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Features

LED DRIVER

- 70W Buck LED Driver
- Constant Current Output (350 to 1200mA)
- Digital PWM and Analogue Voltage Dimming
- High Efficiency to 96%
- EN, UL and RAILWAYS Certified
- Metal or Plastic Case Version
- IP67 Rated for /W, Plastic Case Version

Description

The RCD-48 series is a step-down constant current source designed for driving high power LED applications. Four output currents are available. The maximum output voltage is 56V. The buck drivers have digital PWM and/or analogue voltage dimming control and are special featured with very high efficiency. Typical applications are 48V bus lighting solutions or high voltage LED arrays (e.g. high bay lights).

Selection Guide

Part Number	Input Range (VDC)	Output Current (mA)	Output Voltage (VDC)	Dimming Control	Efficiency Typ. (%)
RCD-48-0.35*	9-60	0-350	2-56	Digital + Analogue	96
RCD-48-0.50*	9-60	0-500	2-56	Digital + Analogue	96
RCD-48-0.70*	9-60	0-700	2-56	Digital + Analogue	96
RCD-48-1.00*	9-60	0-1000	2-56	Digital + Analogue	96
RCD-48-1.20/M	9-60	0-1200	2-56	Digital + Analogue	96

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

Note: Add suffix "/M" for metal case (RCD-48-1.20/M only). No metal case with wires available. Standard version (no suffix) and wired version (suffix /W) only in plastic case.

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

Operating Input Voltage Range		9-60VDC
Absolute Maximum Input Voltage		65VDC max.
Output LED String Voltage Range (depand on the input voltage, defined by the output impedance, see Safe Operating Area)		2V min. / 56V max.
Input Filter		Capacitor
Output Current Accuracy		±3% typ. / ±5% max.
Internal Power Dissipation (Vin=60V, Vout=56V)	350mA	0.8W typ.
	500mA	1.0W typ.
	700mA	1.1W typ.
	1000mA	1.3W typ.
	1200mA	1.4W typ.
Output Current Stability	Vin=60V, Vout=2-56V, Iout=350-1200mA	±1% max.
Output Ripple and Noise (20MHz BW)	Vin=60V, Vout=2-56V, Iout=350-1200mA	300mVp-p max.
Maximum Capacitive Load		100µF max.
Switching Frequency		50kHz min. / 1000kHz max.
Efficiency at Full Load		96% typ.
PWM DIMMING CONTROL & REMOTE ON/OFF CONTROL		
Input Voltage Range		5V typ. / 10V max.
Threshold Voltage	Device ON	0.5V max.
	Device OFF	2.0V min.
PWM Frequency	For Linear Operation	200Hz max.
	Frequency Limit	1000Hz max.
ANALOGUE DIMMING CONTROL (Leave open if not used - do not tie to +Vin)		
Input Voltage Range		0V min. / 10V max.
Control Voltage Range		0V min. / 5.1V max.
Note: The analogue dimming range is from 0% to 100%, but the output can be unstable below 10%, when using the analogue dimming function.		
Analogue Pin Drive Current	Vc=5V	0.2mA max.
Vref Version	Vref Voltage	5V -5%/+10%
	Vref Output Current	0.15mA max.
	Vref Output Short Circuit Current	2mA typ.
Ambient Temperature (free air convection)	350mA	-40°C to +80°C
	500mA	-40°C to +80°C
	700mA	-40°C to +75°C
	1000mA	-40°C to +60°C
	1200mA	-40°C to +50°C
Analogue and PWM Dimming Control Note: Leave open if not used - do not tie to +Vin		continued on next page

LIGHTLINE
DC/DC-Converter
with 5 year Warranty

RECOM

Constant Current Buck LED Driver



RoHS 2011/65/EU 6/6

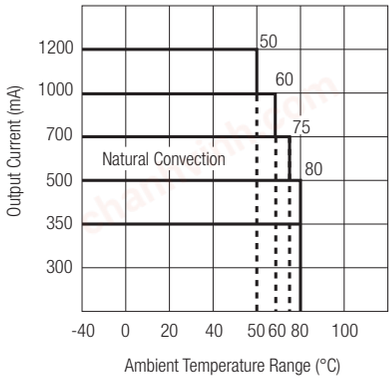
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E224736

EN-50121-3-2 Certified
EN-60950-1 Certified
UL-60950-1 Certified

RCD-48

Derating-Graph

(Ambient Temperature)



Refer to Application Notes

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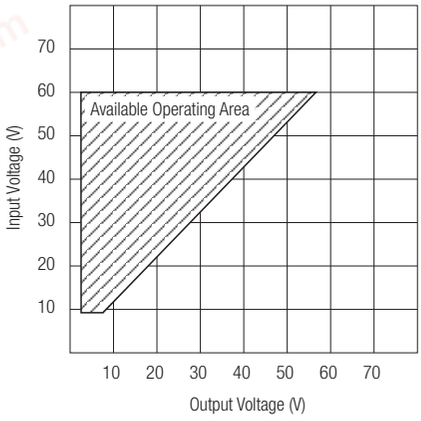
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DC/DC-Converter

RCD-48 Series

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

Storage Temperature		-55°C to +125°C
Case Thermal Impedance		10°C/W typ.
Soldering Temperature		265°C / 10sec. max.
Relative Humidity		95% RH
Input Filter		Capacitor only
Short Circuit Protection		Continuous, Auto Recovery
Case Material		Non Conductive Black Plastic Metal Case
Potting Material		Silicone Potting Material (UL94V-0)
Case Dimensions	Plastic Case	32.6 x 16.65 x 11.10 mm
	Metal Case	32.6 x 16.0 x 11.2 mm
Package Weight	Pinned (Plastic Case)	13g
	Wired (Plastic Case)	16g
	Pinned (Metal Case)	16g
Packing Quantity	Pinned (Plastic/Metal Case)	29 pcs.
	Wired (Plastic Case)	12 pcs.
MTBF (using MIL-HDBK217F)	+25°C	1700 x 10^3 hours
(Nominal Vin at Full Load)	*Note: Detailed Information see Application Notes chapter "MTBF"*	
Safety	Shock / Vibration	EN61373
	EMC RAILWAYS	EN50121-3-2:2006
	Conducted	EN55011
	Radiated	EN55011
	ESD	EN61000-4-2
	Radiated Immunity	EN61000-4-3
	Fast Transient	EN61000-4-4
	Surge	EN61000-4-5
	Conducted Immunity	EN61000-4-6

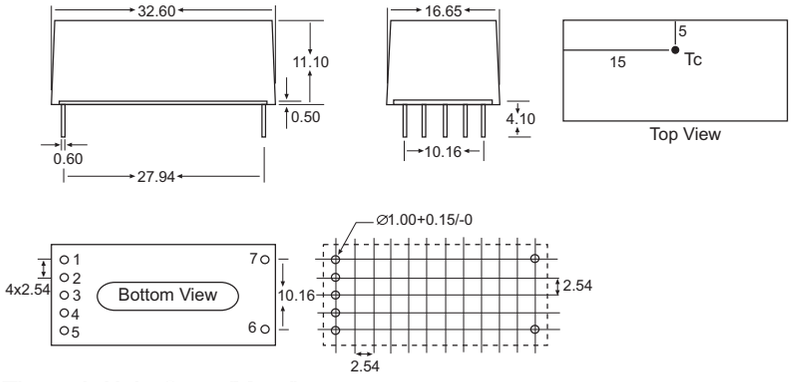
Safe Operating Area



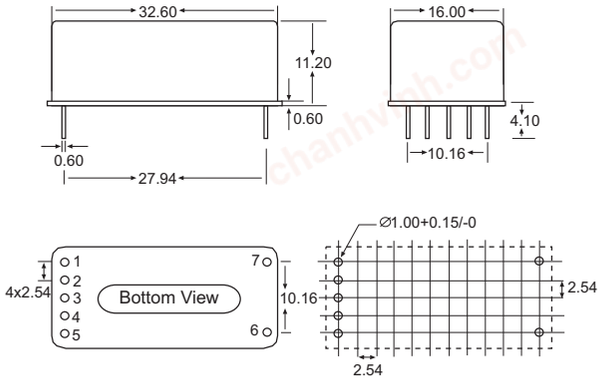
Note:
All LED Drivers may not be used without a load. They must be switched on the primary side only. Noncompliance may damage the LED or reduce its lifetime.

Package Style and Pinning

Through Hole Case (Plastic)



Through Hole Case (Metal)



Pin Connections		RCD-48-x.xx
Pin#	**Function**	**Comments**
1	+Vin	DC Supply
2	GND	Do not connect to -Vout
3	Vref	Vref Voltage 4.8-5.5V typ.
4	PWM/ON/OFF	Leave open if not used
5	Analogue Dimming	Leave open if not used
6	-Vout	LED Cathode Connection
7	+Vout	LED Anode Connection

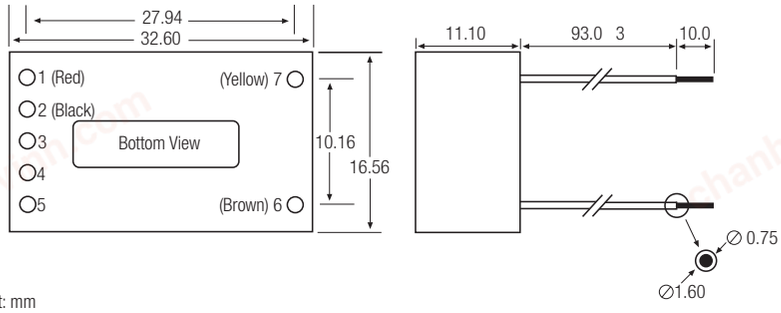
Unit: mm
Tolerance:
XX.X ± 0.5 mm
XX.XX ± 0.25 mm

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DC/DC-Converter

RCD-48 Series

Package Style and Pinning

Wired Version (Plastic)



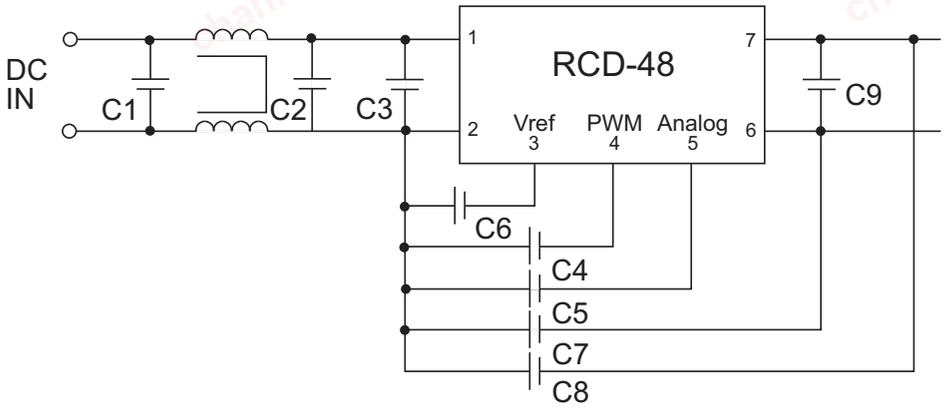
Unit: mm
Tolerance:
XX.X ± 1.0 mm
XX.XX ± 0.25 mm

Wire Connections Pin#	Function	RCD-48-x.xx/W Wire color
1	+Vin	Red
2	GND	Black
3	Vref	Yellow
4	PWM/ON/OFF	Blue
5	Analogue Dimming	Green
6	LED-	Brown
7	LED+	Yellow

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

EMI Filter Suggestions

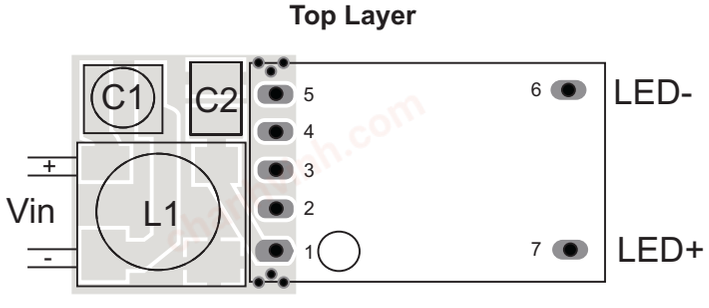
Class B

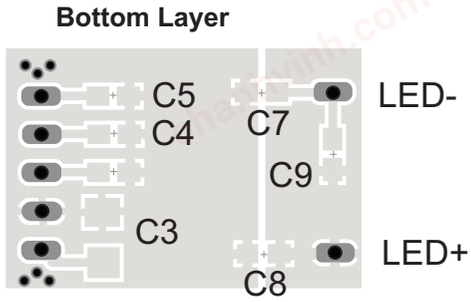


LOAD

L1	1mH (e.g. WE744272102)
C1	10µF
C2	1µF
C3	100nF close to Pins
C4 - C9	10nF

Filter Suggestion



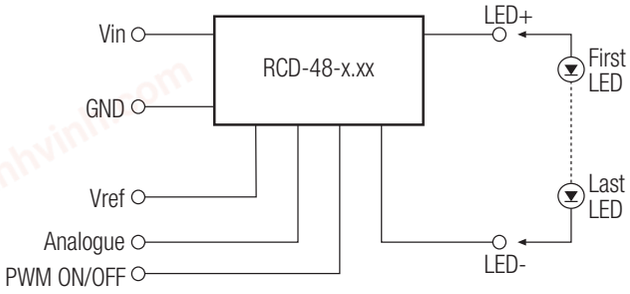


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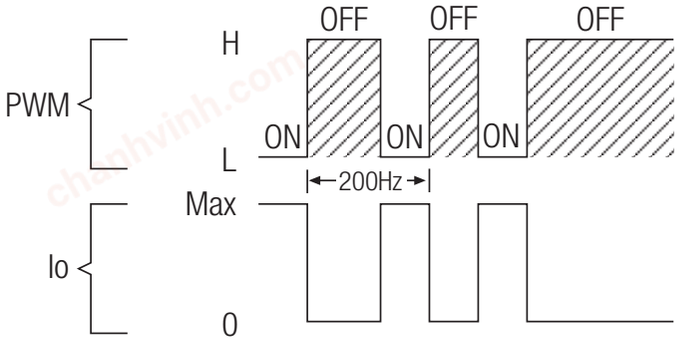
RCD-48 Series

Standard Application

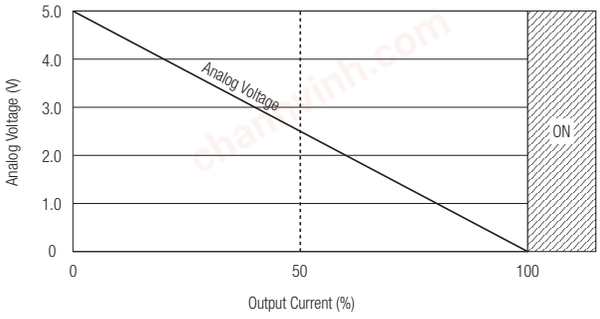
Single String Application



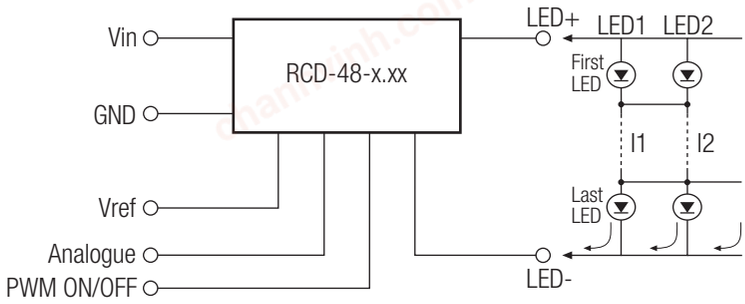
PWM Dimming Controlled



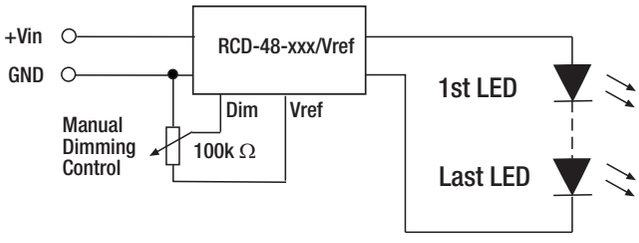
Dimming Controlled by Analog Voltage



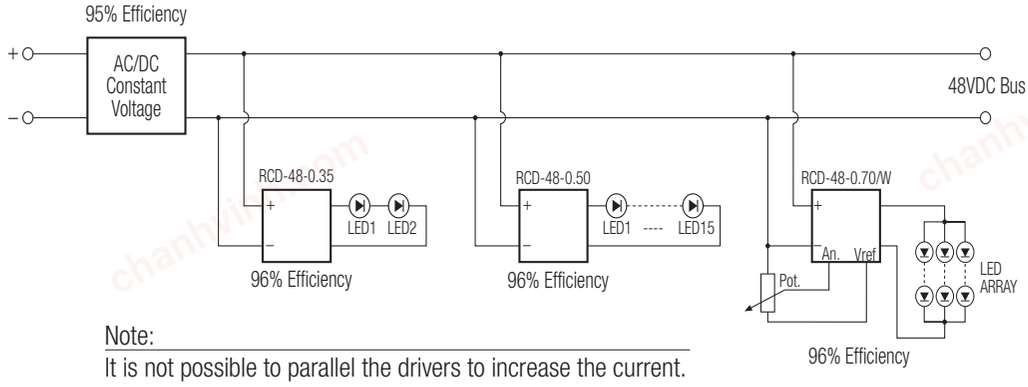
Lighting/Backlighting Wall Application



LED DIMMER for up to 10 white LEDs



High Efficiency Lighting



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

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