

## DESCRIPTION

The EV3214DQ-00A is an evaluation board for the MP3214, a low noise, high current LED driver intended for camera phone application. It can drive LEDs at up to 500mA with an input supply of 2.7 to 5.5 volts.

The high efficiency and low external parts count (two small bypass caps, two small charge pump caps and one programming resistor) make the MP3214 ideally suited for portable applications where small size and high efficiency are critical.

The MP3214 employs an efficient inductor less charge pump with 1x, 1.5x and 2x automatic mode control to achieve high efficiency power conversions.

## **ELECTRICAL SPECIFICATIONS**

| Parameter            | Symbol     | Value   | Units |
|----------------------|------------|---------|-------|
| Input Voltage        | $V_{BATT}$ | 2.7-5.5 | V     |
| LED of flash Current | IF LASH    | 200     | mA    |

## **FEATURES**

- High efficiency.
- Up to 500mA output current.
- Wide supply range of 2.7V to 5.5V.
- Adjustable output LED current.
- PWM brightness control.
- Open /Short LED protection.
- Thermal shut down protection.
- Under-Voltage protection.
- Available in a 3mm × 3mm 16pins QFN package.

## APPLICATIONS

- LED backlight
- LED flash
- LED torch/Flashlight
- Cell phone, Cameras PDA and Handheld equipment

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## EV3214DQ-00A EVALUATION BOARD



(L x W x H) 2.2" x 1.6" x 0.4" (6.1cm x 5.1cm x 1.4cm)

| Board Number | MPS IC Number |  |
|--------------|---------------|--|
| EV3214DQ-00A | MP3214DQ      |  |

### Efficiency VS. Battery Voltage





#### **EVALUATION BOARD SCHEMATIC**



#### EV3214DQ-00A BILL OF MATERIALS

| Qty | Reference | Value  | Description              | Package      | Manufacturer | Manufacturer P/N  |
|-----|-----------|--------|--------------------------|--------------|--------------|-------------------|
| 1   | C1        | 2.2uF  | 6.3V X5R<br>Ceramic Cap. | SMR0603      | muRata       | GRM188R70J225K    |
| 3   | C2,C3,C4  | 1uF    | 6.3V X5R<br>Ceramic Cap. | SMR0603      | muRata       | GRM188R70J105K    |
| 1   | Flash     | NS     | 500mA flash LED          | SMD          | LUMILEDS     | LXHL-BW02         |
| 1   | R1        | 100KΩ  | Film Res., 5%            | 0603         | Yageo        | RC0603JR-07100KL  |
| 1   | R2        | 0Ω     | Film Res., 5%            | 0603         | Yageo        | 9C06031A0R00JL    |
| 1   | R3        | 17.8K  | Film Res, 1%             | 0603         | Yageo        | 9C06031A1782FKHFT |
| 1   | JP1       | Jumper | 3 PIN 2.54 mm            | 0.1"         | Sullins      | STC03SYAN         |
| 1   | U1        |        | White LED Driver         | QFN16<br>3X3 | MPS          | MP3214DQ          |



#### PRINTED CIRCUIT BOARD LAYOUT



Figure 1—Top Silk Layer

Figure 2—Top Layer



Figure 3—Bottom Layer



#### QUICK START GUIDE

- 1. Solder Flash LED to the board if it is not populated.
- 2. Preset the power supply output to between 2.7V and 5.5 V, Then turn off the power supply.
- 3. Connect the positive terminal of the power supply to the VBATT pin.
- 4. Connect the negative terminal of the power supply to the GND pin.
- 5. Set the JP1 connection. Such that the TOE pin is connected to VBATT.
- 6. Turn on the power supply. The board will automatically start up.
- 7. Set the Flash LED current. The IFLASH is set by the resistor R3 and follows equation:

$$\mathsf{IFLASH} = \frac{3570}{R3}$$

or for a desired IFLASH, R3 is calculated by:

 $R3 = \frac{3570}{IFLASH}$ 

| R3                                 | IFLASH                           |
|------------------------------------|----------------------------------|
| 35700Ω                             | 100mA                            |
| 17850Ω                             | 200mA                            |
| 11900Ω                             | 300mA                            |
| 8925Ω                              | 400mA                            |
| 7140Ω                              | 500mA                            |
| 17850Ω<br>11900Ω<br>8925Ω<br>7140Ω | 200mA<br>300mA<br>400mA<br>500mA |

8. A low frequency PWM signal apply to the EN pin (50HZ to 2KHz) can be used to change the LED brightness. For example, if a 20% duty cycle PWM signal is applied to the EN pin, the average IFLASH is 20% the full current.

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