器件参数表

Data Sheet

LP3772

【Low-Power Off-Line CC/CV PSR Controller】

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Description

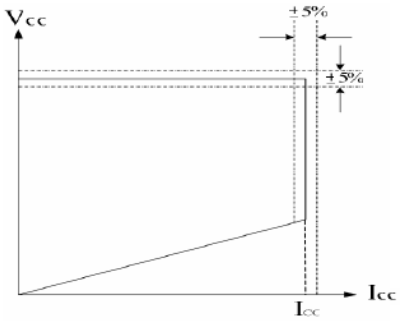
The LP3772 is a high performance AC/DC power supply controller for battery charger and adapter applications. The device uses Pulse Frequency Modulation (PFM) method to build discontinuous conduction mode (DCM) flyback power supplies.

The LP3772 provides accurate constant voltage, constant current (CV/CC) regulation without requiring an opto-coupler and the secondary control circuitry. It also eliminates the need of loop compensation circuitry while maintaining good stability. The LP3772 can achieve excellent regulation and high average efficiency, yet meets no-load consumption less than 75mW.

The LP3772 has a proprietary cable voltage drop compensation function, namely the output loss compensation, loss compensation amount can be controlled by adjusting the FB divider resistances to adjust the maximum amount of compensation, the output voltage is 12%, the loss of pressure drop can be effectively compensated output current at the output line.

Features

- Primary Side Control for Tight Constant Current and Constant Voltage
- 75mW No-load Input Power
- Bipolar Junction Transistor (BJT) Driving
- Proprietary Adjustable Cable voltage drop Compensation
- Random Frequency Modulation to Reduce System EMI
- Enhanced Audio Noise Suppression
- Open Circuit Protection
- Over Voltage Protection
- Short Circuit Protection
- Adjustable line loss compensation



Produce selection

LP3772 type information

Type	Package	Specification	Printing
LP3772-1	SOT23-6	Maximum output power of 5V/1.5A, integrated 3K ohm CS compensation resistor, external drive BJT	LP-1
LP3772-2	SOT23-6	Maximum output power 5V / 1.5A, external transistors, not integrated CS compensation resistor , fully compatible AP3772	LP-2

Typical Application

- Adapters/Chargers for Cell/cordless Phones, PDAs, MP3 and Other Portable Devices
- LED Driver
- Upgrading the best choice - linear power supply and RCC switching power supply
- Standby and Auxiliary Power Supplies

Typical Application Circuit

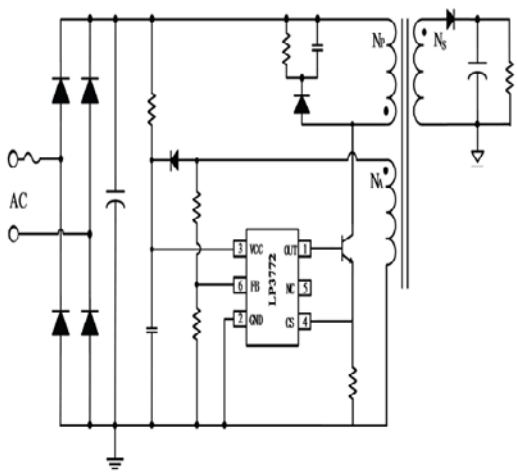


Figure 1a:LP3772-1 Typical Application

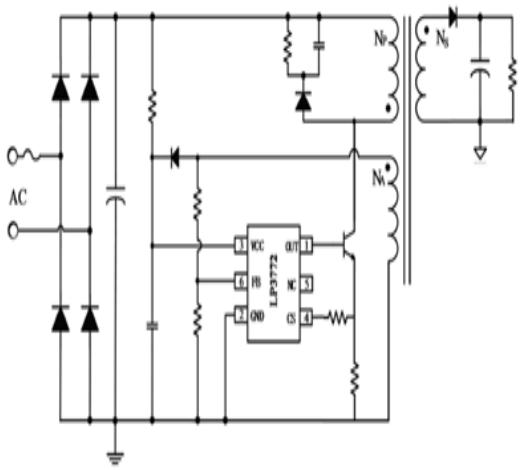


Figure 1b:LP3772-2 Typical Application

Pin Configuration

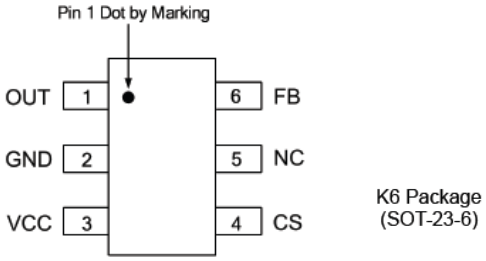


Figure 2: Pin Assignments

Terminal Description

Pin	Name	Description
1	OUT	The OUT pin is used to turn on and turn off the power switch. When turning on the power switch, the OUT pin will output 30mA source current to support the base current of the power BJT. When turning off the power switch, the resistance between the OUT and GND will become to 5Ω
2	GND	The GND pin is the ground of the IC. When the power BJT is turned off, a fast reverse sinking current to the gate of BJT will flow out from this pin. Attention should be paid to in the PCB layout
3	VCC	The VCC pin supplies the power for the IC. In order to get the correct operation of the IC, a capacitor with low ESR should be placed as close as possible to the VCC pin
4	CS	The CS is the current sense pin of the IC. The IC will turn off the power BJT according to the voltage on the CS pin.
5	NC	This pin must be floating.
6	FB	The CV and CC regulation are realized based on the voltage sampling of this pin

Table 1

Block Diagram

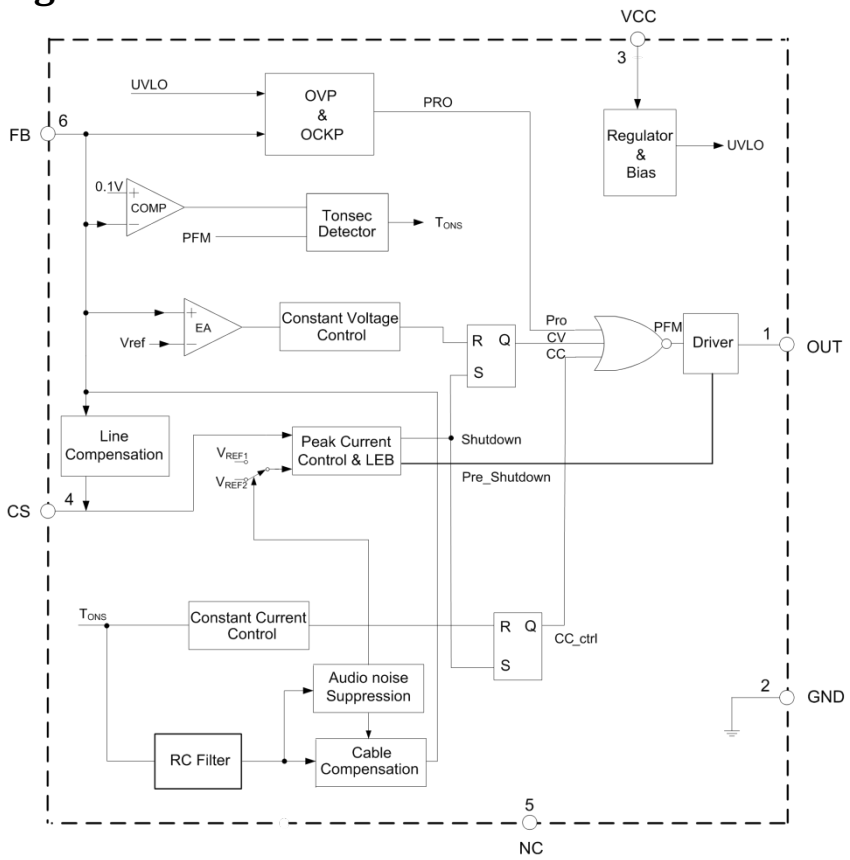


Figure 3: LP3772-x Block Diagram

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value	Unit
Supply Voltage	VCC	7 to 30	V
CS to GND	Vcs	-0.3 to 7	V
FB Input Voltage	VFB	-40 to 8.5	V
Source Current at OUT Pin	ISOURCE	Internally Limited	A
Operating Junction	TJ	150	ºC
Storage Temperature	TST	-65 to 150	ºC
Lead Temperature (Soldering,	TLEAD	300	ºC
Thermal Resistance	JA	250	ºC/W
ESD (Human Body Model)		2000	V

Table 2

Note 1: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability. Electrical Characteristics

Electrical Characteristics

V_{CC} =15V, T_A=25°C, unless otherwise specified.

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
UVLO SECTION							
Startup Threshold		VST		13	15.5	18	V
Minimal Operating Voltage		VUVLO		3.5	4	4.5	V
STANDBY CURRENT SECTION							
Startup Current		I_{ST}	V_{CC}=V_{TH} (ST)-1V, Before Startup	0	0.2	0.6	μA
Operating Current		I_{CC}	Static current		500		
DRIVE OUTPUT SECTION							
Output Current	Sink	I_{sink}	Apply 1V @OUT pin	150	200	330	mA
	Source	I_{SOURCE}		24	30	40	mA
Maximum Off		T_{OFFMAX}			18		ms
CURRENT SENSE SECTION							
Current Sense Threshold Voltage at CC Mode		V_{CS1}			500		mV
Current Sense Threshold Voltage at light load		VCS2			330		mV
Leading Edge Blanking		TLEB	The minimum POWER SWITCH		500		ns
FEEDBACK INPUT SECTION							
Input Resistance of FB Pin		R_{FB}	V_{FB}=4V	1	1.6	2	MΩ
Feedback		V_{FB}		3.94	4	4.06	V
LINE COMPENSATION SECTION							
Line Compensation Voltage		V_{COMP_LINE}	Vfb=-10V,R_{LINE}=30KΩ (Figure. 4)		120		mV
CABLE COMPENSATION SECTION							
Sink Current of FB Pin		Ifb	100% output current		100		μA
PROTECTION SECTION							
Over Voltage		V_{FBOVP}		6	6.5	7	V
Max. On Time of Primary Side		$Tonp_{MAX}$			25		uS

Table 3

Typical Performance Characteristics

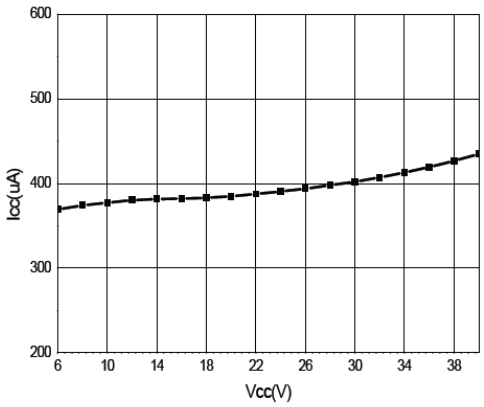


Figure 1. Operating Current Vs. Vcc Voltage

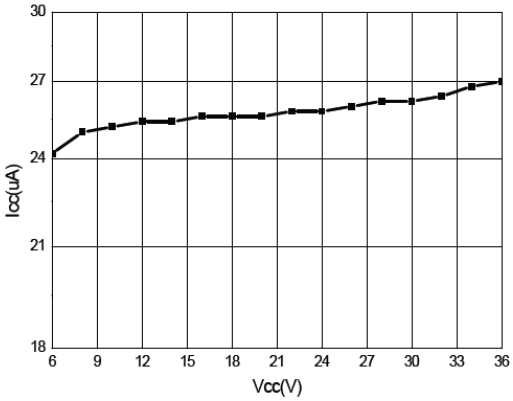


Figure 2. Drive Current Vs. Vcc Voltage

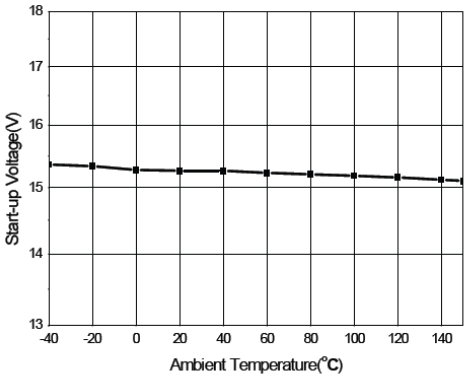


Figure 3. Startup Voltage Vs. Temperature

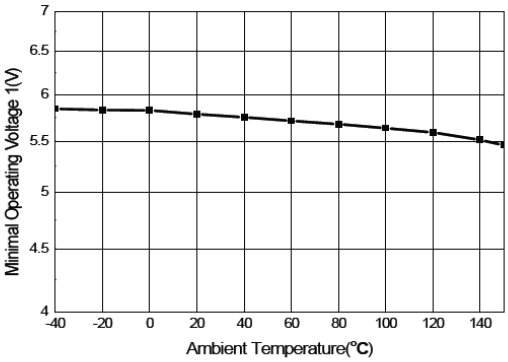


Figure 4. Minimal Operation Voltage Vs. Temperature

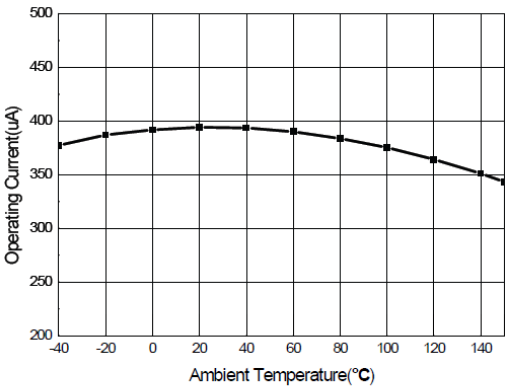


Figure 5. Operating Current Vs. Temperature

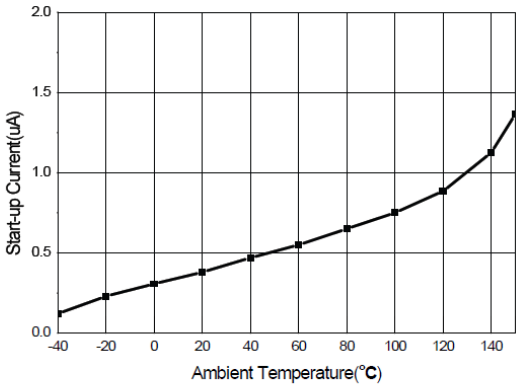


Figure 6. Startup Current Vs. Temperature

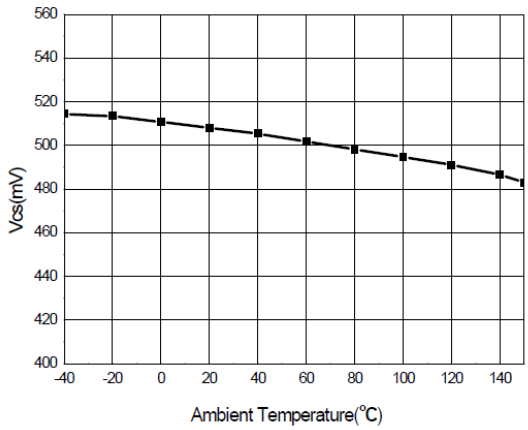


Figure 7. Vcs Vs. Temperature

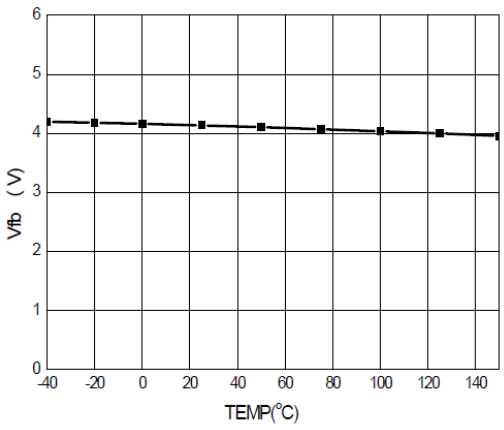
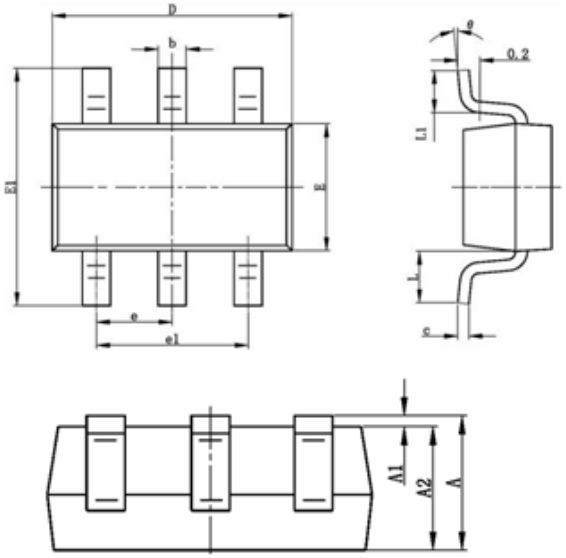


Figure 8. Vfb Vs. Temperature

Package Mechanical Data

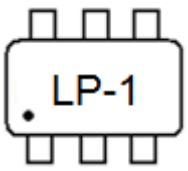
SOT-23-6 PACKAGE

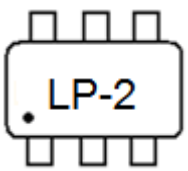


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Printing Information

SOT23-6





"LP-1" refers to type：LP3772-1 "LP-2" refers to type：LP3772-2