### **Features**

### Regulated Converters

- SMD Constant Current LED Driver
- Built-in Class A or Class B EMC Filter
- 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 -R for Tape and Reel Packaging			e.g. RCD-24-0.35/PL/B-R

<sup>\* /</sup>A for EMC Class A input Filter

\* /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	OkHz 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	
	С	ontinued on next page	

### LIGHTLINE

DC/DC-Converter with 5 year Warranty



## Constant **Current LED** Driver





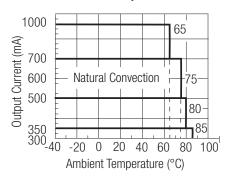


EN-50121-3-2 Certified EN-60950-1 Certified **UL-60950-1** Certified

RCD-24/PL

## **Derating-Graph**

## (Ambient Temperature)



**Refer to Application Notes** 

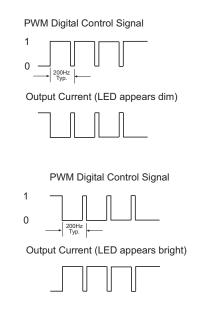
# **LIGHTLINE** DC/DC-Converter

## RCD-24-PL Series

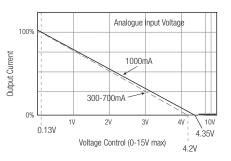
### Specifications (typical at 25°C, nominal input voltage, rated output current unless otherwise specified)

Dimensions			31.0 x 11.4 x 6.6mm
Weight			1.9g
Packing Quantity		12 pcs per Tu	ibe / 400 pcs per Reel
Reflow Soldering Profile			265°C/10 sec max
MTBF	25°C		>600 khours
(using MIL HDBK 217F)			
PWM Dimming and ON/0	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=""><td></td></vr<6v<>	
Remote Pin Drive Curren	t	Vr=5V	1mA max
Quiescent Input Current	in Shutdown Mode	Vin=36V	200µA max
Recommended PWM Fre	equency	For Linear Operation	200Hz
(measured 10%~90% D	imming)	Maximum Frequency	1000Hz
Analogue Dimming Contr	rol (leave open if not used)		
Input Voltage Range		300-1000mA	-0.3V - 15V
Control Voltage Range Li	mits (see Graph)	300-1000mA / Full On	$0.13V \pm 50mV$
		300-700mA / Full Off	$4.2V \pm 150 \text{mV}$
		1000mA / Full Off	$4.35V \pm 100mV$
Analogue Pin Drive Curre	ent	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	Class A
Radiated Immunity		EN61000-4-3	Class A
Fast Transient		EN61000-4-4	Class A
Conducted Immunity		EN61000-4-6	Class A
Note:			

### **Digital Dimming**

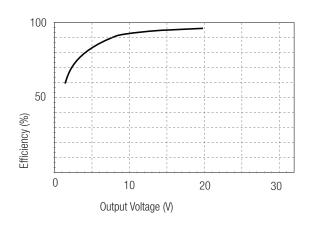


### **Analogue Dimming**

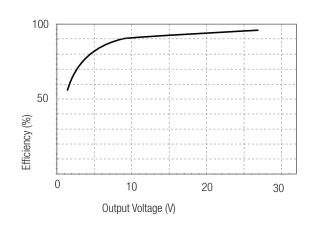


- 1. All LED Drivers may not be used without a load. They must be switched on the primary side only. Noncompliance may damage the LED or reduce its lifetime.
- 2. It is not possible to parallel the drivers to increase the current.

### **Typical Characteristics**



### Vin = 32V, lout = 300~1000mA



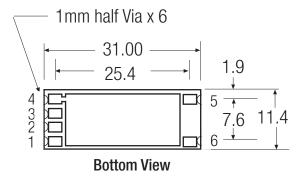


## RCD-24-PL Series

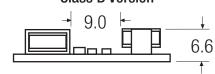
**Package Style and Pinning** 

### **Class A Version**

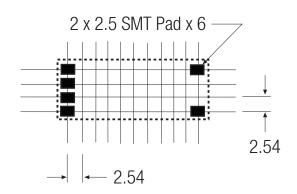




### Class A (1.00A-Version) Class B Version



### **PCB Layout Top View**



Pad Conr	nections 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