Features

Regulated Converters

Rev.1

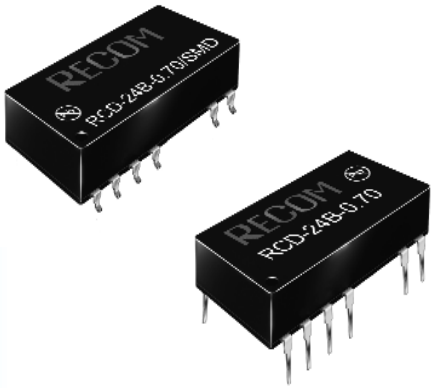
- Constant Current Output
- Power LED Driver
- Wide Input Voltage Range
- PWM/Digital Dimming , Analogue Voltage and Potentiometer Dimming
- Short Circuit Protected
- 96% Efficiency
- SMD Option

INNOLINE

DC/DC-Converter

RCD-24B Series

Constant Current Single Output



RECOM

Description

The RCD series is a step-down constant current source designed for driving high power white LEDs. The standard output current is 700mA. Despite its compact size, the RCD series is fully featured with very high efficiency, wide input voltage range, high ambient operating temperature and three means of LED dimming: PWM/digital control, analogue voltage and potentiometer dimming. All dimming controls are independent and can be combined. The driver is also designed to be as reliable as the LEDs it is driving, even at the full operating temperature of 85°C. An SMD version is also available.

Selection Guide

Part Number	Input Range (VDC)	Output Current (mA)	Output Voltage (V)	Dimming Control	Mounting Style
RCD-24B-0.70	4.5-36V	0-700	2-32	Digital/Analogue/Pot.	Through Hole
RCD-24B-0.70/SMD	4.5-36V	0-700	2-32	Digital/Analogue/Pot.	SMD

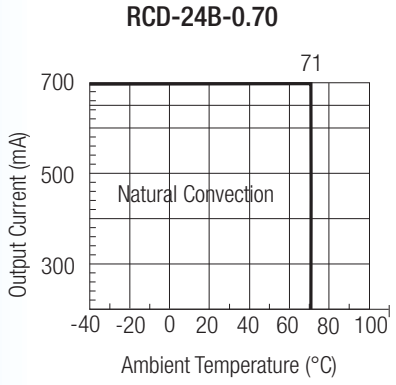
Specifications

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

Input Voltage (absolute maximum)		36VDC max.
Recommended Input Voltage		5V min. / 24V typ. / 36VDC max.
Input Filter		Capacitor
Output Voltage Range	Vin=36V	2V min. / 32V max.
Output Current Range	Vin - Vout >1.5~4V	700mA
Output Current Accuracy	700mA	±2% typ. /±3% max.
Internal Power Dissipation	Load of 5 LEDs	700mW
Output Current Stability	Vin=36V, Vout =2~28V	±1% max
Output Ripple and Noise (20MHz limited)	Vin=36V	120mVp-p max
Temperature Coefficient	-40~+85°C ambient	±0.015%/°C max.
Maximum Capacitive Load		100µF
Operating Frequency		210 kHz min/ 250kHz typ./ 300kHz max
Efficiency at Full Load		96% max.
Short Circuit Protection		Regulated at rated output current
Operating Temperature Range	Natural Convection	-40°C to +71°C
Storage Temperature Range		-55°C to +125°C
Maximum Case Temperature		100°C
Thermal Impedance	Natural Convection	55°C/Watt
Case Material		Non Conductive Black Plastic
Potting Material		Epoxy (UL94-V0)
Dimensions		24.2 x 14.5 x 9.7mm
Weight		6.5g
Wave Soldering Profile		Max. 265°C/10 sec.

Derating Graph

(Ambient Temperature)

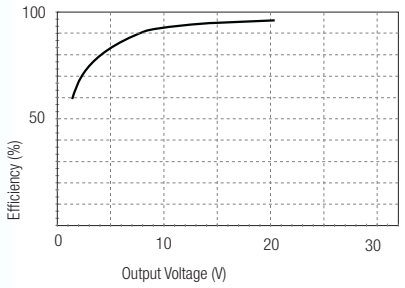


Specifications -Continued

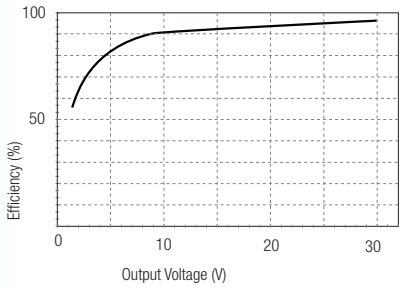
PWM Dimming and ON/OFF Control (Leave open if not used)		
Remote ON/OFF	DC/DC ON	Open or 0V<Vr<0.6V
	DC/DC OFF (Standby)	0.6<Vr<2.9V
	DC/DC OFF (Shutdown)	2.9V<Vr<6V
Remote Pin Drive Current	Vr=5V	1mA max.
Quiescent Input Current in Shutdown Mode	Vin=36V, Vr>2.9V	200µA max.
PWM Frequency Range for Linear Operation (measured over 10%~90% brightness)		50Hz-200Hz
Maximum PWM Frequency		2kHz
Analogue Dimming Control (leave open if not used)		
Input Voltage Range		0 - 15V
Control Voltage Range Limits	Full On	0.13V ± 50mV
(see Graph)	Full Off	4.5V ± 50mV
Analogue Pin Drive Current	Vc=5V	0.2mA max.
Potentiometer Dimming Control (leave open if not used)		
Resistor Value		10kOhm
Environmental		
Relative Humidity		5% to 95% RH, non-condensing
Conducted Emissions (see note)	EN55022	Class A
Radiated Emissions	EN55022	Class A
ESD	EN61000-4-2	Class A
Radiated Immunity	EN61000-4-3	Class A
Fast Transient	EN61000-4-4	Class A
Conducted Immunity	EN61000-4-6	Class A
MTBF (RCD-24-0.70, Nominal Vin, Full Load)	+25°C	TBD x 10³ hours
using MIL-HDBK 217F	+71°C	TBD x 10³ hours

Note: Requires an input filter to meet EN55022 Class A and Class B conducted emissions.

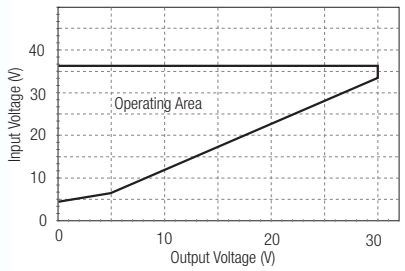
Vin = 24V, Iout = 700mA



Vin = 36V, Iout = 700mA

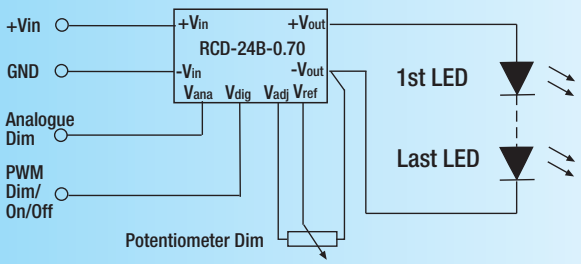


Minimum Dropout Voltage

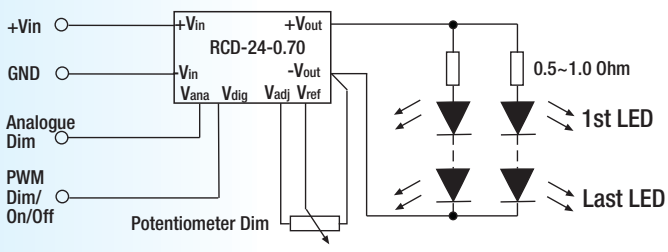


Standard Application Circuits

LED DRIVER

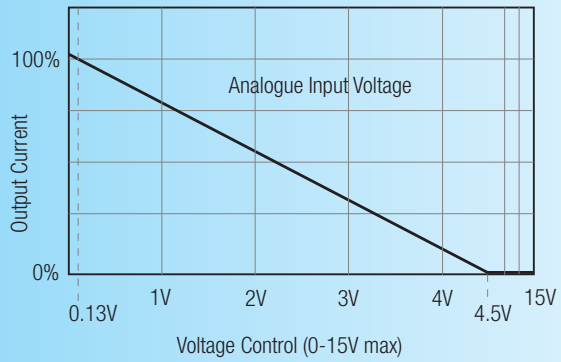


MULTIPLE LED DRIVER (up to 20 LEDS)

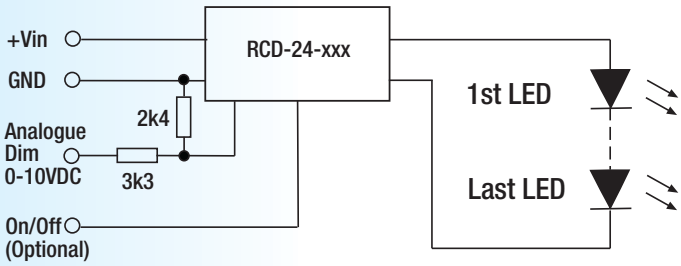


Driving Two Strings of 350mA LEDs with one 700mA Driver.

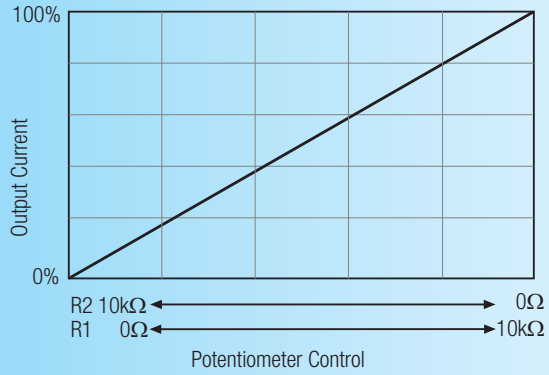
Analogue Dimming Control and Application Circuit Examples



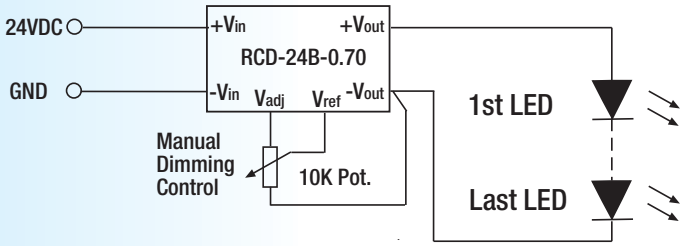
LED DRIVER with 0-10V Interface



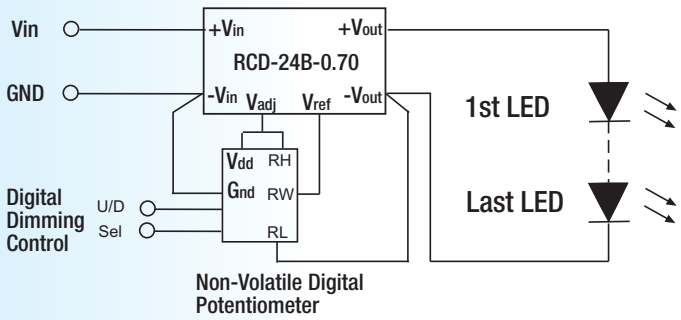
Potentiometer Dimming Control and Application Circuit Examples



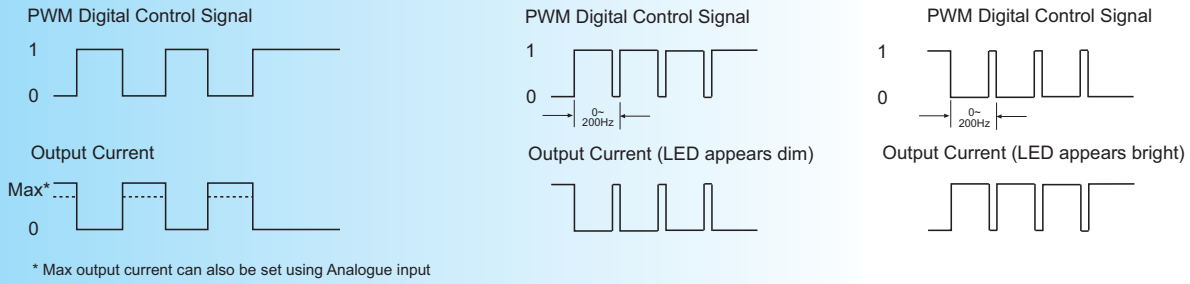
LED DIMMER for up to 7 white 2W LEDs



LED DIMMER with Digital Potentiometer Interface



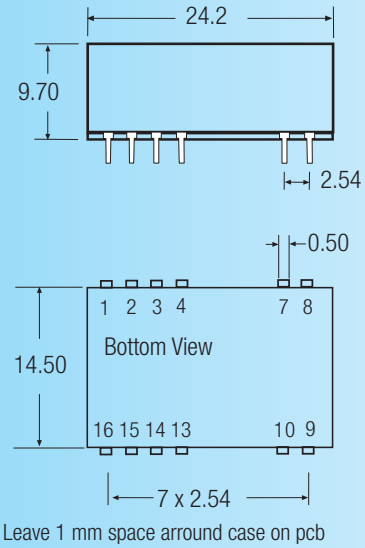
Digital Dimming Control



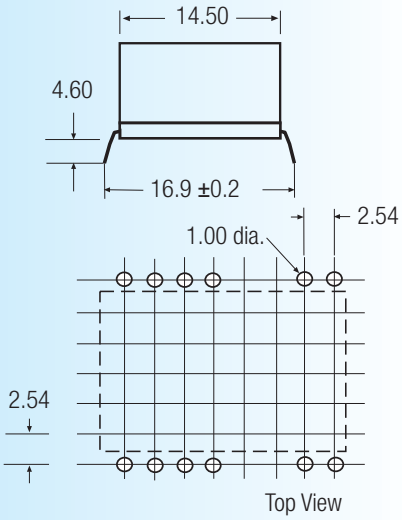
* Max output current can also be set using Analogue input

Package Style and Pinning

Through Hole Case Style



Leave 1 mm space arround case on pcb



Recommended Footprint Details

3rd angle projection

Pin Connections	RCD-24B Series	
Pin #	**Out**	**Comments**
1,2	GND	Do not connect to -Vout
3	PWM/ON/OFF	Leave open if not used
4	Analogue Dimming	Leave open if not used
7,8	-Vout	LED Cathode Connection
9,10	+Vout	LED Anode Connection
13	Vadj	Leave open if not used
14	Vref	Leave open if not used
15,16	+Vin	DC Supply

XX.X ± 0.5 mm
XX.XX ± 0.25 mm
Pin Tolerance ± 0.1 mm

SMD Case Style