



The Future of Analog IC Technology®

EV24895-J-00A

Step-Down White LED Driver Evaluation Board

DESCRIPTION

The EV24895-J-00A is an evaluation board for the MP24895GJ, a step-down converter designed in hysteretic current control mode for driving the high brightness LEDs from wide input voltage of 9V to 30V.

The MP24895 employs hysteretic control architecture to regulate LED current. Moreover, this control scheme provides optimal circuit stabilization and a very quick response time without loop compensation. The highly accurate LED current is measured through an external high-side current-sense resistor. Its low 100mV average feedback voltage reduces power loss and improves the efficiency.

The MP24895 implements PWM and analog dimming together on the EN/DIM pin. The MP24895 includes under-voltage lockout, and thermal overload protection to prevent damage in the event of an output overload.

FEATURES

- Internal 36V MOSFET
- Wide 9V to 30V Input Range
- 750mA Output LED Current
- High Efficiency
- Hysteretic Control
- PWM and Analog Dimming
- 1000:1 PWM Dimming Resolution
- UVLO
- Thermal Shutdown

APPLICATIONS

- Low-Voltage Halogen Replacement
- Low-Voltage General Illumination
- Automotive/Decorative LED Lighting
- Signs/Emergency Lighting
- LED Backlighting

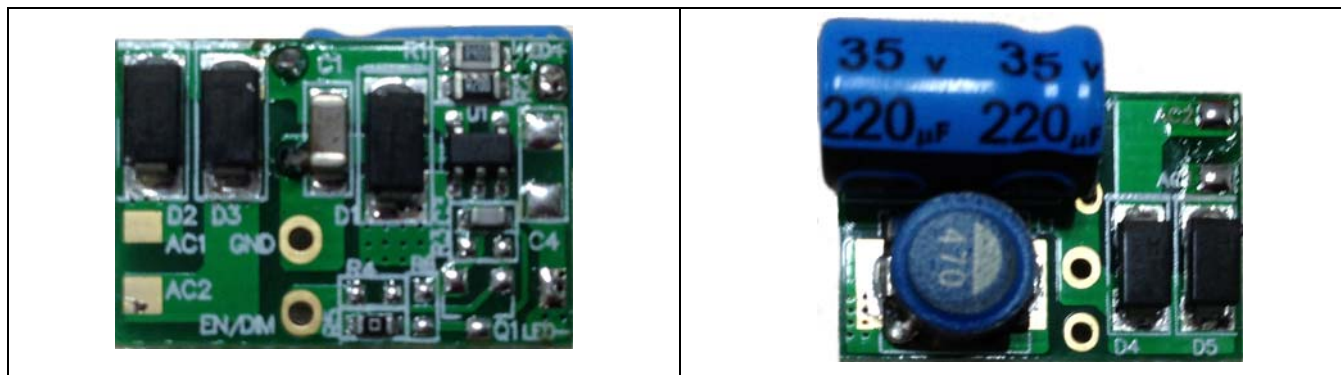
All MPS parts are lead-free and adhere to the RoHS directive. For MPS green status, please visit MPS website under Quality Assurance.

"MPS" and "The Future of Analog IC Technology" are Registered Trademarks of Monolithic Power Systems, Inc.

ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|----------------|-----------|-------------|-------|
| Input Voltage | V_{IN} | 9 to 30 | V |
| Output Voltage | V_{OUT} | $<V_{IN}-3$ | V |
| LED Current | I_{LED} | 750 | mA |

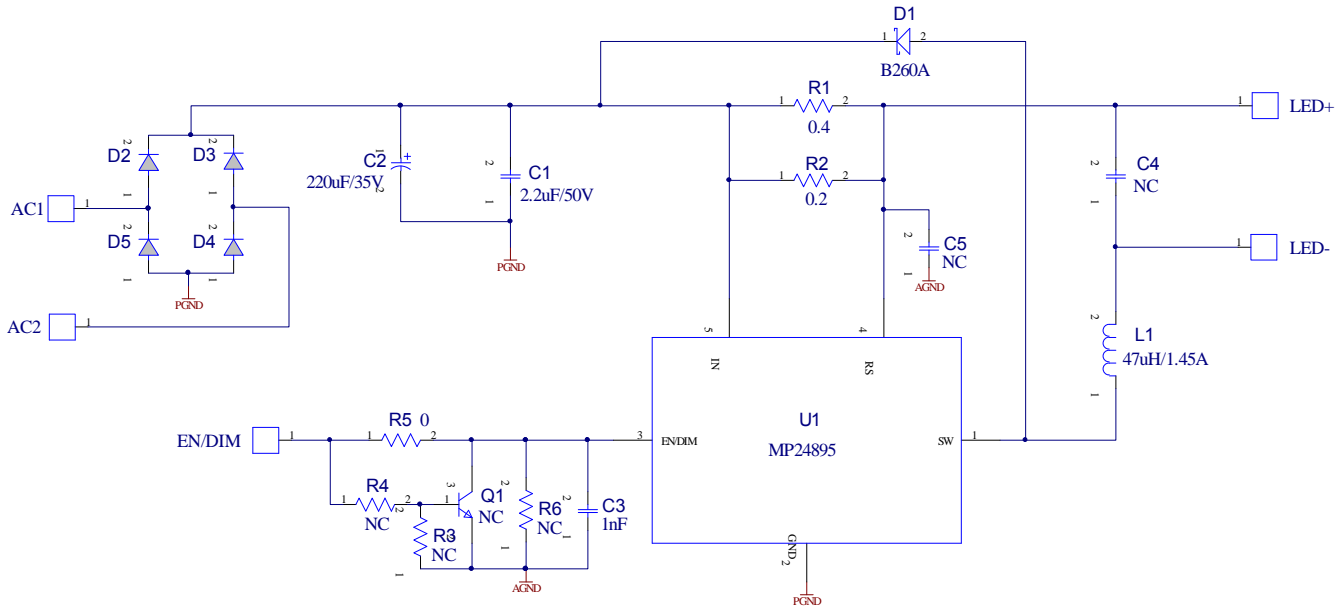
EV24895-J-00A EVALUATION BOARD



(L x W x H) 20mm x 14mm x 11mm

| Board Number | MPS IC Number |
|---------------|---------------|
| EV24895-J-00A | MP24895GJ |

EVALUATION BOARD SCHEMATIC



EV24895-J-00A BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Part Number |
|-----|------------|-----------|-----------------------------|----------|--------------|----------------------|
| 1 | C1 | 2.2µF/50V | Ceramic Capacitor, 50V, X7R | 1206 | muRata | GRM31CR71H225KA88L |
| 1 | C2 | 220µF/35V | Electrolytic Capacitor, 35V | DIP | Sanyo | 220µF/35V |
| 1 | C3 | 1nF/25V | Ceramic Capacitor, 25V, C0G | 0603 | muRata | GRM1885C1E102JA01D |
| 2 | C4, C5 | NC | | | | |
| 5 | D1 to D5 | B260A | Schottky Diode | SMA | Diodes | B260A |
| 1 | L1 | 47µH | Inductor, 1.2A | SMD | TDK | SLF7055T-470M1R2-3PF |
| 1 | R1 | 0.4Ω | Film Resistor, 1% | 0805 | Royalohm | 0805F400LT5E |
| 1 | R2 | 0.2Ω | Film Resistor, 1% | 0805 | Yageo | RL0805FR-070R2L |
| 3 | R3, R4, R6 | NC | | | | |
| 1 | R5 | 0Ω | Film Resistor, 5% | 0603 | Yageo | RC0603JR-070RL |
| 1 | Q1 | NC | | | | |
| 1 | U1 | MP24895 | MPS WLED Driver | TSOT23-5 | MPS | MP24895GJ-Z |

PRINTED CIRCUIT BOARD LAYOUT

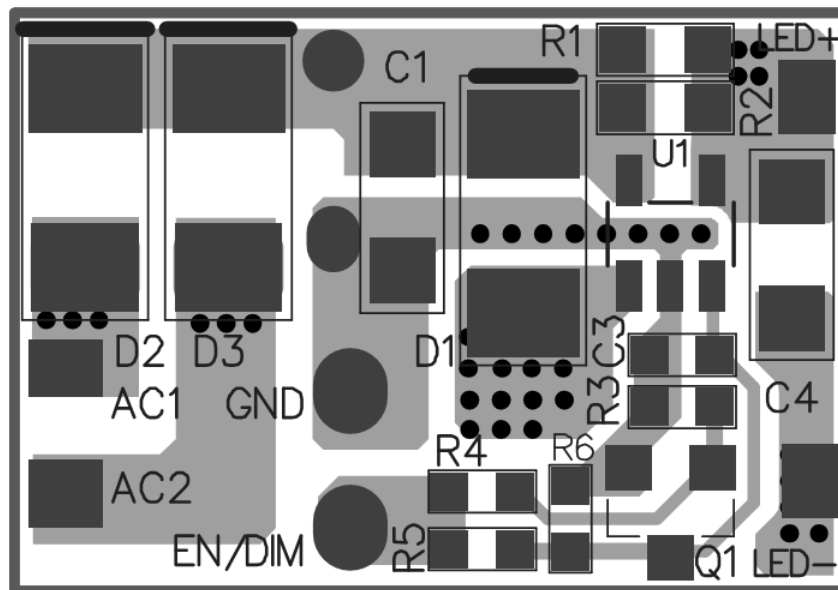


Figure 1—Top Layer

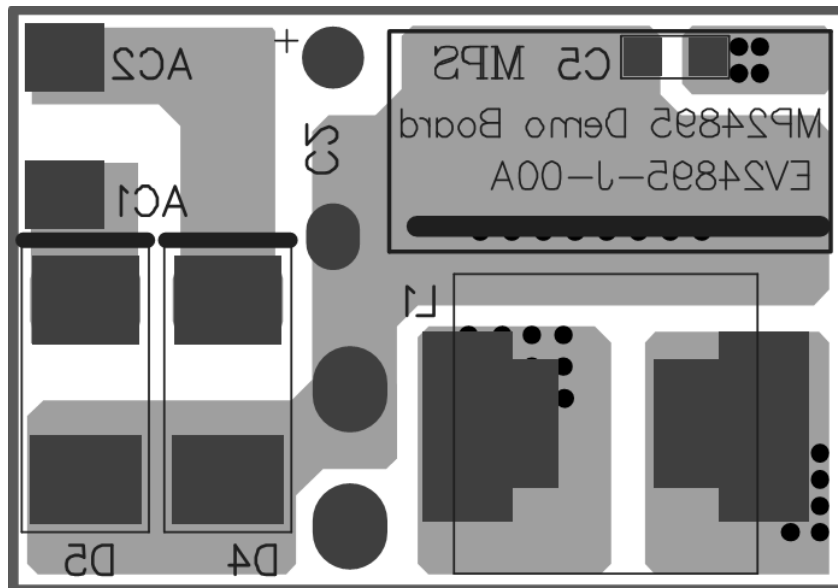


Figure 2—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the LED+ and LED- pins on the EV board, respectively.
2. Connect the positive and negative terminals of the 24V AC power supply to the AC1 and AC2. If apply a DC power supply, please connect + and – to AC1 and AC2. Turn the power supply on.
3. If PWM dimming is required, provide a 200Hz to 2kHz PWM signal to EN/DIM pin. Remove R5 and put a 1k Ω resistor on R4.
4. If analog dimming is required, please open R4 and short R5, then provide a 0.3V to 2.5V DC voltage to the EN/DIM pin.
5. The LED current is adjustable by set current sense resistor R1//R2 as below formula,

$$R1//R2=100\text{mV}/I_{\text{LED}}$$

NOTICE: The information in this document is subject to change without notice. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.