# EV6001DN-00D

**WLED Driver Evaluation Board**

The Future of Analog IC Technology

## GENERAL DESCRIPTION

The EV6001DN-00D is an evaluation board for the WLED driver application. It can drive 6 20mA strings of WLEDs with up to 10 WLEDs per string. EV6001DN-00D has good current balance among 6 strings. It also has PWM dimming, EN function, and open circuit voltage protection.

This device is available in an 8-pin SOIC package with an exposed pad.

## ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 7 – 21 | V |
| Output Voltage | $V_{OUT}$ | 33 | V |
| Output Current | $I_{OUT}$ | 20mA x 6 | mA |

## FEATURES

- Integrated 150V Power Switch
- Integrated 100V Startup Circuit
- Cycle-by-Cycle Current Limiting
- PWM Dimming
- Open Circuit Protection
- Backlight Current Balance

## APPLICATIONS

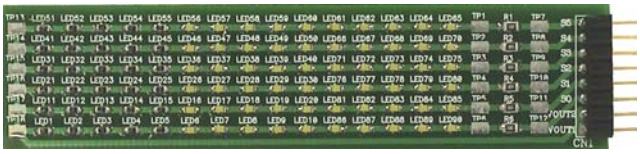
- LCD Panel Backlight
- General and Accent Lighting



## EV6001DN-00D EVALUATION AND LED BOARDS

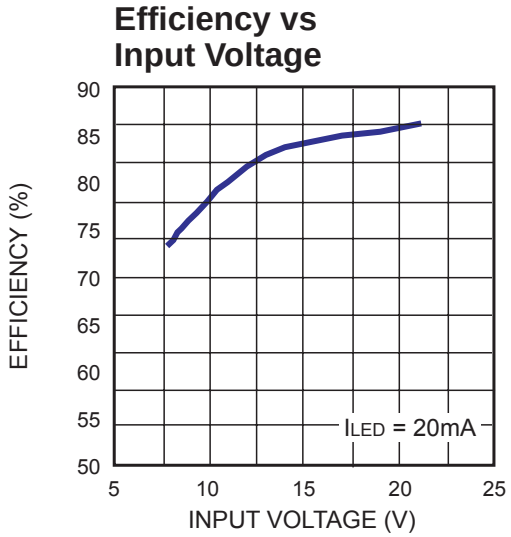
**(L x W x H) 2.6" x 0.6" x 0.2"**
**(6.5cm x 1.5cm x 0.5cm)**

| Board Number | MPS IC Number |
|---|---|
| EV6001DN-00D | MP6001DN |

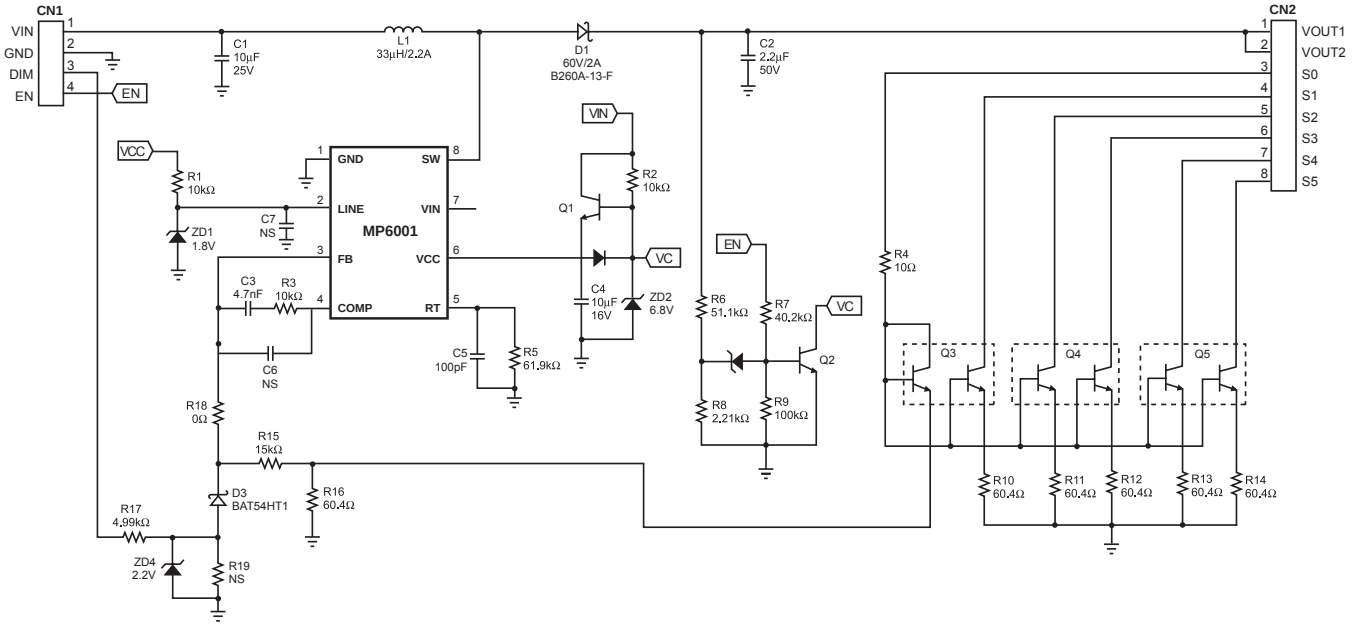


**(L x W x H) 3.3" x 0.8" x 0.2"**
**(8.5cm x 2.0cm x 0.5cm)**

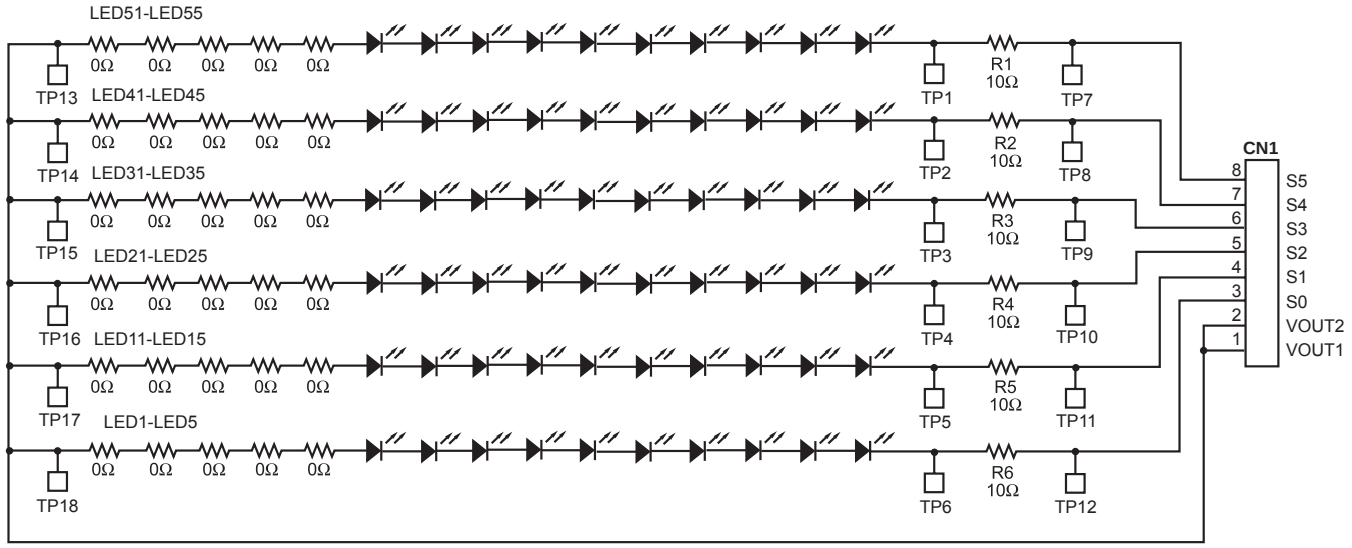
| Board Number | MPS IC Number |
|---|---|
| MP6001 LED Board -00C | MP6001DN |



## EVALUATION BOARD SCHEMATIC




## LED BOARD SCHEMATIC



## EV6001DN-00D BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Part Number |
|---|---|---|---|---|---|---|
| 1 | C1 | 10µF | Ceramic Cap., 25V, X7R | 1210 | TDK | C3225X7R1E106M |
| 1 | C2 | 2.2µF | Ceramic Cap., 50V, X7R | 1210 | TDK | C3225X7R1H225K |
| 1 | C3 | 4.7nF | Ceramic Cap., 50V, X7R | 603 | TDK | C1608X7R1H472K |
| 1 | C4 | 10µF | Ceramic Cap., 16V X7R | 1206 | TDK | C3216X7R1C106M |
| 1 | C5 | 100pF | Ceramic Cap., 50V, NPO | 603 | TDK | C1608C0G1H101J |
| 2 | C6, C7 | | Not Stuffed | 603 | | |
| 2 | R1, R3 | 10kΩ | Film Res., 5% | 603 | Panasonic | ERJ-3GEYJ103V |
| 1 | R2 | 10kΩ | Film Res., 5% | 805 | Panasonic | ERJ-6GEYJ103V |
| 1 | R4 | 10Ω | Film Res., 5% | 805 | Panasonic | ERJ-6GEYJ100V |
| 1 | R5 | 61.9kΩ | Film Res., 1% | 603 | Panasonic | ERJ-3EKF6192V |
| 1 | R6 | 51.1kΩ | Film Res., 1% | 603 | Panasonic | ERJ-3EKF5112V |
| 1 | R7 | 40.2kΩ | Film Res., 1% | 603 | Panasonic | ERJ-3EKF4022V |
| 1 | R8 | 2.21kΩ | Film Res., 1% | 603 | Panasonic | ERJ-3EKF2211V |
| 1 | R9 | 100kΩ | Film Res., 5% | 603 | Panasonic | ERJ-3GEYJ104V |
| 6 | R10, R11, R12, R13, R14, R16 | 60.4Ω | Film Res., 1% | 603 | Panasonic | ERJ-3EKF60R4V |
| 1 | R15 | 15kΩ | Film Res., 5% | 603 | Panasonic | ERJ-3GEYJ153V |
| 1 | R17 | 4.99kΩ | Film Res., 1% | 603 | Panasonic | ERJ-3EKF4991V |
| 1 | R18 | 0Ω | Film Res., 5% | 603 | Panasonic | ERJ-3GEY0R00V |
| 1 | R19 | | Not Stuffed | 603 | | |
| 1 | L1 | 33µH | Inductor, 2.2A | SMD | Sumida | CDR7D43MN-330 |
| 2 | Q1, Q2 | | Transistor, NPN, 40V, 350mW | SOT-23 | Diodes Inc | MMBT3904-7-F |
| 3 | Q3, Q4, Q5 | | Transistor, Dual NPN, 40V, 200mA | SOT-363 | Diodes Inc | MMDT3904-7-F |
| 2 | ZD1, ZD3 | | Diode Zener, 1.8V | SOD-323 | Central Semiconductor | CMSZ1L8 |
| 1 | ZD2 | | Diode Zener, 6.8V | SOD-123 | Diodes Inc | BZT52C6V8-7 |
| 1 | ZD4 | | Diode Zener, 2.2V | SOD-323 | Central Semiconductor | CMDZ2L2 |
| 1 | CN1 | | Connector Header, 4P, 2mm | | Any | |
| 1 | CN2 | | Connector Header, 8P, 2mm | | Any | |
| 1 | U1 | | DC-DC Converter | SO-8 | MPS | MP6001DN |

## LED BOARD BILL OF MATERIALS *(continued)*

| Qty | Ref | Value | Description | Package | Manufacturer | Part Number |
|---|---|---|---|---|---|---|
| 6 | R1 – R6 | 10Ω | Film Res., 5% | 805 | Panasonic | ERJ-6GEYJ100V |
| 60 | LED6 – LED10<br>LED16 – LED20<br>LED26 – LED30<br>LED36 – LED40<br>LED46 – LED50<br>LED56 – LED60<br>LED61 – LED90 | | White LED, Surface Mount | 603 | LITE-ON Inc | LTW-C191TS5 |
| 30 | LED1 – LED5<br>LED11 – LED15<br>LED21 – LED25<br>LED31 – LED35<br>LED41 – LED45<br>LED51 – LED55 | 0Ω | Film Res., 5% | 603 | Panasonic | ERJ-3GEY0R00V |
| 1 | CN1 | | Connector Header, 8 Pin, 2mm | | Any | |

## PRINTED CIRCUIT BOARD LAYOUT

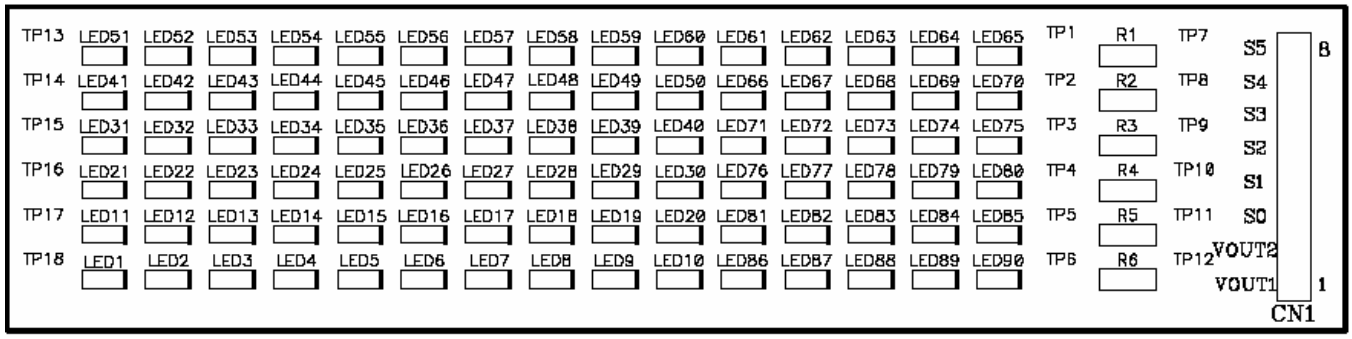



**Figure 1—LED Board Top Silk Layer**

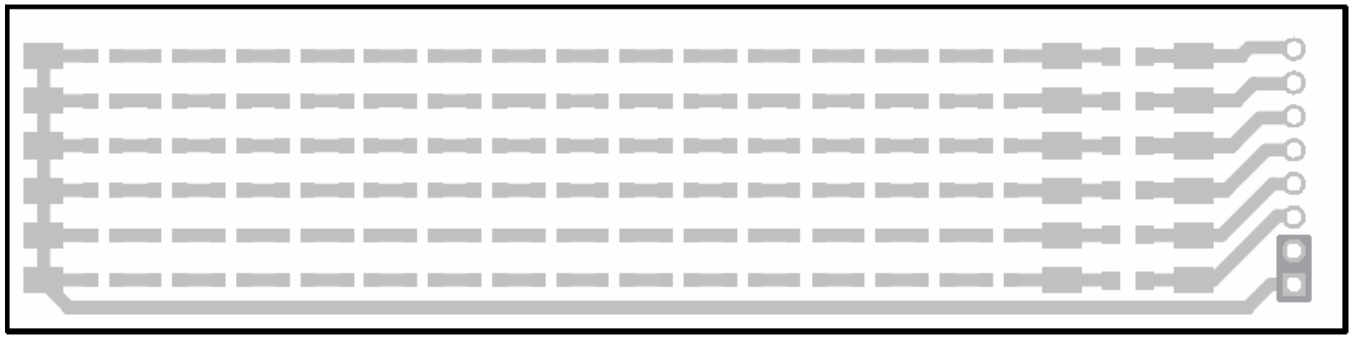


**Figure 2—LED Board Top Layer**

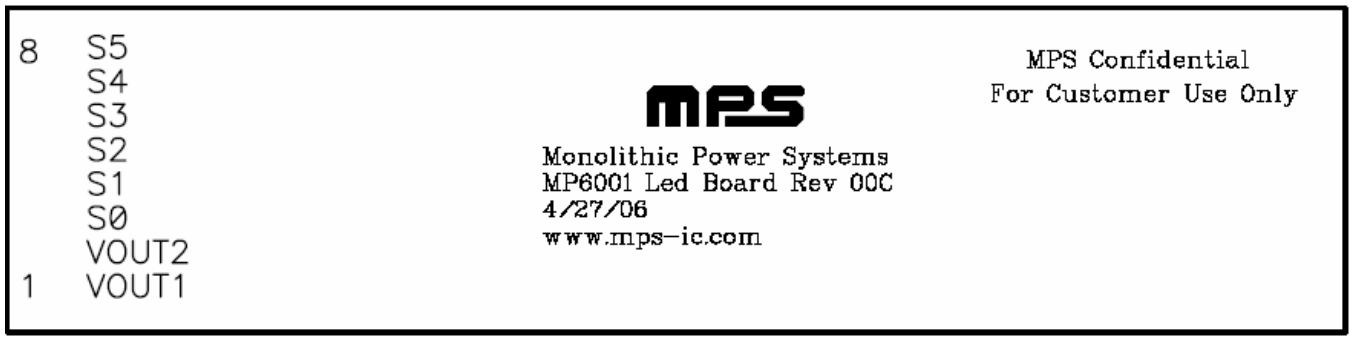



**Figure 3—LED Board Bottom Silk Layer**

**Figure 4—LED Board Bottom Layer**