



EV3372-R-00A

8-Channel, Synchronous Boost WLED Driver with I²C Interface Evaluation Board

DESCRIPTION

The EV3372-R-00A is an evaluation board for the MP3372, a synchronous boost converter with eight current channels. The IC is designed to drive WLED arrays for LCD panels in tablets and notebook backlighting applications.

The MP3372 uses peak current mode and pulse-width modulation (PWM) control to regulate the boost converter. The MP3372 employs a standard I²C digital interface to set the operation mode, switching frequency, full-scale current for each channel, sync or non-sync mode, dimming mode and duty, and various protection thresholds.

The low-headroom voltage for LED regulation and small on resistance of the switching MOSFET provide the MP3372 with high efficiency. The synchronous rectifier saves PCB size and total BOM cost.

The MP3372 is available in a QFN-24 (4mmx4mm) package.

ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|--------------------|------------------|-----------|-------|
| Input voltage | V _{IN} | 3 to 30 | V |
| Output voltage | V _{LED} | <45 | V |
| LEDs# | | 8 strings | |
| LED current/string | I _{LED} | 50 | mA |

FEATURES

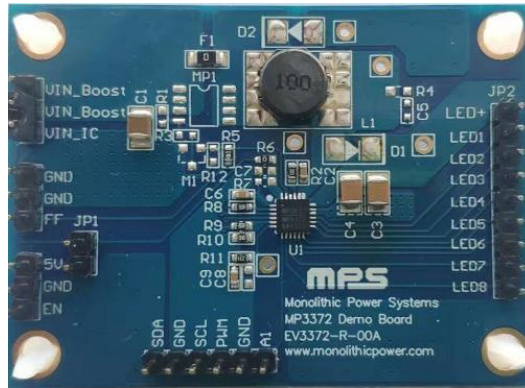
- 3V to 30V Input Voltage Range
- Maximum 2.5% Current Matching
- 350kHz/500kHz/650kHz,/800kHz/950kHz/1.2MHz Selectable f_{sw}
- A1 Pins for Two I²C Addresses
- 0mA to 50mA Full-Scale LED Current, 8 Bits, 0.196mA/Step
- Selectable Sync or Non-Sync Mode
- Multi-Dimming Operation Mode Includes:
 - Analog Dimming via External PWM Input, 10-Bit Resolution
 - Analog Dimming via I²C, 10-Bit Resolution
 - PWM Dimming via External PWM Input, 14-Bit Resolution
 - PWM Dimming via I²C, 14-Bit Resolution
 - Mixed Dimming Mode via External PWM Input with 6.25%/12.5%/25%/50% Transfer Point, 14-Bit PWM Duty Resolution
 - Mixed Dimming Mode via I²C with 6.25%/12.5%/25%/50% Transfer Point, 14-Bit PWM Duty Resolution
- Phase Shift Function during PWM Dimming (Including PWM Dimming during Mixed Dimming)
- Linear Smooth Dimming with 2μs, 4μs, 8μs, 16μs, 32μs, 64μs, or 128μs Step-Slope Set
- Unused LED String Auto-Disable at Start-Up
- LED Short/Open Protection, OTP, OCP, Inductor or Diode Short Protection:
 - 2.5V, 5V, 7.5V, 10V LED Short Threshold
 - 24V, 31V, 37.5V, or 46V OVP Threshold
 - 1.8 or 2.5A Current Limit
- Cascade Function to Share Power Stage
- Available in a QFN-24 (4mmx4mm) Package

APPLICATIONS

- Tablets/Notebooks
- Automotive Displays

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EV3372-R-00A EVALUATION BOARD



(LxW) 6.2cmx4.4cm

| Board Number | MPS IC Number |
|--------------|---------------|
| EV3372-R-00A | MP3372GR |

QUICK START GUIDE

1. Connect the terminals of the power supply (3V to 30V) to:
 - a) Positive (+): VIN_Boost
 - b) Negative (-): GND
2. Connect the terminals of the load panel (8 strings) to:
 - a) Positive (+): LED+ pin
 - b) Negative (-): LED1–8 pins

Connect unused strings (unused LEDx pin(s)) to GND using a 0Ω resistor.
3. Connect the EN pin to enable IC with a high-level signal (> 1.2V).
4. Connect SCL, SDA, and GND to their respective locations on the configurable kit (EVKT-USBI2C-02) with an I²C interface.
5. If working in external dimming mode, add a PWM input signal to the PWM terminal on the evaluation board. If working in internal dimming mode, the PWM pin can be left alone or pulled to GND.

POWER-ON SEQUENCE

1. VIN powers on.
2. EN powers on.
3. Set the registers using the GUI I²C interface (see Figure 1).
4. The PWM signal and LED string(s) should turn on.
5. Program the PWM duty cycle to dim the LED current.

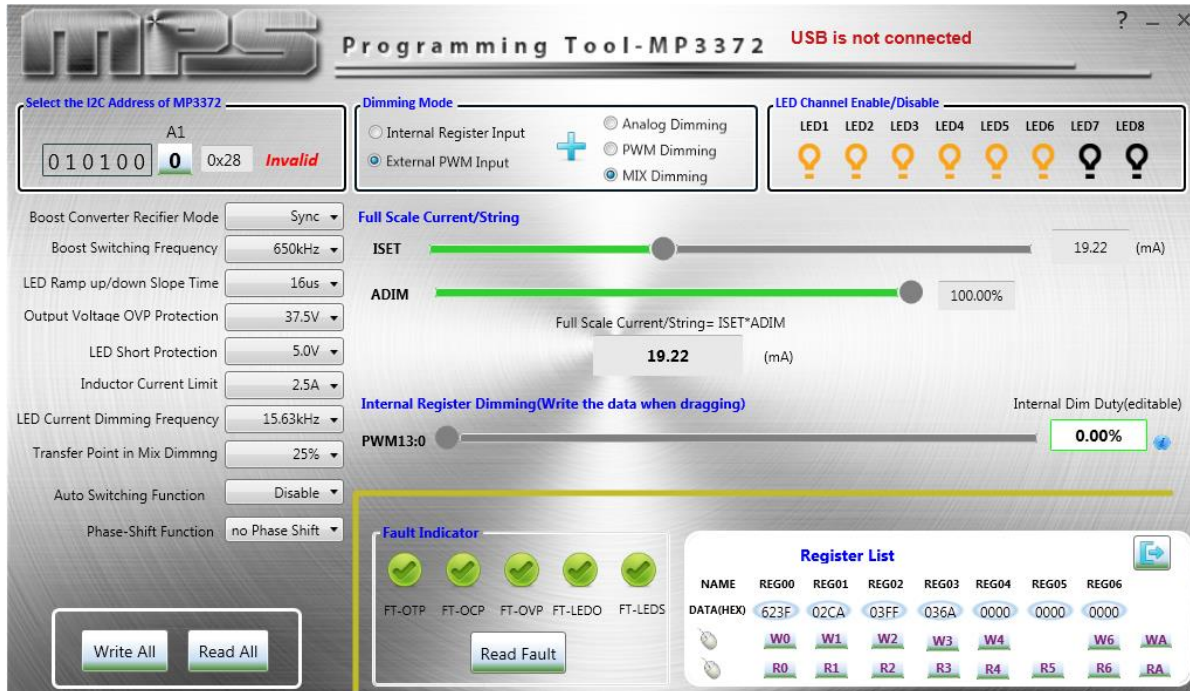
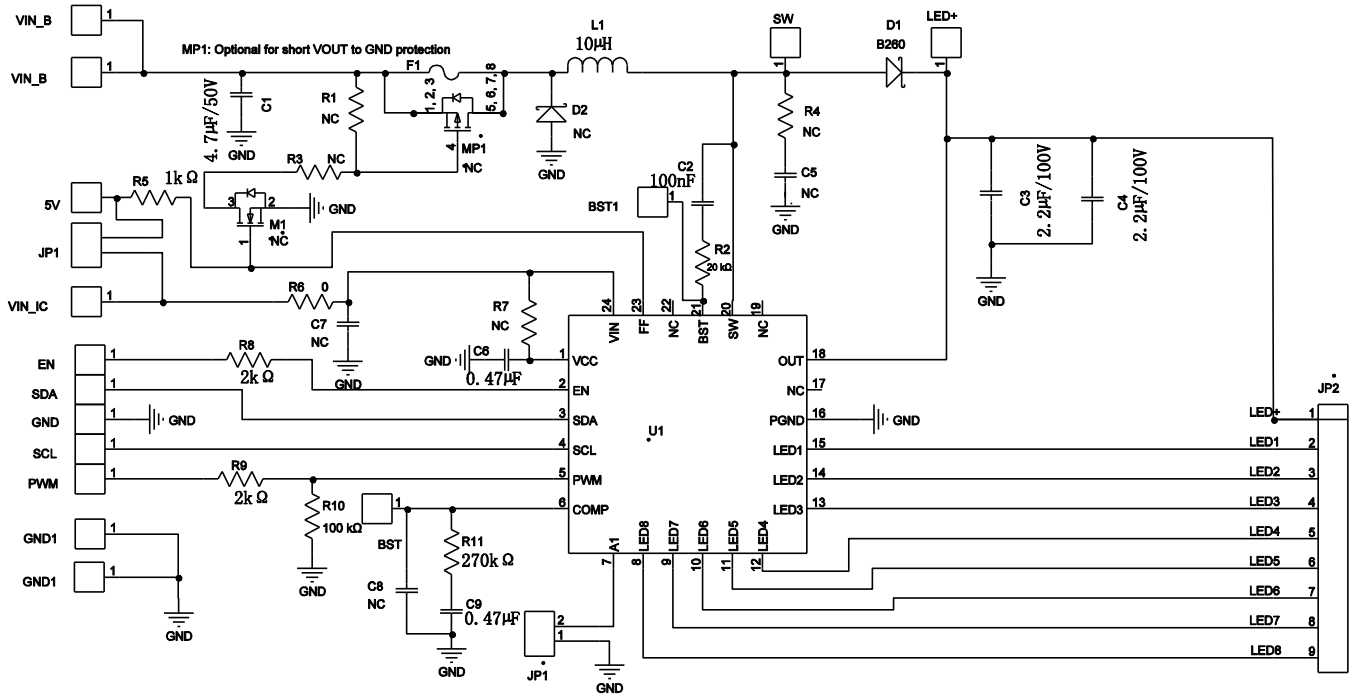


Figure 1: MP3372 GUI Interface

EVALUATION BOARD SCHEMATIC



EV3372-R-00A BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer P/N |
|-----|---------------------------|--------|---|---------------------|--------------|--------------------|
| 1 | F1 | 0Ω | Fuse or resistor | 1206 | muRata | RC1206JR-070RL |
| 1 | MP1 | NC | PMOS | SO-8 | | |
| 1 | C1 | 4.7μF | Ceramic capacitor, 50V, X7R | 1210 | muRata | GRM32ER71H475KA88L |
| 1 | C2 | 100nF | Ceramic capacitor, 16V, X7R | 0603 | muRata | GRM188R71C104KA01D |
| 2 | C3, C4 | 2.2μF | Ceramic capacitor, 100V, X7R | 1210 | muRata | GRM32ER72A225KA35L |
| 2 | C6,C9 | 470nF | Ceramic capacitor, 16V, X7R | 0603 | muRata | GRM188R71C474KA88D |
| 3 | C5, C7, C8 | NC | Ceramic capacitor | 0603 | | |
| 1 | D1 | NC | B190 | SMA | | |
| 1 | D2 | NC | | SMA | | |
| 1 | L1 | 10μH | Inductor, 36mΩ, 3.2A | SMD | KENJET | KJH8D43-100N |
| 1 | R2 | 20Ω | Resistor, 20Ω, 1% | 0603 | Yageo | RC0603FR-0720RL |
| 1 | R5 | 1kΩ | Resistor, 1kΩ, 1% | 0603 | Yageo | RC0603FR-071KL |
| 1 | R6 | 0Ω | Resistor, 0Ω, 1% | 0603 | Yageo | RC0603FR-070RL |
| 2 | R8, R9 | 2kΩ | Resistor, 2kΩ, 1% | 0603 | Yageo | RC0603FR-072KL |
| 1 | R10 | 100kΩ | Resistor, 100kΩ, 1% | 0603 | Yageo | RC0603FR-07100RL |
| 1 | R11 | 270Ω | Resistor, 270Ω, 1% | 0603 | Yageo | RC0603FR-07270RL |
| 5 | R1, R3, R4, R7, R12 | NC | Resistor | 0603 | | |
| 1 | U1 | MP3372 | LED driver with I ² C interface | QFN-24 (4mmx4mm) | MPS | MP3372GR |

PCB LAYOUT

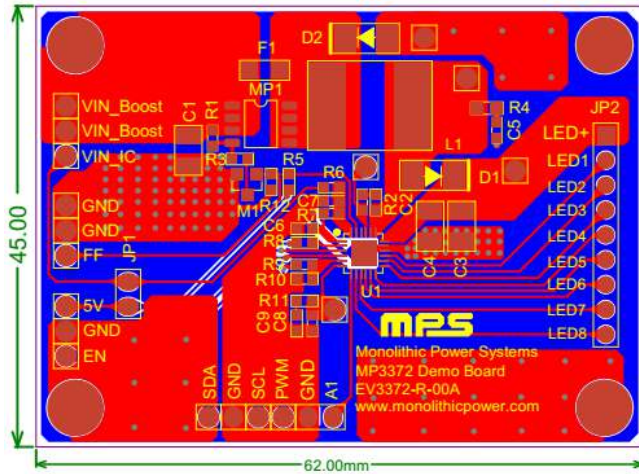


Figure 1: Top Layer

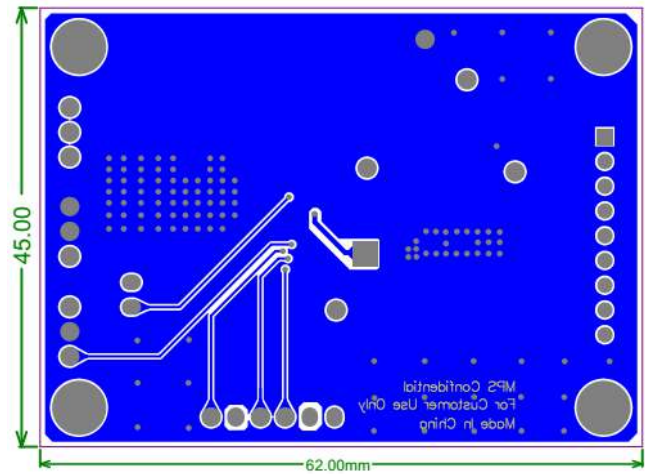


Figure 2: Bottom Layer

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