Features

- SMD Constant Current LED Driver
- Built-in Class A or Class B EMC Filter

Regulated Converters

- Wide Input and Output Voltage Range **Digital PWM and Analogue Voltage Dimming**
- - Short Circuit and Overtemperature Protected
 - Low Cost
 - **EN/RAILWAYS** Certified
 - 5 Year Warranty

Description

The RCD-24-xxx/PL series is a step-down constant current source designed for driving high power LEDs. The converter uses a pinless SMD open frame design to reduce cost and size. Output currents available are 300mA, 350mA, 500mA, 600mA, 700mA and 1000mA with either Class A (Suffix /A) or Class B (suffix /B) built-in EMC filtering. Despite its compact size, the RCD-PL series is fully featured with very high efficiency, wide input voltage range, high ambient operating temperature and two means of LED dimming: PWM/digital control and analogue voltage dimming. Both 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 ambient operating temperature and is designed for strip lighting, wall washers and flourescent tube replacement designs, where a low profile and narrow width are demanded.

Selection Guide

Part Number	Input Range (VDC)	Output Current (mA)	Output Voltage (Vmin-Vmax)	Dimming Control	Mounting Style
RCD-24-0.30/PL*	4.5-36V	0-300	2-35	Digital + Analogue	Pinless SMD
RCD-24-0.35/PL*	4.5-36V	0-350	2-35	Digital + Analogue	Pinless SMD
RCD-24-0.50/PL*	4.5-36V	0-500	2-35	Digital + Analogue	Pinless SMD
RCD-24-0.60/PL*	4.5-36V	0-600	2-35	Digital + Analogue	Pinless SMD
RCD-24-0.70/PL*	4.5-36V	0-700	2-35	Digital + Analogue	Pinless SMD
RCD-24-1.00/PL/A	6-36V	0-1000	2-32	Digital + Analogue	Pinless SMD
* /A for EMC Class A	input Filter	add -I	R for Tape and R	leel Packaging	e.g. RCD-24-0.35/PL/B-R

* /B for EMC Class B input Filter

Note: RCD-24-1.00/PL/A only available with Class A Filter

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

Input Voltage (absolute maximum)		40VDC max	
Recommended Input Voltage	6V min. / 24V typ. / 36VDC max		
Input Filter	Suffix /A	Capacitor	
	Suffix /B	Class B with Pi Filter	
	RCD-24-1.00/PL/A	Class A with Pi Filter	
Output Current Accuracy (Vin=24V)	300-700mA	±2% typ, ±3% max	
	1000mA	±3% typ, ±5% max	
Internal Power Dissipation	Worst case load of 5 LEDs (300-700mA)	700mW max.	
	Worst case load of 8 LEDs (1000mA), Vin=36	/ 1.6W typ.	
Output Current Stability	Vin = 36V, Vout = 1-9 LEDs (300-700mA)	±1% max	
	Vin = 36V, Vout = 1-8 LEDs (1000mA)	± 1.5% max.	
Output Ripple and Noise (20MHz BW)	Vin=36V, Vout =1-9 LEDs (300-700mA)		
	Vin=36V, Vout =1-8 LEDs (1000mA)	300mVp-p max	
Temperature Coefficient	-40°C to +85°C ambient	±0.015%/°C max	
Maximum Capacitive Load		100µF	
Operating Frequency	300-1000mA 212kHz min/ 250)kHz typ/ 280kHz max	
Efficiency at Full Load	300-700mA	96% typ.	
	Vin=36V, Vout=8 LEDs (1000mA)	94% typ.	
Short Circuit Protection	Regulated a	at rated output current	
Operating Temperature Range	300/350mA	-40°C to +85°C	
	500mA	-40°C to +80°C	
	600/700mA	-40°C to +75°C	
	1000mA	-40°C to +65°C	
Storage Temperature Range		-55°C to +125°C	
Relative Humidity	5% to 95%	6 RH, non-condensing	
	C	ontinued on next page	



RECOM

Constant **Current LED** Driver



E358085

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



Derating-Graph

(Ambient Temperature)



Refer to Application Notes

LIGHTLINE DC/DC-Converter

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

Dimensions		31.0 x 11.4 x 6.6mm
Weight		1.9g
Packing Quantity		12 pcs per Tube / 400 pcs per Reel
Reflow Soldering Profile		265°C/10 sec max
MTBF	(using MIL HDBK 217F) +25°C	>600 khours
PWM Dimming and ON/OFF Control (Leave open if not used)		
Remote ON/OFF	DC/DC ON	Open or 0V <vr<0.6v< td=""></vr<0.6v<>
Threshold Voltages	DC/DC OFF (Standby)	0.6 <vr<2.9v< td=""></vr<2.9v<>
	DC/DC OFF (Full Shutdown)	2.9V <vr<6v< td=""></vr<6v<>
Remote Pin Drive Current	Vr=5V	1mA max
Quiescent Input Current in Shutdown Mode	Vin=36V	200µA max
Recommended PWM Frequency	For Linear Operation	200Hz
(measured 10%~90% Dimming)	Maximum Frequency	1000Hz
Analogue Dimming Control (leave open if not used)		
Input Voltage Range	300-1000mA	-0.3V - 15V
Control Voltage Range Limits (see Graph)	300-1000mA / Full On	0.13V ± 50mV
	300-700mA / Full Off	$4.2V \pm 150 \text{mV}$
	1000mA / Full Off	4.35V ±100mV
Analogue Pin Drive Current	300-1000mA / Vc=5V	0.2mA max.
Environmental		
Shock / Vibration		EN61373
EMC Railways		EN50121-3-2:2006
Conducted Emissions	300-1000mA (/A Suffix)	EN55022, Class A
	300-700mA (/B Suffix)	EN55022, Class B
Radiated Emissions		EN55022, Class B
ESD		EN61000-4-2, Criterion A
Radiated Immunity		EN61000-4-3, Criterion A
Fast Transient		EN61000-4-4, Criterion A
Conducted Immunity		EN61000-4-6, Criterion A

Note:

1. 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.
- 2. It is not possible to parallel the drivers to increase the current.

Typical Characteristics



Vin = 32V, lout = 300~1000mA

RCD-24-PL

Series



LIGHTLINE DC/DC-Converter

Dimming

Digital Dimming





Output Current (LED appears dim)



Note:

3. If PWM dimming is used, a capacitor on output in parallel is required.

Analogue Dimming



Package Style and Pinning









Class A (1.00A-Version)



PWM Digital Control Signal



Output Current (LED appears bright)



P/N	C1	
RCD-24-0.30/PL/X		
RCD-24-0.35/PL/X	33µF	
RCD-24-0.50/PL/X		
RCD-24-0.60/PL/X	17.15	
RCD-24-0.70/PL/X	47µF	
RCD-24-1.00/PL/A	150µF	

Pad C	onnections	RCD-24-PL Series	
Pad #	Out	Comments	
1	+Vin	DC Supply	
2	Analogue Dimming	Leave open if not used	
3	PWM/ON/OFF	Leave open if not used	
4	GND	Do not connect to -Vout	
5	-Vout	LED Cathode Connection	
6	+Vout	LED Anode Connection	

XX.X ± 0.5 mm XX.XX ± 0.25 mm

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RCD-24-PL Series