

IS32LT3172/73 10-TO-200MA CONSTANT-CURRENT LED DRIVER

DESCRIPTION

The IS32LT3172/73 is adjustable constant current linear devices with excellent temperature stability. A single resistor is all that is required to set the operating current from 10mA to 200mA. The devices can operate from an input voltage from 2.5V to 42V with minimal voltage headroom of 0.6V. Designed with a low dropout voltage; the device can drive LED strings close to the supply voltage.

As a current sink, it is ideal for automotive LED lighting applications or as power supply current limiters.

FEATURES

- Low-side current sink
 - Current preset to 10mA
 - Adjustable from 10mA to 200mA with external resistor selection
- Wide input voltage
 - 2.5V to 42V (IS32LT3173)
 - 5V to 42V (IS32LT3172)
 - with a low dropout of 0.6V
- Up to 1.8W power dissipation in a small SOT-8 package
- Up to 10kHz PWM input (IS32LT3173 only)
- RoHS compliant (Pb-free) package
- Automotive Grade:
 - IS32LT3172 – AEC-Q100
 - IS32LT3173 – AEC-Q100 (pending)
- Operating temperature range from -40°C ~ +125°C

QUICK START

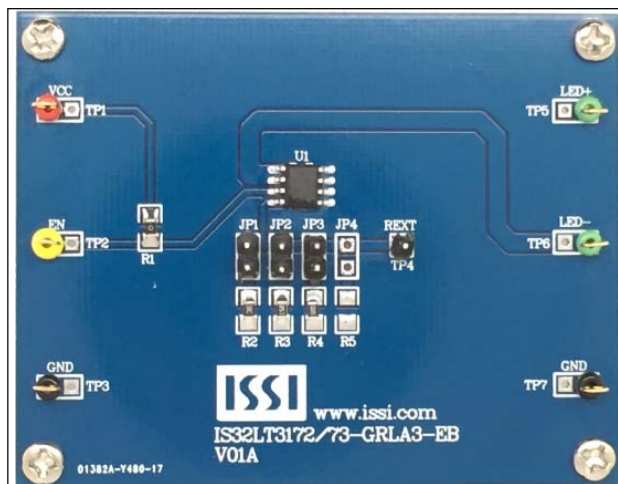


Figure 1: Photo of IS32LT3172/73 Evaluation Board

RECOMMENDED EQUIPMENT

- 42V, 200mA DC variable power supply
- 3 HBLEDs connected as a serial string (To prevent the IC junction from over heat, the recommended maximum supply is 15V)

ABSOLUTE MAXIMUM RATINGS

- ≤ 42V input voltage

Caution: Do not exceed the conditions listed above, otherwise the board will be damaged.

PROCEDURE

The IS32LT3172/73 evaluation board is fully assembled and tested. Follow the steps listed below to verify board operation.

Caution: Do not turn on the power supply until all connections are completed.

- 1) Connect the ground terminal of the power supply to the GND (TP3) and the positive terminal to the VCC (TP1). Connect the Anode of an external LED string to LED+ (TP5) and its Cathode to LED- (TP6).
- 2) The evaluation board supports eight current levels, selected by JP1, JP2, JP3, see table below. The test point REXT can be used to add an external fixed or variable resistor between REXT and GND (TP4). The final resistance can be measured with an ohm meter across REXT and GND (TP6) pins. For jumpers (JP1~JP3) Closed=1 and Open=0.

JP1	JP2	JP3	REXT (Ω)
0	0	0	-
0	0	1	100
0	1	0	15
0	1	1	13
1	0	0	10
1	0	1	9.1
1	1	0	6
1	1	1	5.6

- 3) The 0Ω resistor R1 is NOT installed for the IS32LT3173 evaluation board. Only the IS32LT3173 will accept a digital PWM signal at the EN (TP2) pin. Refer to IS32LT3172/73 datasheet for more device operation details.



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ORDERING INFORMATION

Part No.	Temperature Range	Package
IS32LT3172-GRLA3-EB	-40°C ~ +125°C (Automotive)	SOT-8-EP, Lead-free
IS32LT3173-GRLA3-EB	-40°C ~ +125°C (Automotive)	SOT-8-EP, Lead-free

Table 1: Ordering Information

For pricing, delivery, and ordering information, please contact ISSI's analog marketing team at analog@issi.com or (408) 969-6600.

EVALUATION BOARD OPERATION

IS32LT3172/73 evaluation board drives one string of WLEDs. There are three resistors used for adjusting the output current.

OUTPUT CURRENT SETTING

IS32LT3172/73 provides an easy constant current source solution for LED lighting applications. It uses an external resistor to adjust the LED current from 10mA to 200mA. The LED current can be determined by the external resistor R_{EXT} as Equation (1):

$$R_{EXT} = \frac{10mA \times 106\Omega}{I_{SET} - 10mA} \quad (1)$$

Where I_{SET} is in mA.

Paralleling a low tolerance resistor R_{EXT} with the internal resistor R_{INT} will improve the overall accuracy of the current sense resistance. The resulting output current will vary slightly lower due to the negative temperature coefficient (NTC) resulting from the self heating of the IS32LT3172/73.

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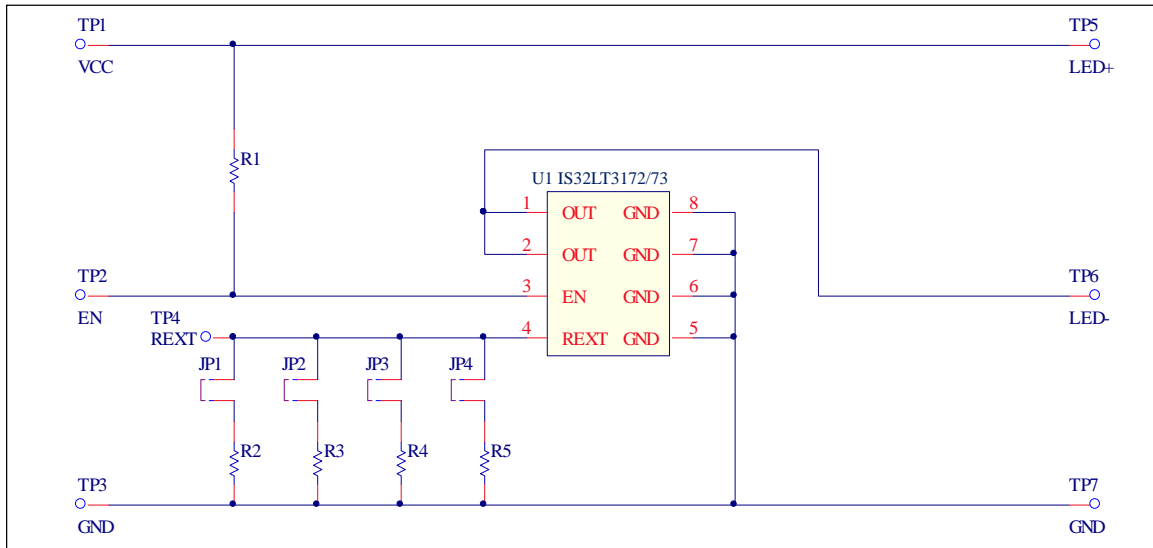


Figure 2: IS32LT3172/73 Evaluation Board Schematic

BILL OF MATERIALS

Name	Symbol	Description	Qty	Supplier	Part No.
LED Driver	U1	LED Driver	1	ISSI	IS32LT3172 or IS32LT3173
Resistor	R1	IS32LT3172: RES,0ohm,1/8W,±5%,SMD	1	YAGEO	RL0805JR-0700RL
		IS32LT3173: NC	0		
Resistor	R2	RES,10R,1/8W,±1%,SMD	1	YAGEO	RC0805FR-0710RL
Resistor	R3	RES,15R,1/8W,±1%,SMD	1	YAGEO	RC0805FR-0715RL
Resistor	R4	RES,100R,1/8W,±1%,SMD	1	YAGEO	RC0805FR-07100RL
Resistor	R5	NC	0		
Jumper	JP1~JP3	Jumper	3		
Test Terminal	TP1~TP6	Test terminal	6		

Bill of materials, refer to Figure 2 above.



Figure 3: Board Component Placement Guide - Top Layer

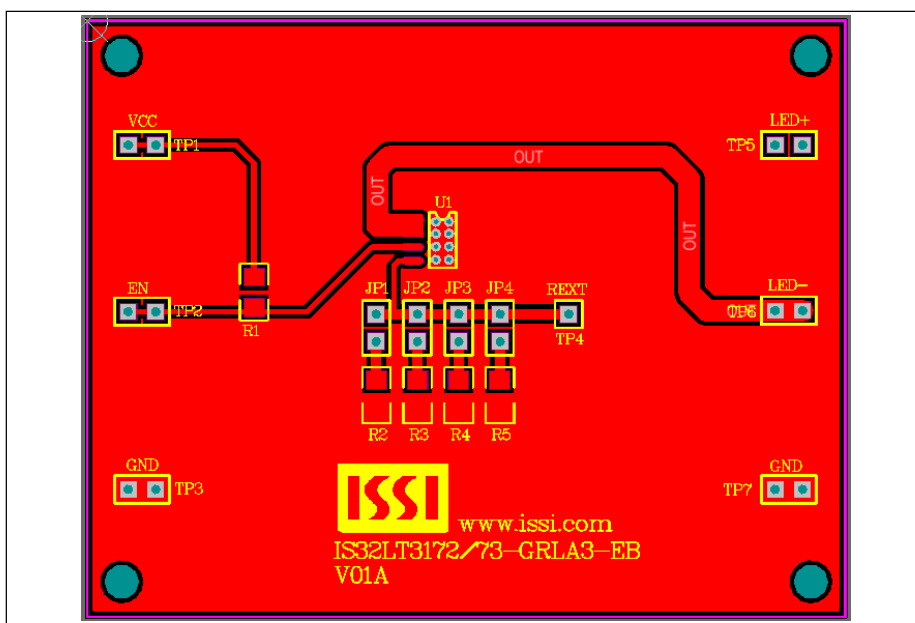


Figure 4: Board PCB Layout - Top Layer

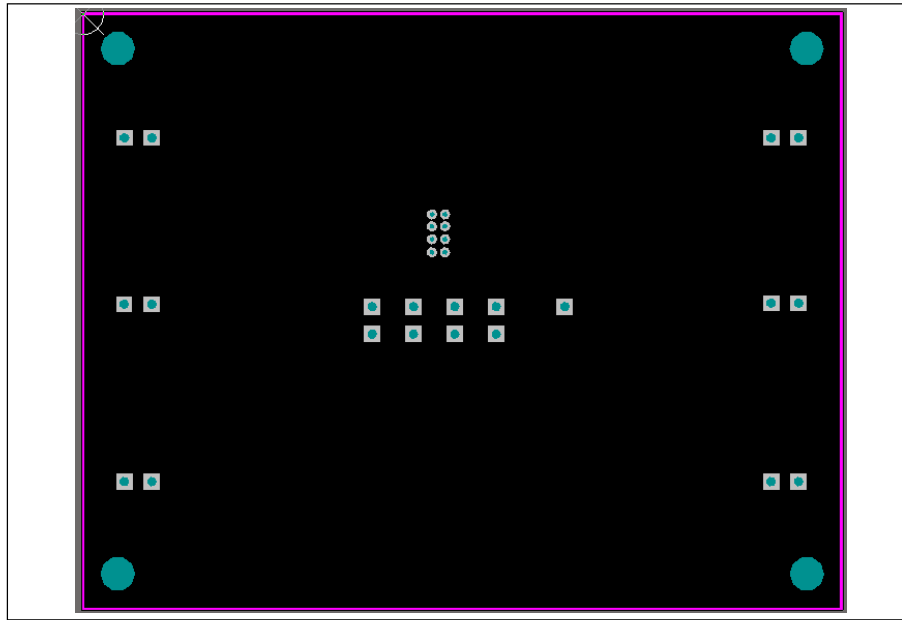


Figure 5: Board Component Placement Guide - Bottom Layer

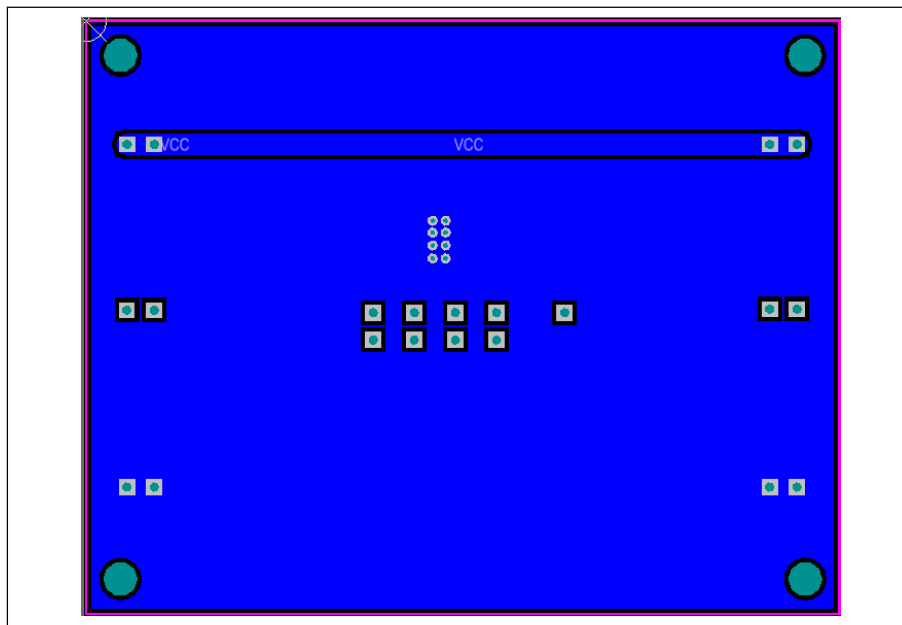


Figure 6: Board PCB Layout - Bottom Layer

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