GENERAL DESCRIPTION

The ACP12522 is a current limit power switch designed for load-switching applications. The current limit threshold be set at an accurate 2.1A. The integrated current-limiting circuit protects the input supply against large currents which may cause the supply to fall out of regulation. They offer current and thermal limiting and short circuit protection as well as controlled rise time and under voltage lockout functionality. A 12ms deglitch capability on the open-drain Flag output prevents false over-current reporting and does not require any external components. The device are available in SOT25 and U-DFN2018-6 packages.

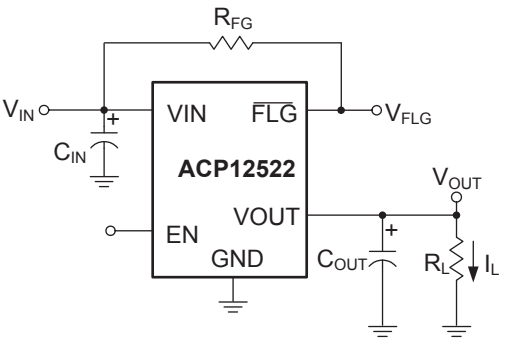
FEATURES

- Input Voltage Range: 2.5V to 5.5V
- 2.1A Accurate Current Limiting Threshold
- Fast Transient Response
- Max 35μA Quiescent Current
- Low 90mΩ Typical $R_{DS(ON)}$
- Reverse Current Blocking
- Thermal Shutdown and Over-Current Protection
- Fault Report with 12ms Typical Blanking Time
- -40 to 85°C Operation Temperature Range

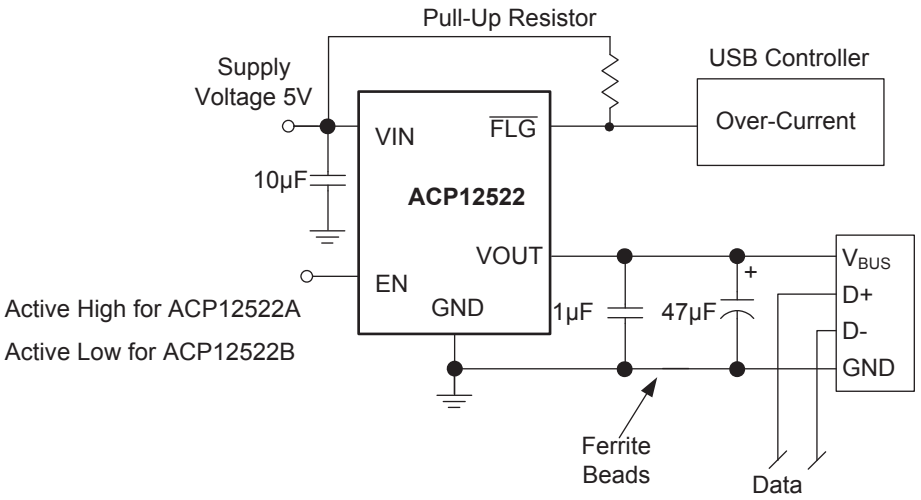
APPLICATION

- USB Bus
- Self Powered Hubs
- USB Peripherals
- STB,LCD TV, Printer

TEST CIRCUIT

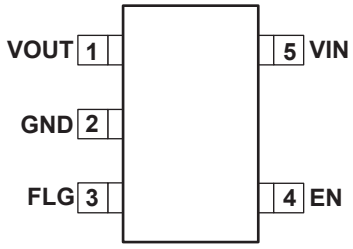


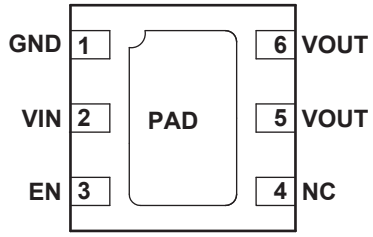
APPLICATION CIRCUIT



Typical ACP12522 Application Circuit

PIN CONFIGURATION

Pin Configuration	Pin Description		
SOT25	**Pin#**	**Symbol**	**Function**
(Top View)  	1	VOUT	Voltage Output Pin
	2	GND	Ground
	3	FLG	Fault Report Pin
	4	EN	Enable Input, Active High
	5	VIN	Voltage Input Pin

Pin Configuration	Pin Description		
U-DFN2018-6	**Pin#**	**Symbol**	**Function**
(Top View)  	1	GND	Ground
	2	VIN	Voltage Input Pin
	3	EN	Enable Input
	4	FLG	Fault Report Pin
	5	VOUT	Voltage Output Pin
	6	VOUT	Voltage Output Pin

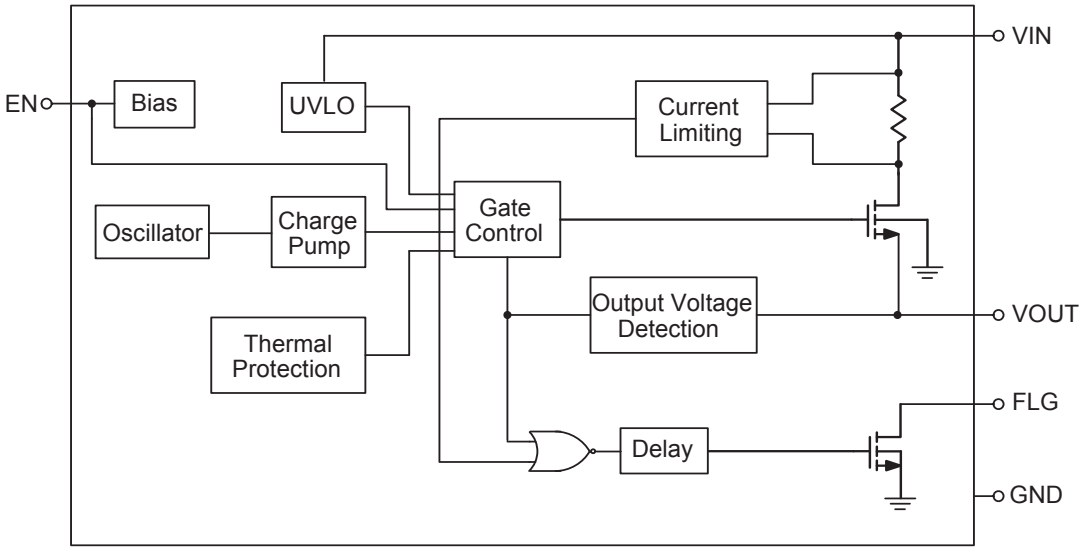
ORDERING INFORMATION

Standard Part NO.	Package	Remark	Min. Quantity
ACP12522A-BTRAL	SOT25	Active-High	3000PCS
ACP12522B-BTRAL		Active-Low	3000PCS
ACP12522A-ZTRAL	U-DFN2018-6	Active-High	3000PCS
ACP12522B-ZTRAL		Active-Low	3000PCS

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Input, EN Voltage	V_{IN}, V_{EN}	6.5	V
Output Voltage	V_{OUT}	V_{IN}+0.3	
Maximum Junction Temperature	T_J	-40 to 150	°C
Storage Temperature	T_S	-65 to 150	
Operating Ambient Temperature	T_A	-40 to 85	
Human Body Model	HBM	2000	V
Machine Mode	MM	400	

FUNCTION BLOCK



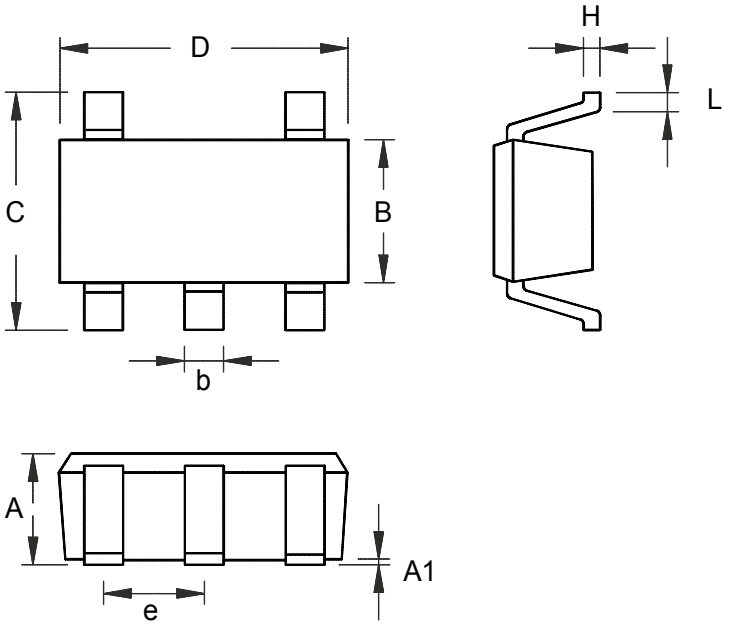
Functional Block Diagram

ELECTRICAL CHARACTERISTICS(T_A = +25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input UVLO Threshold	V_{UVLO}	V_{IN} Rising	1.7		2.3	V
Input Shutdown Current	I_{SHDN}	Disabled, I_{OUT} = 0		0.1	1	μA
Input Quiescent Current	I_Q	Enabled, I_{OUT} = 0		20	35	
Input Leakage Current	I_{LEAK}	Disabled, OUT Grounded		0.1	1	
Reverse Leakage Current	I_{REV}	Disabled, V_{IN} = 0V V_{OUT} = 5V,I_{REV} at V_{IN}		0.1	1	
Switch On-Resistance	$R_{DS(ON)}$	V_{IN} = 5V,I_{OUT}=1.5A -40°C≤T_A≤85°C		90	120	mΩ
		V_{IN} = 3.3V,I_{OUT}=1.5A -40°C≤T_A≤85°C		100	130	
Short Circuit Current Limit	I_{SH}	Enabled into short circuit, C_L=120μF		2		A
Over Load Current Limit	I_L	V_{IN}= 5V, V_{OUT}= 4.0V, C_L=120μF, -40°C≤T_A≤85°C	1.85	2.1	2.35	
Current limiting Trigger Threshold	I_{Trig}	Output Current Slew rate (<100A/S) , C_L=120μF		2.6		
EN Input Logic Low Voltage	V_{IL}	V_{IN} = 2.7V to 5.5V			0.4	V
EN Input Logic High Voltage	V_{IH}		1.6			
EN Input leakage	I_{SINK}	V_{EN} = 5V			1	μA
Output Turn On Rise Time	t_R	C_L = 1μF R_{LOAD} = 10Ω		0.6	1.5	ms
Output Turn On Delay Time	$t_{D(ON)}$			2.3		
Output Turn Off Delay Time	$t_{D(OFF)}$			0.025		
Output Turn On Fall Time	t_F			0.05	0.1	
FLG Output FET On-Resistance	R_{FLG}	I_{FLG} =10mA		20	40	Ω
FLG Blanking Time	T_{Blank}	C_{IN}=10μF, C_L=22μF	8	12	16	ms
Thermal Shutdown Threshold	T_{SHDN}	Enabled, R_{load}=1KΩ		150		°C
Thermal Shutdown Hysteresis	T_{HYS}			20		
Junction to Ambient	θ_{JA}	SOT25		170		°C/W
		U-DFN2018-6		70		

PACKAGE INFORMATION

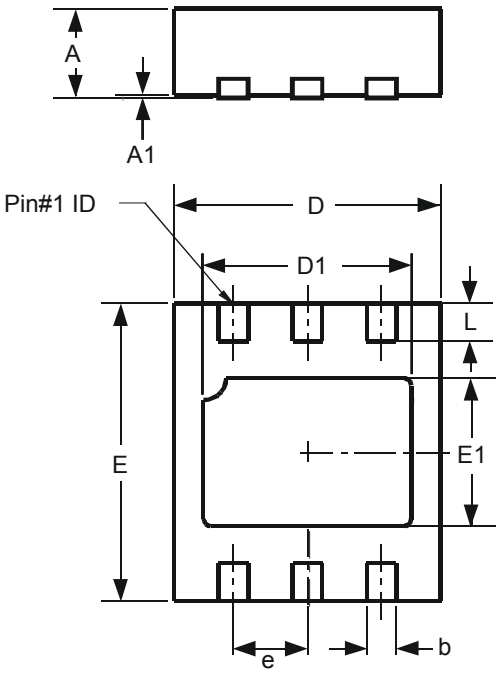
- **SOT25**



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

PACKAGE INFORMATION

- **U-DFN2018-6**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.545	0.605	0.021	0.023
A1		0.050		0.002
b	0.150	0.250	0.005	0.009
D	1.750	1.875	0.068	0.070
D1	1.300	1.500	0.051	0.059
e	0.450	0.600	0.017	0.023
E	1.950	2.075	0.076	0.081
E1	0.900	1.100	0.035	0.043
L	0.200	0.300	0.007	0.011