

CC, CV Control for Battery Charger & Adaptor

Description

The SL71062 is a voltage and current control IC which contains precision voltage reference. It is suitable for battery charger, second controller of switching regulator systems, and other battery systems.

Features

- Constant Voltage & Constant Current Control
- Wide input voltage range: 2.2V to 14V
- Internal Precision Voltage Reference : 1.240V ± 1%
- Photo Coupler (PC) Drive Current : 40mA Typ.
- Operating Current : 1mA Max.
- Easy compensation & Low external component count.
- Package Outline: SOT26.

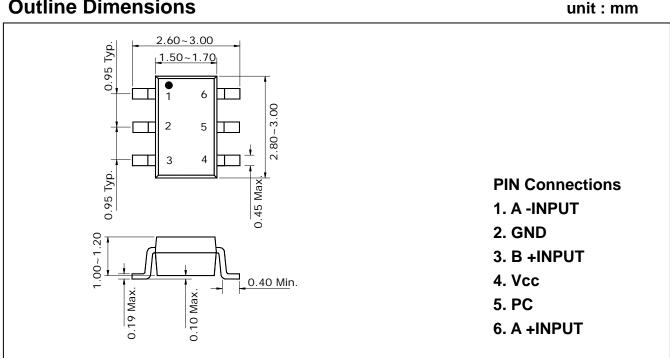
Applications

- Adapters
- Battery chargers

Ordering Information

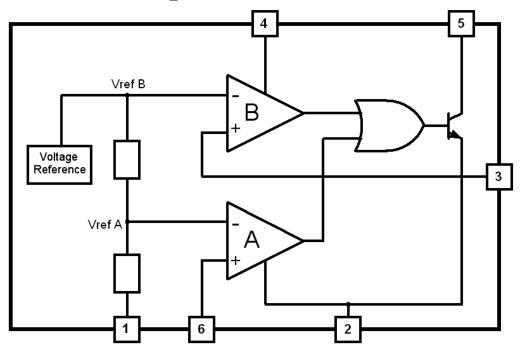
| Type NO. | Marking | Package Code | | |
|----------|---------|--------------|--|--|
| SL71062 | 762 | SOT - 26 | | |

Outline Dimensions

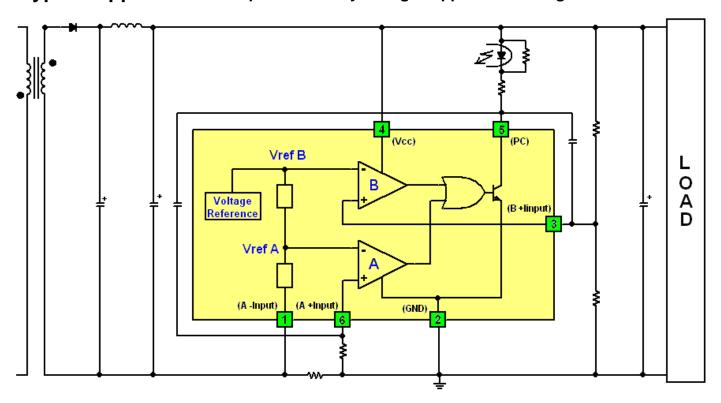


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Internal Block Diagram



Typical Application : Adapter or Battery Charger Application Using SL71062



In the above application schematic, the SL71062 is used on the secondary side of a flyback adapter (or battery charger) to provide an accurate control of voltage and current.

The above feedback loop is made with an optocoupler.

Pin Description

| Name | Pin No. | Function |
|----------|---------|----------------------------------------------------|
| A –INPUT | 1 | Input Pin of the Current Control Loop |
| GND | 2 | Ground Line. 0V Reference For All Voltages |
| B +INPUT | 3 | Input Pin of the Voltage Control Loop |
| Vcc | 4 | DC Supply Line |
| PC | 5 | Photo Coupler (P/C)Drive Pin. Sinking Current Only |
| A +INPUT | 6 | Input Pin of the Current Control Loop |

Absolute Maximum Ratings

| Characteristic | Symbol | Value | Unit |
|-------------------------------------|--------|------------|------|
| DC Supply Voltage | Vcc | 16 | V |
| Power Dissipation | Pd * | 500 | mW |
| Operating Ambient Temperature Range | Topr | -40 to 85 | °C |
| Storage Temperature Range | Tstg | -55 to 150 | °C |

^{*} Mount on a glass epoxy circuit board of 30x30mm Pad dimension of 50mm²

Operating Conditions

| Characteristic | Symbol | Value | Unit |
|-------------------|-----------------|-----------|------|
| DC Supply Voltage | V _{CC} | 2.2 to 14 | V |

Electrical Characteristics

| Characteristic | Symbol | Test Condition | Min. | Тур. | Max. | Unit |
|---------------------|---------------------|--------------------------|------|-----------------------|------|------|
| Operating Current | I _{cc} | I _{PC} = off | - | 0.6 | 1.0 | mA |
| Leakage Current | I _{PCLEAK} | $V^+ = V_{PC} = 14V$ | - | - | 10 | μA |
| Saturation Voltage | V _{PCSAT} | $I_{PC} = 20 \text{ mA}$ | - | 500 | 700 | mV |
| PC Terminal Current | I _{PC} | - | 20 | 40 | 70 | mA |
| Output Voltage High | V _{OH} | R _L = 30 kΩ | ı | V _{CC} – 0.1 | ı | V |

Electrical Characteristics (Continued)

Ta = 25 $^{\circ}$ C and V_{CC} = 5V (unless otherwise specified)

| Characteristic | Symbol | Test Condition | Min. | Тур. | Max. | Unit | |
|-------------------------------|----------------------|---------------------------|-------|-------|-------|-------|--|
| [A CH : Current Control Loop] | | | | | | | |
| Reference Voltage 1) | V _{REF} (A) | $I_{PC} = 2.5 \text{ mA}$ | 105 | 109 | 113 | mV | |
| Input Bias Current | I _B (A) | - | - | 20 | 50 | μA | |
| Transconduction Gain 2) | G _M (A) | - | 1.5 | 8 | - | mA/mV | |
| [B Ch : Voltage Control Loop] | | | | | | | |
| Reference Voltage 3) | V _{REF} (B) | $I_{PC} = 1.5 \text{ mA}$ | 1.227 | 1.240 | 1.253 | V | |
| Input Bias Current | I _B (B) | - | - | 50 | 500 | nA | |
| Transconduction Gain 4) | G _M (B) | - | 1 | 3 | - | mA/mV | |

- 1) The internal current sense threshold is set to -109mV. The current control loop precision takes into account the cumulative effects of the internal voltage reference deviation as well as the input offset voltage of the transconduction operational amplifier.
- 2) When the positive input at ICTRL is lower than -109mV, and the voltage is decreased by 1mV, the sinking current at the output OUT will be increased by 8mA.
- 3) The internal voltage reference is set at 1.240V (bandgap reference). The voltage control loop precision takes into account the cumulative effects of the internal voltage reference deviation as well as the input offset voltage of the trans-conductance operational amplifier.
- 4) If the voltage on B +Input (the positive input of the amplifier) is higher than the negative amplifier input (Vref(B) = 1.240V), and it is increased by 1mV, the sinking current at the output OUT will be increased by 3mA.

Fig.1 Supply current vs Ambient Temperature

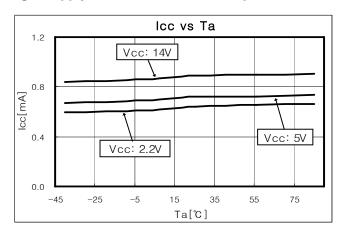


Fig.2 Vref(B) vs Ambient Temperature

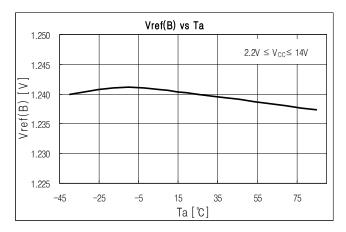


Fig.3 Vref(A) vs Ambient Temperature

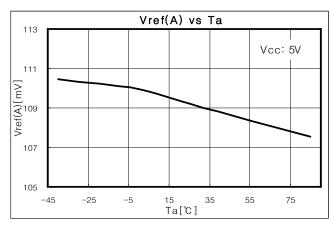


Fig.4 Saturation Voltage vs Ambient Temperature

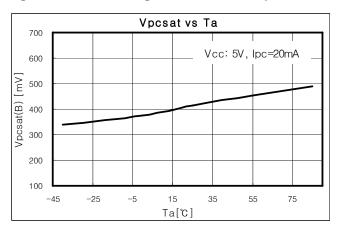
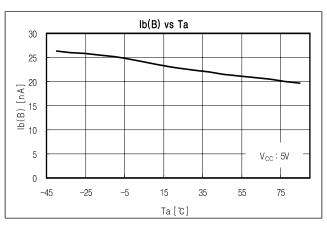


Fig. 5 Input Bias Current vs Ambient Temperature



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