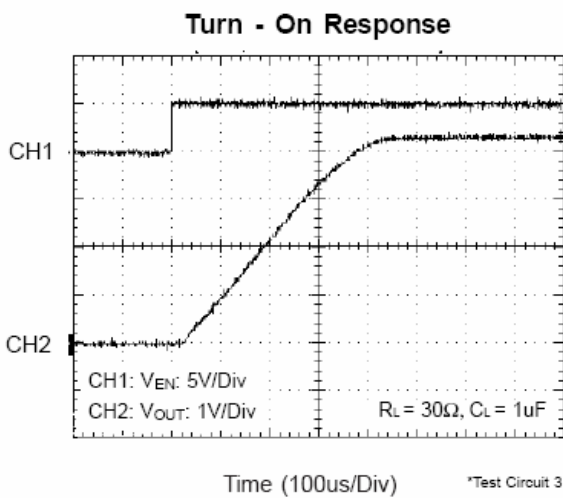
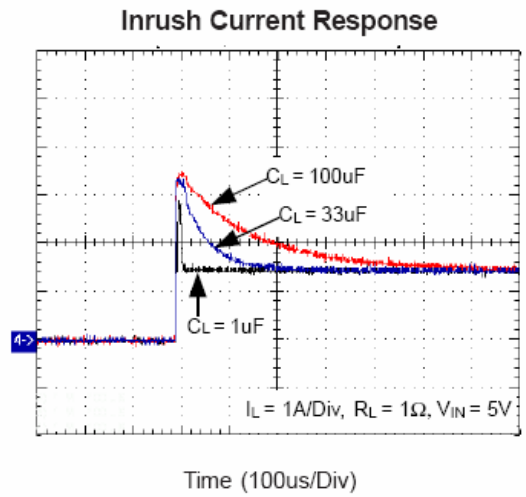
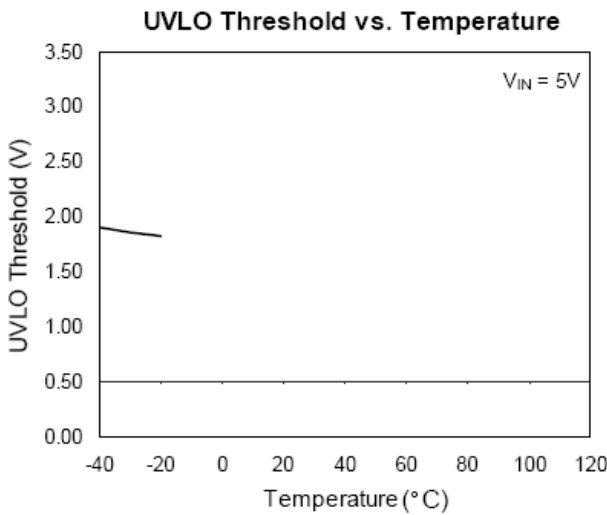
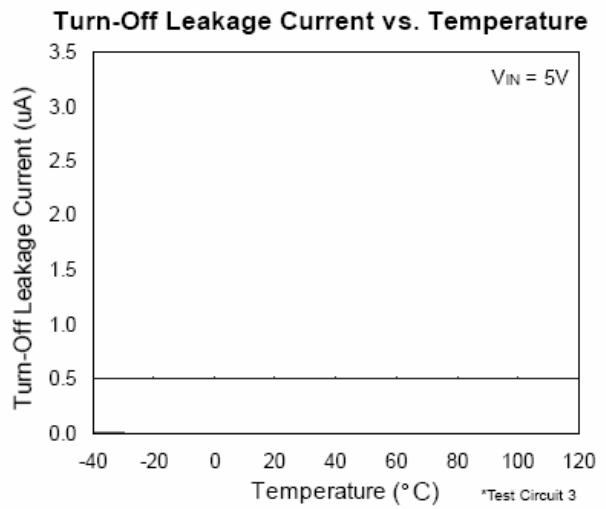
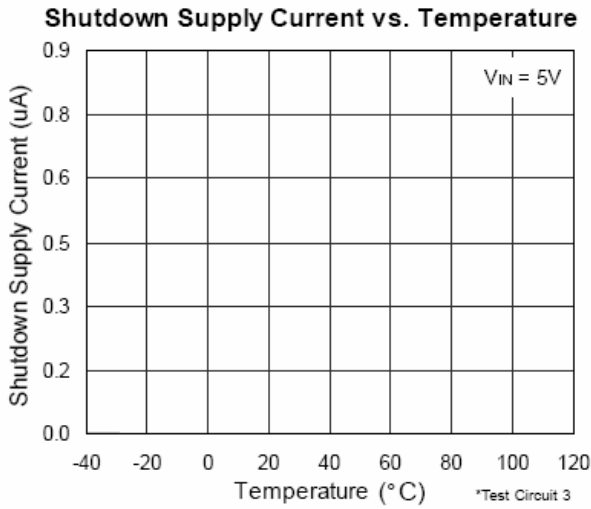
(Over recommended operating conditions unless specified otherwise)  $V_{INA} = 3.6V, EN = High, T_A = 25^\circ C$  )

Symbol	Parameter	Conditions	LPW520			Unit
			Min.	Typ.	Max.	
$V_{IN}$	Input Voltage		2.1		6	V
$R_{DS(ON)}$	Output NMOSFET $R_{DS(ON)}$			120		m $\Omega$
$I_Q$	Quiescent Current	$V_{in} = 3V$		19	28	$\mu A$
$I_{SHDN}$	Shutdown Current	$ENB = GND$			1	$\mu A$
$V_{EN(L)}$	Enable Threshold Low				0.4	V
$V_{EN(H)}$	Enable Threshold High		1.5			V
$I_{EN}$	Input Low Current	$V_{INB} = V_{ENB} = 5.5V$	-1		1	$\mu A$

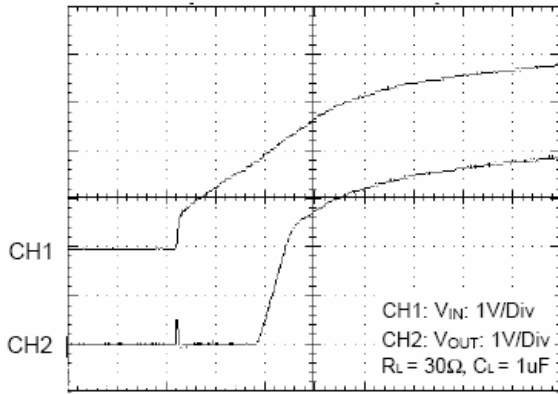
Typical Operating Characteristics





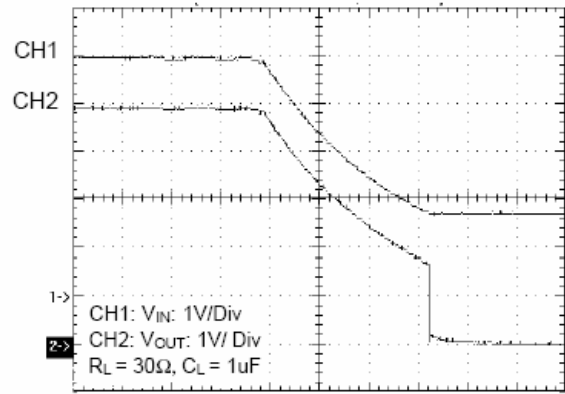


**UVLO at Rising**



Time (500us/Div)

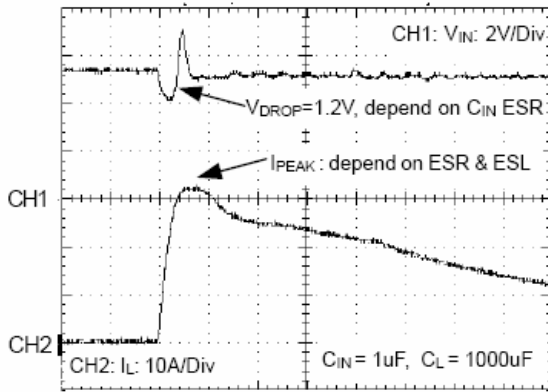
**UVLO at Falling**



Time (100ms/Div)

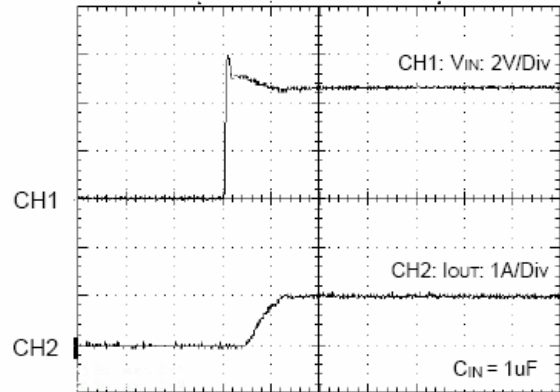
\*Test Circuit 2

**Inrush Short Circuit Response**



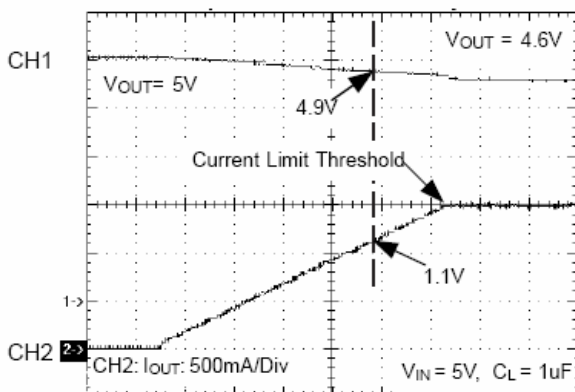
Time (25us/Div)

**Soft - start Short Circuit Response**



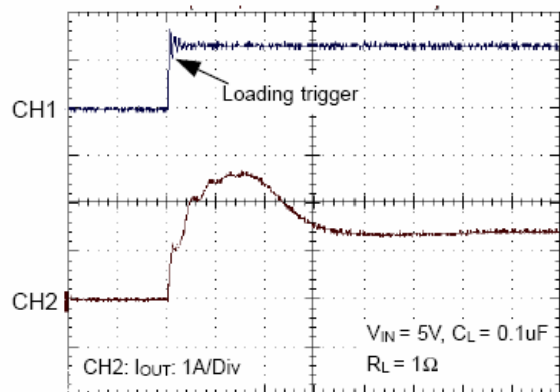
Time (5us/Div)

**Ramped Load Response**



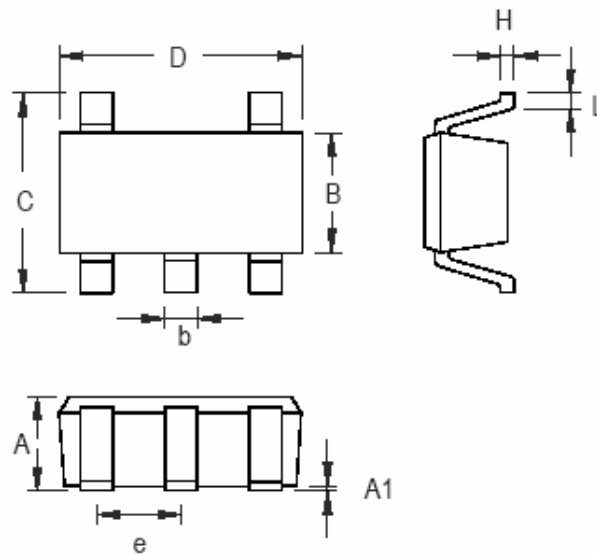
Time (1ms/Div)

**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**