



TX4132L Product Specification

(Built-in 60V/5A MOS wide input voltage step-down DC-DC)

Overview

TX4132L is a switching step-down DC-DC that supports wide voltage input. The chip has built-in 60V/5A power supply rate MOS, supports the highest input voltage 55V.

TX4132L has low standby power consumption, high efficiency, low ripple, excellent bus voltage regulation and Load regulation and other characteristics. Supports high current output, the output current can reach more than 3A.

TX4132L supports both output constant voltage and output constant current functions.

TX4132L adopts fixed frequency PWM control method, and the typical switching frequency is 140KHz. Light load The switching frequency is automatically reduced to obtain high conversion efficiency.

TX4132L internally integrates soft-start and over-temperature protection circuits, output short-circuit protection, and current-limiting protection and other functions to improve system reliability.

TX4132L is packaged in ESOP8, and the heat sink is built-in to connect to the VIN pin.

Features

- Wide input voltage range: 8V~55V
- High efficiency: up to 96%
- The output voltage is adjustable from 5V to 30V
- Operating frequency: 140KHz
- Supports output of constant voltage and constant current
- Supports output of 5V/3A
- Built-in soft start
- Low standby power consumption
- Built-in over-temperature protection
- Built-in output short circuit protection



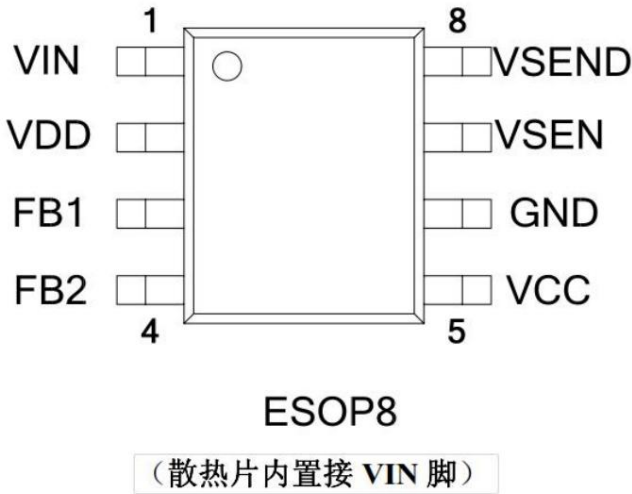
Application areas

•Constant voltage power supply

•Electric cars, electric bicycles, battery cars

•Twister cars and trucks

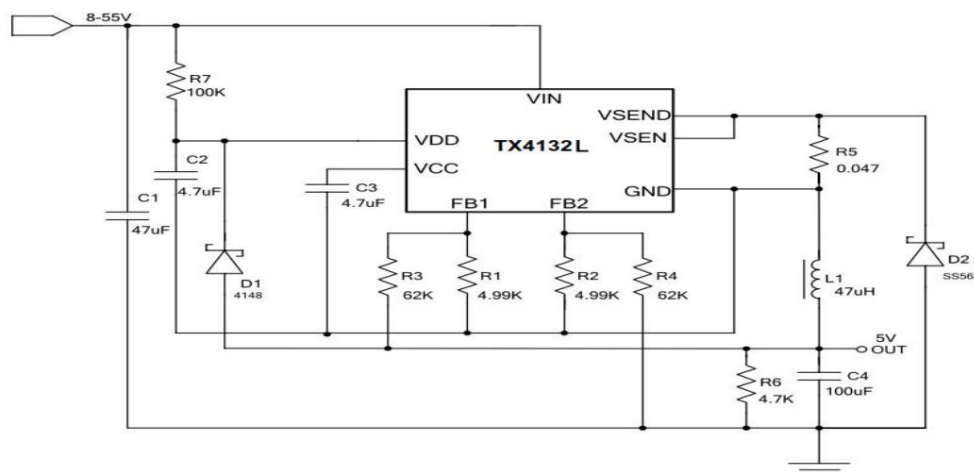
Pin definition



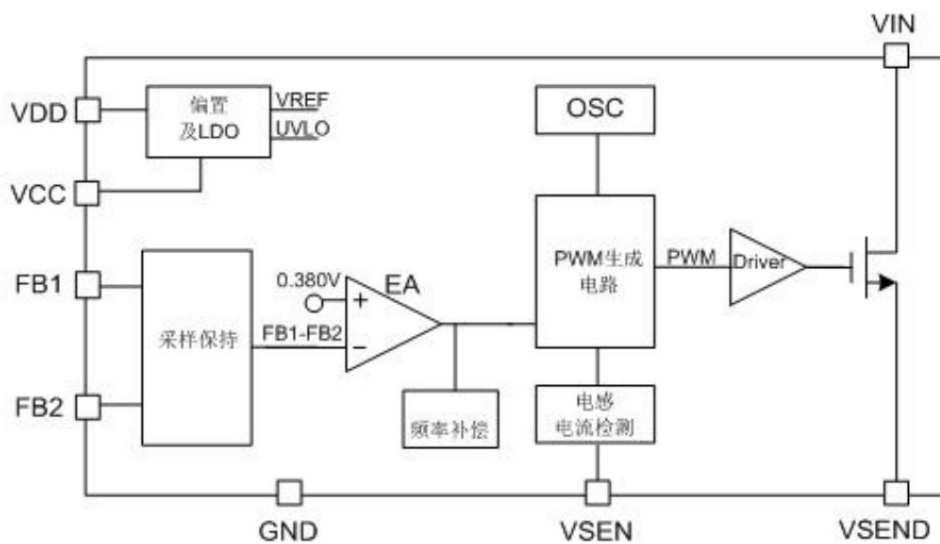
Function Description

Pin name	Pin description	
1	VIN	Built-in MOS drain, connected to Input power
2	VDD chip	power supply
3	FB1	Output feedback voltage positive terminal sampling
4	FB2	Output feedback voltage negative terminal sampling
5	VCC	Internal 5V LDO input out, connect the capacitor.
6	GND	chip ground
7	VSEN inductor	current detection pin
8	The heat sink is built-in	to connect to the VIN pin

Typical application circuit diagram



Circuit diagram





Limit parameters (Note 1)

symbol	describe	Parameter range	unit
VIN	Maximum voltage at VIN terminal	60	V
VDD	Maximum voltage at VDD terminal	33	V
Vmax	FB1,FB2,VCC,VSEN,VSEND pin voltage	-0.3~6	V
PESOP8	ESOP8 package maximum power	1	W
TA	consumption operating	-2~85	°C
TSTG	temperature range storage	-40~120	°C
TSD	temperature range soldering temperature range (time less than 30 seconds)	240+	°C
VESD	Electrostatic withstand voltage value (human body model)		V

2000 Note 1: Limit parameters refer to exceeding the working range specified in the above table, which may cause device damage. and

Working under the above extreme conditions may affect the reliability of the device.



Electrical characteristics (unless otherwise stated, VDD =12V, TA =25 oC)

parameter	symbol	Test conditions	minimum value	typical value	maximum value	unit
voltage						
VDD clamp voltage	VDD	IVDD<I _{Om} A		33		V
Undervoltage protection turns on VDD_ON		VDD rises		4.5		V
Under voltage protection turns off VDD_OFF		VDD drops		3		V
Supply current						
Working current	IOP	DRV load 1nF capacitor		1		mA
Starting current STARTUP		VDD=5V		40	100	uA
Power tube current limit						
Overcurrent protection threshold VCS_LMT				300		mV
Output current and output voltage sampling						
VSEN voltage drop	VCS		145	150	155	mV
FBI, FB2 voltage difference VFB			369	380	391	mV
On-off level						
On-off level	FS			140		KHz
Built-in MOS						
MOS tube voltage resistance	VDS		60			V
MOS tube conduction internal resistance R _{DS(on)}				70		QQ
Over temperature protection						
Over temperature protection OTP_TH				150		oC
Over temperature protection hysteresis OTP_HYS				25		oC
LDO						
VCC voltage	VCC			5.5		V



Typical application test data

VO=5V/3A test data

VI	II(A)	VO	IO	eff.
10	0.277	5.28	0.5	95.3
12	0.233	5.27		94.2
18	0.159	5.27		92.1
36	0.12	5.26		91.3
48	0.081	5.24		89.8
55	0.062	5.23		87.9
55	0.054	5.22		87.9
VI	II(A)	VO	IO	eff.
10	0.56	VO 5.27	1	94.1
12	0.475	5.27		92.5
18	0.318	5.25		91.7
24	0.24	5.25		91.1
36	0.161	5.23		90.2
48	0.121	5.21		89.7
55	0.106	5.21		89.4
VI	II(A)	VO	IO	eff.
10	1.16	5.29	2	91.2
12	0.98	5.28		89.8
18	0.65	5.26		89.9
24	0.49	5.26		89.5
36	0.327	5.23		88.9
48	0.245	5.22		88.8
55	0.214	5.20		88.4
VI	II(A)	VO	IO	eff.
10	1.82	VO 5.30	3	87.4
12	1.51	5.29		87.6
18	1	5.28		88.0
24	0.75	5.28		88.0
36	0.5	5.25		87.5
48	0.373	5.23		87.6
55	0.326	5.22		87.3



Application Information

Overview

TX4132L is a switching step-down DC-DC compatible with a wide input voltage range. Built-in chip 60V/5A power MOS.

TX4132L adopts fixed-frequency PWM peak current mode control method, which has low standby power consumption, fast response speed, and excellent bus voltage and load regulation rate. Typical switching frequency is 140KHz. At light load, the switching frequency is automatically reduced to obtain high conversion efficiency.

TX4132L supports both output constant voltage and output constant current.

TX4132L internally integrates soft-start and over-temperature protection circuits, output short-circuit protection, current-limiting protection and other functions to improve system reliability.

Maximum output current

setting The maximum output current is set by a resistor connected between VSEN and GND (see Figure 1 application circuit diagram):

$$I_{OUT_MAX} = \frac{V_{CS}}{R_5}$$

VCS typical value is 150mV. For example, if R5=47mOhm, the output current limit is 3.19A.

The output voltage is

set through the voltage dividing resistors R1, R3, R2, R4 connected to the FB1 and FB2 pins. electricity

The resistance selection should satisfy R1=R2, R3=R4.

$$V_{OUT} = \frac{R_2}{R_1} * V_{FB}$$

The typical value of VFB is 380mV

Inductor value:

The typical value of the inductor is between 33uH and 100uH. A large inductor value can obtain a small ripple current.

Helps improve efficiency. On the other hand, attention should be paid to the ESR of the inductor. Excessive ESR will reduce efficiency.

Over temperature protection

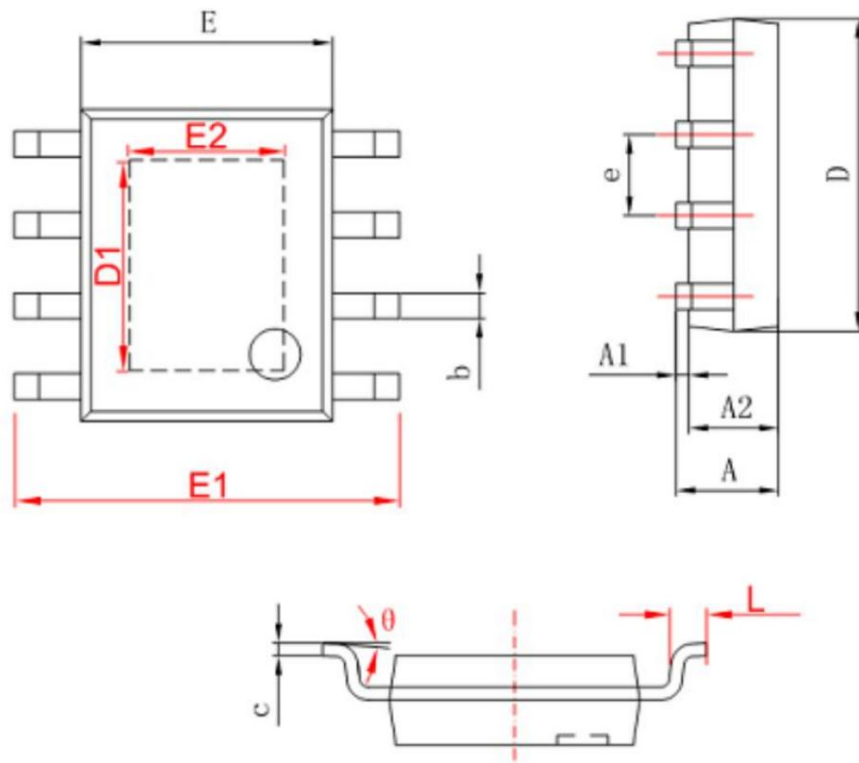
The chip integrates over-temperature protection. When the chip temperature is high, the over-temperature protection point is reached (typical value is 150 degrees).

When, the system will turn off the power tube, thereby limiting the input power and enhancing system reliability.

Package information

ESOP-8L

● SOP-8/PP





字符	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.050	0.150	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
D1	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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