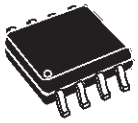
L6932

HIGH PERFORMANCE 2A ULDO LINEAR REGULATOR

PRELIMINARY DATA

- 2V TO 14V INPUT VOLTAGE RANGE
- 50mΩ Rdson TYPICAL @TJ=125°C
- 300µA QUIESCENT CURRENT AT ANY LOAD
- EXCELLENT LOAD AND LINE REGULATION
- 200mV MAX DROPOUT AT 2A
- 1.8V AND 2.5V FIXED VOLTAGE
- ADJUSTABLE FROM 1.2V TO Vin (L6932D1.2)
- 1% VOLTAGE REGULATION ACCURACY
- SHORT CIRCUIT PROTECTION
- THERMAL SHUT DOWN
- SO8 PACKAGE



SO-8 (4+4)

ORDERING NUMBERS:
L6932D1.2
L6932D1.8
L6932D2.5

APPLICATIONS

- MOTHERBOARDS
- MOBILE PC
- HAND-HELD INSTRUMENTS
- PCMCIA CARDS
- PROCESSORS I/O
- CHIPSET AND RAM SUPPLY

DESCRIPTION

The L6932 Ultra Low Drop Output linear regulator operates from 2V to 14V and is able to support 2A. Designed with an internal 50mΩ N-channel

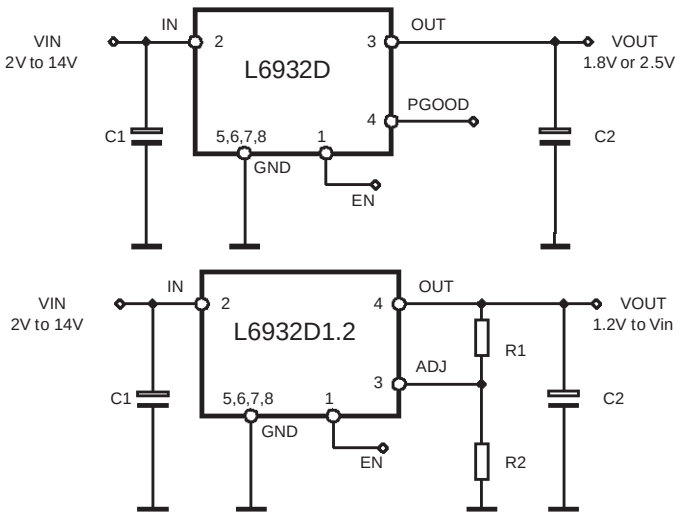
Mosfet, can be usefull for the DC-DC conversion between 2.5V and 1.8V at 2A in portable applications reducing the power dissipation.

L6932 is available in 1.8V, 2.5V and adj version from 1.2V and ensure a voltage regulation accuracy of 2%.

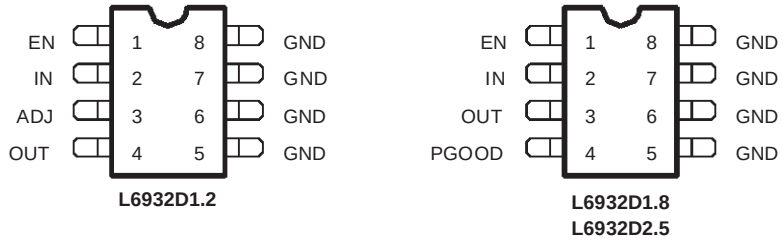
The current limit is fixed at 2.5A to controll the current in short circuit condition within ±8%. The current is sensed in the power mos in order to limit the power dissipation.

The device is also provided of a thermal shut down that limits the internal temperature at 150°C with an histeresys of 20°C. L6932 provides the Enable and the Power good functions.

TYPICAL OPERATING CIRCUIT



PIN CONNECTIONS



PIN FUNCTION

N°	L6232D 1.2	L6232D 1.8/2.5	Description
1	EN		Enables the device if connected to Vin and disables the device if forced to gnd.
2	IN		Supply voltage. This pin is connected to the drain of the internal N-mos. Connect this pin to a capacitor larger than 10µF.
3	ADJ	–	Connecting this pin to a voltage divider it is possible to programme the output voltage between 1.2V and Vin.
	–	OUT	Regulated output voltage. This pin is connected to the source of the internal N-mos. Connect this pin to a capacitor of 10µF.
4	OUT	–	Regulated output voltage. This pin is connected to the source of the internal N-mos. Connect this pin to a capacitor of 10µF.
	–	PGOOD	Power good output. The pin is open drain and detects the output voltage. Is forced low if the output voltage is lower than 90% of the programmed voltage.
5, 6, 7, 8	GND		Ground pin.

ABSOLUTE MAXIMUM RATINGS

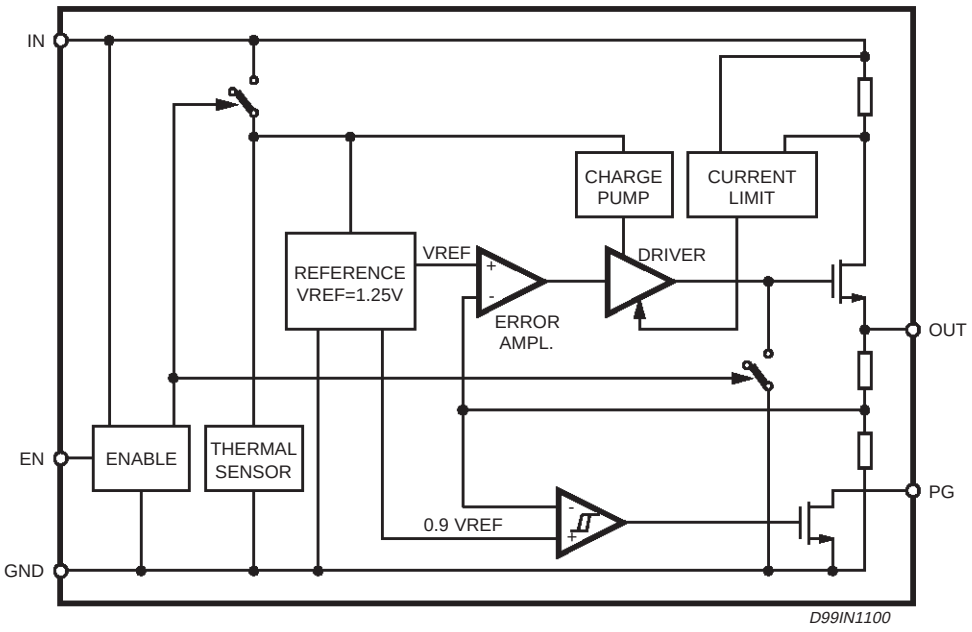
Symbol	Parameter	Value	Unit
V_{in}	VIN and Pgood	14.5	V
	EN, OUT and ADJ	-0.3 to (V_{in} +0.3)	V

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ J\text{-}amb}$	Thermal Resistance Junction to Ambient	62 (*)	°C/W
T_{max}	Maximum Junction Temperature	150	°C
T_{stg}	Storage Temperature Range	-65 to 150	°C

(*) Measured on Demoboard with about 4 cm^2 of dissipating area 2 Oz.

BLOCK DIAGRAM (Referred to the Fixed Voltage version)



ELECTRICAL CHARACTERISTCS (T_j = 25°C, V_{IN} = 5V unless otherwise specified)

(*) Specification referred to T_j from -25°C to 125°C.

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{in}	Operating Supply Voltage		2		14	V
V_o	Output voltage L6932D1.2	I_o = 0.1A; V_{in} = 3.3V	1.188	1.2	1.212	V
	Output voltage L6932D1.8	I_o = 0.1A; V_{in} = 3.3V	1.782	1.8	1.818	V
	Output voltage L6932D2.5	I_o = 0.1A; V_{in} = 3.3V	2.475	2.5	2.525	V
	L6932D1.2 (*) Line Regulation	V_{in} = 2.5V ±10%; I_o = 10mA		1		mV
		V_{in} = 3.3V ±10%; I_o = 10mA		1		mV
		V_{in} = 5V ±10%; I_o = 10mA		1		mV
	L6932D1.8 (*) Line Regulation	V_{in} = 2.5V ±10%; I_o = 10mA		1		mV
		V_{in} = 3.3V ±10%; I_o = 10mA		1		mV
		V_{in} = 5V ±10%; I_o = 10mA		1		mV
	L6932D2.5 (*) Line Regulation	V_{in} = 3.3V ±10%; I_o = 10mA		1		mV
		V_{in} = 5V ±10%; I_o = 10mA		1		mV
	L6932D1.2 Load Regulation	V_{in} = 3.3V; 0.1A < I_o < 2A			15	mV
	L6932D1.8 Load Regulation	V_{in} = 3.3V; 0.1A < I_o < 2A			15	mV

(*) Guaranteed by design due to measurement problems.

ELECTRICAL CHARACTERISTCS (continued)

Symbol	Parameter	Test Condition		Min.	Typ.	Max.	Unit
	L6932D2.5 Load Regulation	V_{in} = 3.3V; 0.1A < I_o < 2A				15	mV
R_{dson}	Drain Source ON resistance				50	100	mΩ
I_{occ}	Current limiting			2.3	2.5	2.7	A
I_q	Quiescent current			0.2		0.4	mA
I_{sh}	Shutdown current	2V < V_{in} < 14V	*			25	µA
	Ripple Rejection	f = 120Hz, I_o = 1A V_{in} = 5V, ΔV_{in} = 2Vpp		60	75		dB
V_{en}	EN Input Threshold			0.5	0.65	0.8	V
	Pgood threshold	V_o rise			90		%Vo
	Pgood Hysteresis				10		%Vo
	Pgood saturation	I_{pgood} = 2mA			0.2	0.4	V

Figure 1. Output Voltage vs. Junction Temperature (L6932D1.2)

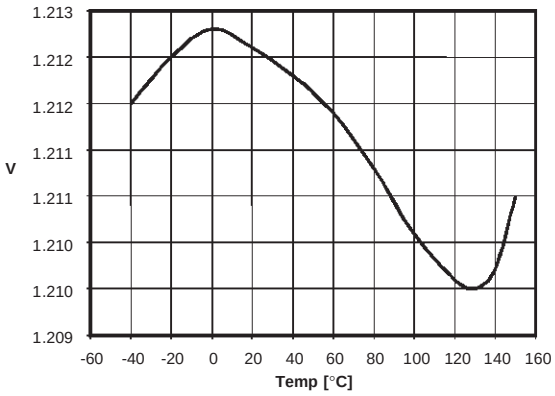


Figure 2. Output Voltage vs. Junction Temperature (L6932D1.8)

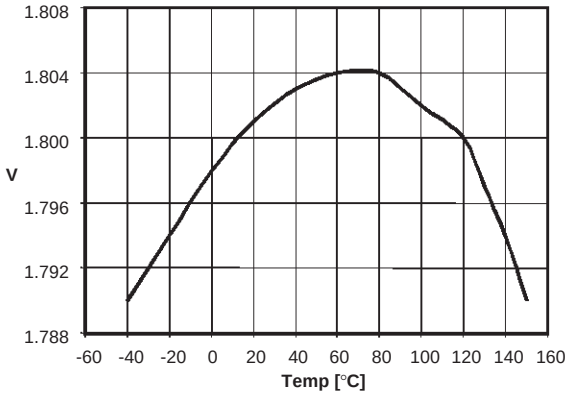
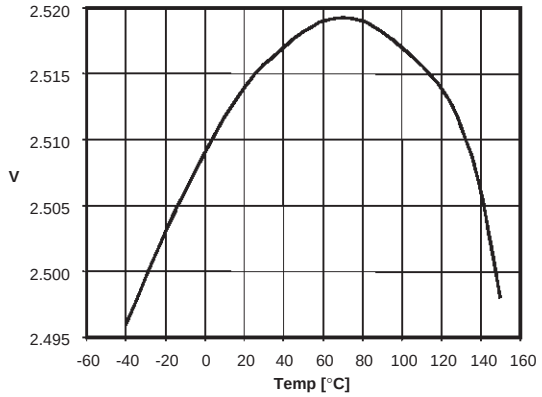


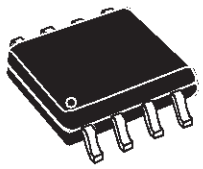
Figure 3. Output Voltage vs. Junction Temperature (L6932D2.5)



DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D (1)	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F (1)	3.8		4.0	0.15		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					

(1) D and F do not include mold flash or protrusions. Mold flash or potrusions shall not exceed 0.15mm (.006inch).

OUTLINE AND MECHANICAL DATA



SO8