Features

LED DRIVER

- Buck-Boost LED Driver up to Vout=40V
- Constant Current Output (350 mA or 500mA)
- Digital PWM and Analogue Voltage Dimming
- High Efficiency to 92%
- EN60950-1 and UL60950-1 Certified
- EMC Class A Without Extern Components
- Pinned or Wired Version
- 5 Year Warranty

Description

The RBD-12 series is a Buck-Boost constant current source designed for driving high power LED applications. Two output currents are available, 350mA and 500mA, and the maximum output voltage is 40V. The drivers have digital and analogue voltage dimming control and a regulated reference 5V output. Typical applications are solar, off-grid lighting, mobile traffic signs and battery-powered lighting. The wired version is IP67 rated.

Selection Guide

<table>
<thead>
<tr>
<th>Part</th>
<th>Input Range (VDC)</th>
<th>Output Current (mA)</th>
<th>Output Voltage Range (VDC)</th>
<th>Dimming Control</th>
<th>Efficiency typ. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBD-12-0.35*</td>
<td>8-36</td>
<td>0-350</td>
<td>2-40</td>
<td>Digital + Analogue</td>
<td>92</td>
</tr>
<tr>
<td>RBD-12-0.50*</td>
<td>8-36</td>
<td>0-500</td>
<td>2-40</td>
<td>Digital + Analogue</td>
<td>92</td>
</tr>
</tbody>
</table>

*add suffix “/W” for wired version with Vref output and analogue + PWM dimming control (seven wires)

Specifications (typical at 25°C, nominal input voltage, rated output current unless otherwise specified)

- Operating Input Voltage Range: 8-36VDC
- Absolute Maximum Input Voltage: 38VDC
- Output LED String Voltage Range: 2V min. / 40V max.
- Input Filter: Capacitor
- Max. Capacitance Load: 100μF max.
- Output Current Accuracy: ±5% typ. / ±6.5% max.
- Internal Power Dissipation:
  - 350mA (Vin=36V, Vout=40V): 1.63W typ.
  - 500mA (Vin=36V, Vout=40V): 2.33W typ.
- Output Current Ripple and Noise (20MHz BW): Vin=24V, Vout=40V:
  - 350mA: 35mAp-p typ.
  - 500mA: 45mAp-p typ.
- Switching Frequency: 350kHz typ.
- Efficiency at Full Load: Vin=24V: 92% typ.
- Vref Nominal: 0.8mA max.

PWM DIMMING CONTROL & REMOTE ON/OFF CONTROL

- Input Voltage Range: 0V min. / 5V typ. / 10V max.
- Threshold Voltage:
  - Device ON: 2V min.
  - Device OFF: 0.1V max.
- Frequency: 1000Hz max.

ANALOGUE DIMMING CONTROL

- Input Voltage Range: 0V min. / 10V max.
- Control Voltage Range: 0.2±0.1V min. / 1.5±0.1V max.
- Operating Temperature:
  - 350mA (see Derating Graph): -40°C to +75°C
  - 500mA: -40°C to +65°C
- Case Temperature: 115°C max.
- Storage Temperature: -55°C to +125°C
- Case Thermal Impedance: 10°C/W

Refer to Application Notes
**LIGHTLINE**

**DC/DC-Converter**

**RBD-12 Series**

**Specifications** (typical at 25°C, nominal input voltage, rated output current unless otherwise specified)

<table>
<thead>
<tr>
<th>Potting Material</th>
<th>Silicone Potting Material (UL94V-0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Dimensions</td>
<td>32.60 x 16.65 x 11.10 mm</td>
</tr>
<tr>
<td>Package Weight</td>
<td>pinned version 13g</td>
</tr>
<tr>
<td></td>
<td>wired version 17g</td>
</tr>
<tr>
<td>Packing Quantity</td>
<td>pinned version 29 pcs.</td>
</tr>
<tr>
<td></td>
<td>wired version 12 pcs.</td>
</tr>
<tr>
<td>MTBF (using MIL-HDBK217F at 25°C)</td>
<td>1700 x 10³ hours</td>
</tr>
</tbody>
</table>

Certification


**Package Style and Pinning**

**RBD-12-x.xx - Through Hole Case**

![Diagram of Through Hole Case]

**RBD-12-x.xx/W - Wired Version**

![Diagram of Wired Version]

**Safe Operating Area**

- **500mA**
  - Vin 8V up to Vout = 17V
  - Vin 9V up to Vout = 25V
  - Vin 12V up to Vout = 24V
  - Vin 16V up to Vout = 32V

- **350mA**
  - Vin 8V up to Vout = 25V
  - Vin 9V up to Vout = 27V
  - Vin 12V up to Vout = 36V

**Pin Connections**

<table>
<thead>
<tr>
<th>Pin#</th>
<th>Function</th>
<th>RBD-12-x.xx</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Vin</td>
<td>DC Supply</td>
</tr>
<tr>
<td>2</td>
<td>Vref</td>
<td>Vref Voltage 5V typ.</td>
</tr>
<tr>
<td>3</td>
<td>Analogue Dimming</td>
<td>Leave open if not used</td>
</tr>
<tr>
<td>4</td>
<td>PWM/ON/OFF</td>
<td>Leave open if not used</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Do not connect to -Vout</td>
</tr>
<tr>
<td>6</td>
<td>LED-</td>
<td>LED Cathode Connection</td>
</tr>
<tr>
<td>7</td>
<td>LED+</td>
<td>LED Anode Connection</td>
</tr>
</tbody>
</table>

**Wire Connections**

<table>
<thead>
<tr>
<th>Pin#</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Red</td>
</tr>
<tr>
<td>2</td>
<td>Yellow</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>Black</td>
</tr>
<tr>
<td>6</td>
<td>LED-</td>
</tr>
<tr>
<td>7</td>
<td>LED+</td>
</tr>
</tbody>
</table>

Wires: UL/CSA approved (22AWG/300V)

All LED Drivers may not be used without a load. They must be switched on the primary side only. Noncompliance may damage the LED or reduce its lifetime.

Note 1: Output Current Accuracy is defined as:

\[
\frac{I_{out} - I_{out \, \text{rated}}}{I_{out \, \text{rated}}} \times 100
\]

Note 2: Output Current Stability is defined as:

\[
\frac{I_{out \, \text{deviation}} - I_{out \, \text{nominal}}}{I_{out \, \text{nominal}}} \times 100
\]

\[I_{out \, \text{deviation}} = \text{maximum Deviation (min. Load, max. Load)}\]

**www.recom-power.com**

REV: 3/2017

L-17
**LIGHTLINE**

**DC/DC-Converter**

**RBD-12 Series**

**Standard Application**

- EN55022: Class A without external filter
- EN55015: without filter
- EN55022: Class B with filter

**Single String Application**

**Solar Lighting Application**

**PWM Dimming Controlled**

**Dimming Controlled by Analog Voltage**

**LED DIMMER for up to 10 white LEDs**

**Note:**

It is not possible to parallel the drivers to increase the current.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM’s explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.

L-18 REV: 3/2017 www.recom-power.com