

Features

LED DRIVER

- 3-20W Buck- Boost LED Driver
- Constant Current Output (350 or 500mA)
- Digital PWM and Analogue Voltage Dimming
- High Efficiency to 92%
- Meets EN60950-1 and UL60950-1
- 8-40VDC Output Voltage
- Through Hole Case 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 range is 40V respectively. The drivers have digital and/or analogue voltage dimming control and are special featured with very high efficiency. Typical applications are solar powered lightings, variable traffic signs and transportation lightings.

Selection Guide

Part Number	Input Range (VDC)	Output Current (mA)	Output Voltage (VDC)	Dimming Control	Efficiency typ. (%)
RBD-12-0.35*	8-36	0-350	8-40	Digital + Analogue	90
RBD-12-0.50*	8-36	0-500	8-40	Digital + Analogue	90

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

Note: The output ripple current might be higher with one LED, but still within safety standards.

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		8V min. / 40V max.
(depend on the input voltage, defined by the output impedance, see Safe Operating Area)		
Input Filter		Capacitor
Max. Capacitance Load		100µF max.
Output Current Accuracy	(Note 1)	±3% min. / ±5% max.
Internal Power Dissipation	350mA	1.5W typ.
	500mA	1.7W typ.
Output Current Stability (Note 2)	Vin=24V, Vout=8-40V	±1% max.
Output Ripple and Noise	Vin=24V, Vout=8-40V	60mAp-p max.
Reflected Back Ripple Current	Vin=24V, Vout=8-40V	30mAp-p max.
Switching Frequency		350kHz typ.
Efficiency at Full Load		92% typ.
PWM DIMMING CONTROL & REMOTE ON/OFF CONTROL		
Input Voltage Range		0V min. / 5V typ. / 10V max.
Threshold Voltage	Device ON	2V min.
	Device OFF	0.2V max.
Frequency		200Hz min. / 1000Hz max.
Sink Output Current	V _{PWM} = 5V	0.5µA max.
ANALOGUE DIMMING CONTROL		
Input Voltage Range		0V min. / 10V max.
Control Voltage Range		0.1V min. / 1.6V max.
Sink Output Current	V _{analogue} = 1.2V	2µA max.
Operating Temperature	350mA	-40°C to +80°C
	500mA	-40°C to +75°C
(see Derating Graph)		
Operating Case Temperature		115°C max.
Storage Temperature		-55°C to +125°C
Case Thermal Impedance		10°C/W
Soldering Temperature		265°C/10sec. max.
Relative Humidity		95% RH
Short Circuit Protection		regulated at rated output current
Overtemperature Shutdown	(auto-restart after cool down)	150°C

LIGHTLINE
DC/DC-Converter
with 5 year Warranty

RECOM

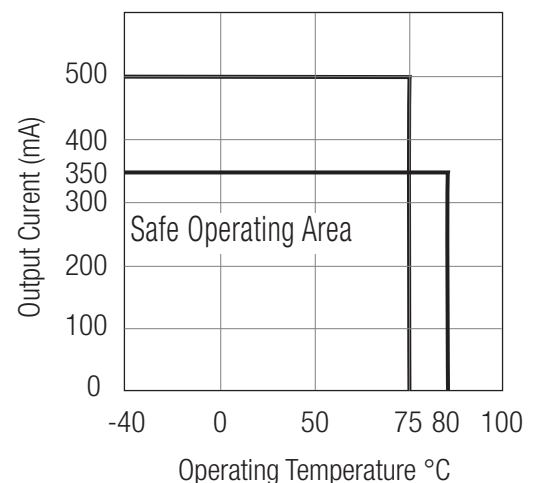
Constant Current Buck-Boost LED Driver



EN-60950-1 pending
UL-60950-1 pending

RBD-12

Derating Graph



Please Read Application Notes

www.recom-electronic.com

RBD-12 Series

Specifications

Case Material	Non Conductive Black Plastic	
Potting Material	Silicone Potting Material (UL94V-0)	
Case Dimensions	32.60 x 16.65 x 11.10 mm	
Package Weight	pinned version	13g
	wired version	17g
Packing Quantity	pinned version	29 pcs.
	wired version	3 pcs.
MTBF (using MIL-HDBK217F at 25°C)	RBD-12-0.50, $V_{in}=12V$, $V_{out}=24V$	1700 x 10 ³ hours

Detailed Information see Applications Notes chapter "MTBF"

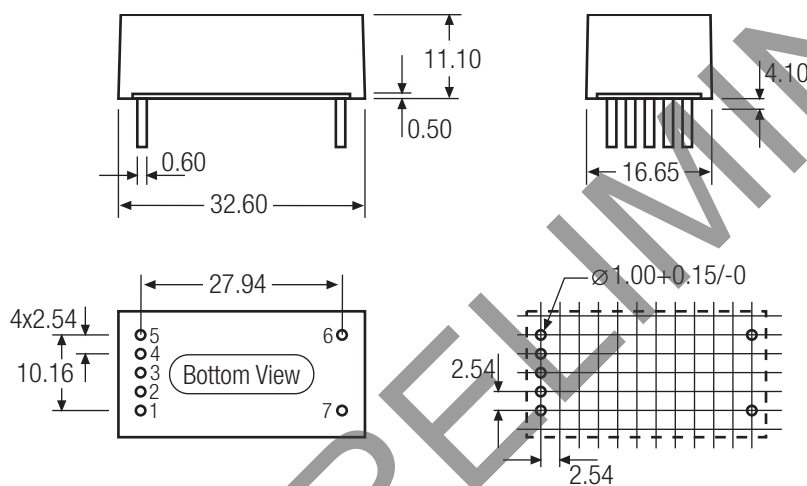
Note 1: Output Current Accuracy is defined as: $[(I_{out} \text{ "average"} - I_{out} \text{ "nominal"}) / I_{out} \text{ "nominal"}] \times 100$

Note 2: Output Current Stability is defined as: $[(I_{out} \text{ "deviation"} - I_{out} \text{ "nominal"}) / I_{out} \text{ "nominal"}] \times 100$

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

Package Style and Pinning

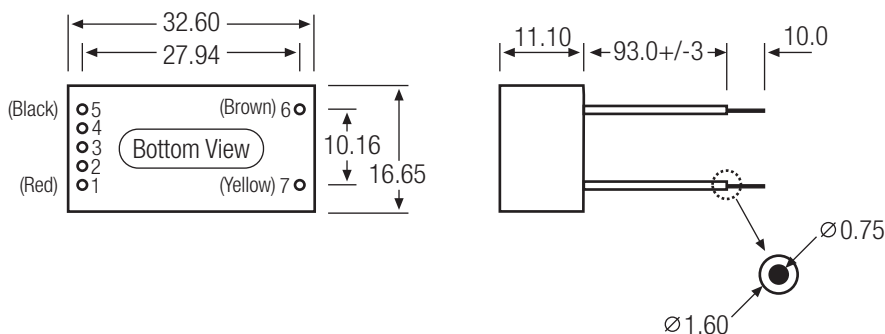
RBD-12-x.xx - Through Hole Case



Pin#	Function	Comments
1	+Vin	DC Supply
2	Vref	Vref Voltage 5V typ.
3	Analogue Dimming	Leave open if not used
4	PWM/ON/OFF	Leave open if not used
5	GND	Do not connect to -Vout
6	-Vout	LED Cathode Connection
7	+Vout	LED Anode Connection

Unit: mm
Tolerance:
XX.X ± 0.5 mm
XX.XX ± 0.25 mm

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



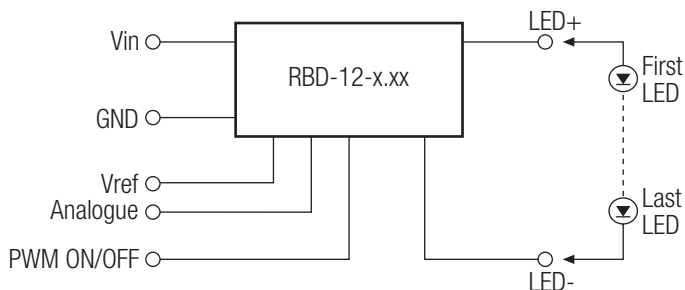
Pin#	Function	Wire color
1	+Vin	Red
2	Vref (5V typ.)	Yellow
3	Analogue Dimming	Green
4	PWM/ON/OFF	Blue
5	GND	Black
6	LED-	Brown
7	LED+	Yellow

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

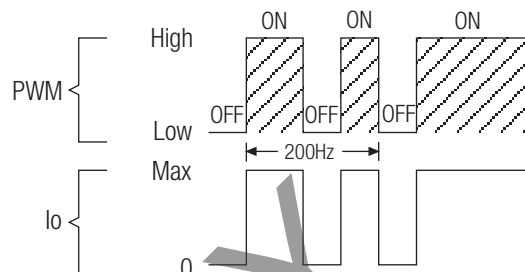
Unit: mm
Tolerance:
XX ± 0.25 mm
X ± 0.5 mm

Standard Application

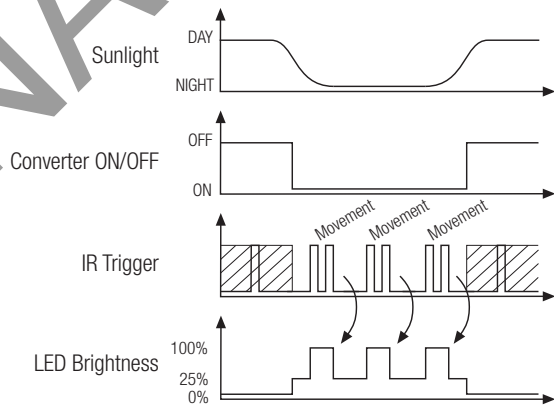
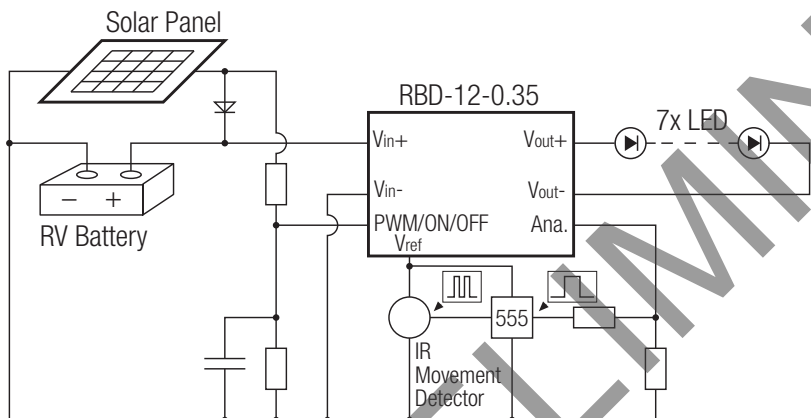
Single String Application



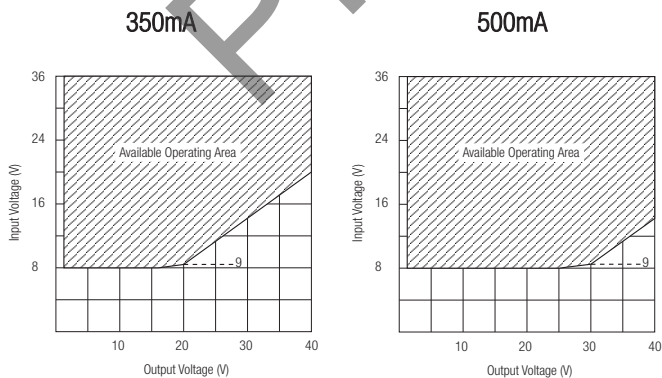
PWM Dimming Controlled



Solar Lighting Application



Safe Operating Area



Dimming Controlled by Analog Voltage

