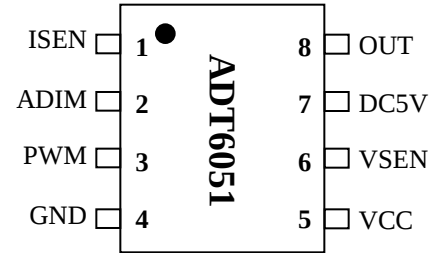


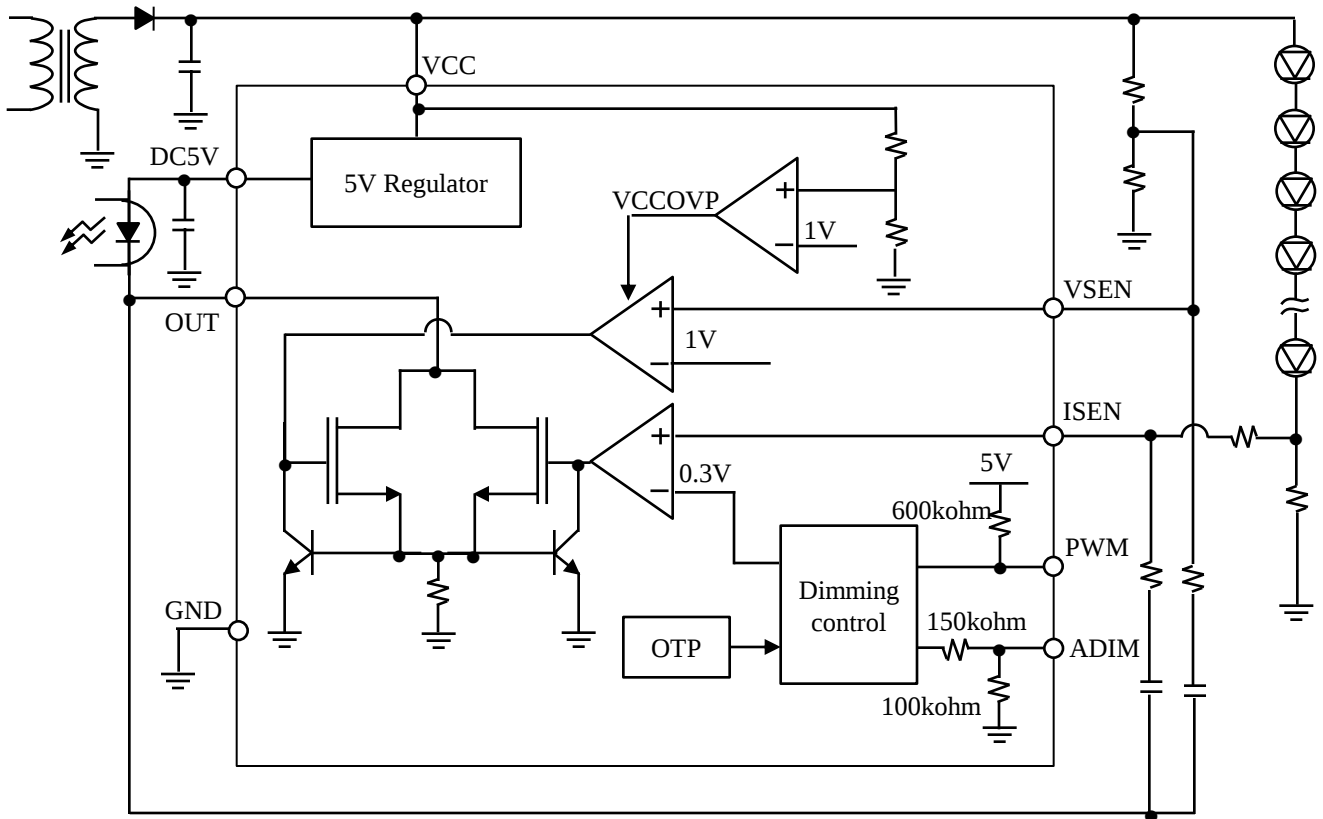


## PIN CONFIGURATION

| Pin No. | Pin Name | Description                                           |
|---------|----------|-------------------------------------------------------|
| 1       | ISEN     | Constant current control input.                       |
| 2       | ADIM     | Analog dimming input.                                 |
| 3       | PWM      | PWM dimming input.                                    |
| 4       | GND      | Ground.                                               |
| 5       | VCC      | Supply voltage input.                                 |
| 6       | VSEN     | Constant voltage control input                        |
| 7       | DC5V     | 5V LDO output                                         |
| 8       | OUT      | Open-drain output. Connects this pin to opto-coupler. |



## SIMPLIFIED BLOCK DIAGRAM



\* This specifications are subject to be changed without notice

## ABSOLUTE MAXIMUM RATINGS (Note1)

| Parameter                  | Symbol                      | Rating    | Units |
|----------------------------|-----------------------------|-----------|-------|
| Ground Voltage             | GND                         | -0.3      | V     |
| Power Voltage              | VCC                         | -0.3 ~ 60 | V     |
| Open Drain Output          | OUT                         | -0.3 ~ 60 | V     |
| All Other pins             | DC5V, VSEN, ISEN, PWM, ADIM | -0.3 ~ 6  | V     |
| Junction Temperature       | T <sub>J</sub>              | -40 ~ 150 | °C    |
| Storage Temperature        | T <sub>STG</sub>            | -65 ~ 150 | °C    |
| Thermal Resistance (Note2) | θ <sub>JA</sub>             | 150       | °C/W  |

Note1. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device.

Note2. Measured on JESD51-7, 4-layer PCB

## ELECTRICAL CHARACTERISTICS

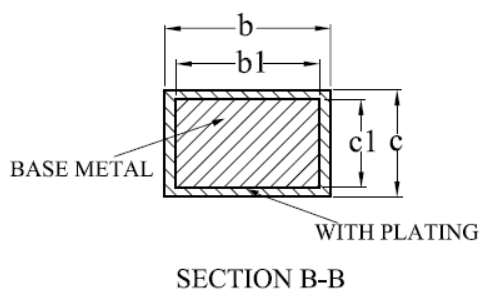
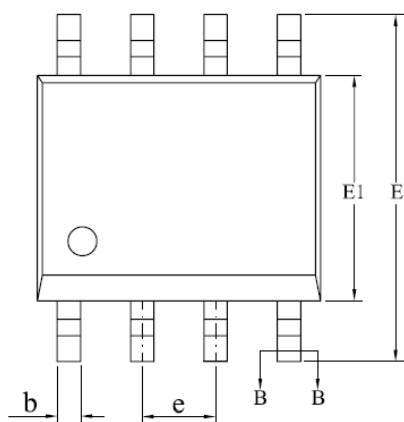
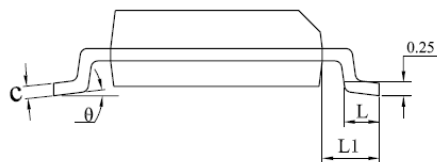
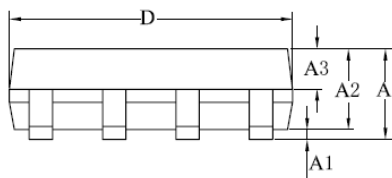
(VCC = 15V, Ta=25°C , unless otherwise specified)

| Parameter              |                                             | Conditions             | Symbol                | Min. | Typ. | Max. | Units |
|------------------------|---------------------------------------------|------------------------|-----------------------|------|------|------|-------|
| Device supply          | Power supply operating range                |                        | V <sub>CC</sub>       | 8    | 15   | 55   | V     |
|                        | VCC OVP                                     |                        | VCCOVP                | 55   | 58.5 | -    | V     |
|                        | LED off VCC                                 | V(ADIM)=0V             | VCC <sub>LEDOFF</sub> | 8.5  | 10   | 11.5 | V     |
|                        | VCC quiescent current                       | V(ISEN)=V(VSEN)=0V     | I <sub>CC</sub>       | -    | 0.5  | 1.0  | mA    |
| PWM dimming            | PWM input high level                        |                        | V <sub>PWMH</sub>     | 1.5  | -    | -    | V     |
|                        | PWM input low level                         |                        | V <sub>PWML</sub>     | -    | -    | 0.8  | V     |
|                        | PWM dimming frequency                       |                        | F <sub>PWM</sub>      | 0.1  | -    | 100  | kHz   |
|                        | PWM duty range                              |                        | D <sub>PWM</sub>      | 10   | -    | 100  | %     |
|                        | Threshold duty (LED OFF) (Note3)            |                        | D <sub>OFF</sub>      | 3.7  | 6.7  | 9.7  | %     |
|                        | Threshold duty (LED ON) (Note3)             |                        | D <sub>ON</sub>       | 7    | 10   | 13   | %     |
|                        | Pull up current                             | V(PWM)=0V              | I <sub>PULLUP</sub>   | -    | 9    | 15   | uA    |
| Analog dimming         | Analog dimming input voltage                |                        | V <sub>ADIM</sub>     | 0.1  | -    | 1.0  | V     |
|                        | Threshold voltage (LED OFF)                 |                        | V <sub>OFF</sub>      | 37   | 67   | 97   | mV    |
|                        | Threshold voltage (LED ON)                  |                        | V <sub>ON</sub>       | 70   | 100  | 130  | mV    |
|                        | Pin input current                           | V(ADIM)=1V             | I <sub>ADIM</sub>     | -3   | 0    | 3    | uA    |
| Current control loop   | Transconductance, Sink current only (Note3) |                        | G <sub>MISEN</sub>    | -    | 9.5  | -    | V/A   |
|                        | Current sensing reference voltage           | I(OUT)=100uA           | V <sub>ISEN</sub>     | 297  | 300  | 303  | mV    |
|                        | Pin input current                           | V(ISEN)=5V             | I <sub>ISEN</sub>     | -1   | 0    | 1    | uA    |
| Voltage control loop   | Transconductance, Sink current only (Note3) |                        | G <sub>MVSEN</sub>    | -    | 5.2  | -    | V/A   |
|                        | Voltage sensing reference voltage           | I(OUT)=100uA           | V <sub>VSEN</sub>     | 0.95 | 1.00 | 1.05 | V     |
|                        | Pin input current                           | V(VSEN)=5V             | I <sub>VSEN</sub>     | -1   | 0    | 1    | uA    |
| Output stage           | Lower output voltage, Sink current only     | I(OUT)=1mA, V(ISEN)=1V | V <sub>OL</sub>       | -    | 0.7  | 1.1  | V     |
|                        | Output short circuit current.               | V(OUT)=5V, V(ISEN)=1V  | I <sub>OUTMAX</sub>   | 3    | 6    | 10   | mA    |
| DC 5V output           | DC 5V output voltage                        | I(DC5V)=5mA            | V <sub>DC5V</sub>     | 4.5  | 5.0  | 5.5  | V     |
|                        | Output short circuit current.               | V(DC5V)=0V             | I <sub>DC5Vmax</sub>  | 8    | 16   | 24   | mA    |
| Temperature protection | Over temperature protection (Note3)         |                        | OTP                   | -    | 150  | -    | °C    |
|                        | OTP hysteresis (Note3)                      |                        | OTP <sub>HYS</sub>    | -    | 40   | -    | °C    |

Note 3 : The parameter is guaranteed by design. It is not tested in production.

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## PACKAGE DIMENSTION



| SYMBOL | MILLIMETER |      |      |
|--------|------------|------|------|
|        | MIN        | NOM  | MAX  |
| A      | —          | —    | 1.77 |
| A1     | 0.08       | 0.18 | 0.28 |
| A2     | 1.20       | 1.40 | 1.60 |
| A3     | 0.55       | 0.65 | 0.75 |
| b      | 0.39       | —    | 0.48 |
| b1     | 0.38       | 0.41 | 0.43 |
| c      | 0.21       | —    | 0.26 |
| c1     | 0.19       | 0.20 | 0.21 |
| D      | 4.70       | 4.90 | 5.10 |
| E      | 5.80       | 6.00 | 6.20 |
| E1     | 3.70       | 3.90 | 4.10 |
| e      | 1.27BSC    |      |      |
| L      | 0.50       | 0.65 | 0.80 |
| L1     | 1.05BSC    |      |      |
| θ      | 0          | —    | 8°   |

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