

PART NUMBER: VLD24-XXX

DESCRIPTION: constant current dc-dc converter

applications

The VLD24-XXX series is a step-down constant current source designed for driving high power LEDs. The available output currents are: 300mA, 350mA, 500mA, 600mA, 700mA. Despite its compact size, the VLD24-XXX series is fully featured with very high efficiency, wide input voltage range, high ambient operating temperature, and two means of LED dimming: PWM digital dimming and analog dimming control, via a trim POT.

features

- power LED driver
- high efficiency up to 95%
- wide input voltage range
- constant current output
- PWM digital dimming
- short-circuit protection
- analog dimming
- output on/off control



model	input range (V dc)	output voltage (V dc)	output current (mA)	dimming control	efficiency (%)
VLD24-300	5.5~36	2~32	0~300	PWM+analog	95
VLD24-350	5.5~36	2~32	0~350	PWM+analog	95
VLD24-500	5.5~36	2~32	0~500	PWM+analog	95
VLD24-600	5.5~36	2~32	0~600	PWM+analog	95
VLD24-700	5.5~36	2~32	0~700	PWM+analog	95

INPUT

parameter	conditions/description	min	nom	max	units
input voltage	absolute max before device failure			40	VDC
	operating input range	5.5	24	36	VDC
quiescent input current in off mode	V _{in} = 24V, V _{DIM} < 0.6V			400	µA
input filter	capacitor				

OUTPUT

parameter	conditions/description	min	nom	max	units
voltage range	V _{in} is at least 1.5~4V higher than V _{out}	2		32	VDC
current range	V _{in} -V _{out} > 1.5~4V	300		700	mA
current accuracy	300~700mA		±8	±12	%
current stability	V _{in} = 24V, V _{out} = 2~32V		±10	±18	%
temp. coefficient	-40°C ~ 71°C ambient			±0.03	%/°C
maximum capacitive load				470	µF

PROTECTION CIRCUIT

parameter	conditions/description
short-circuit protection	regulated at rated output current

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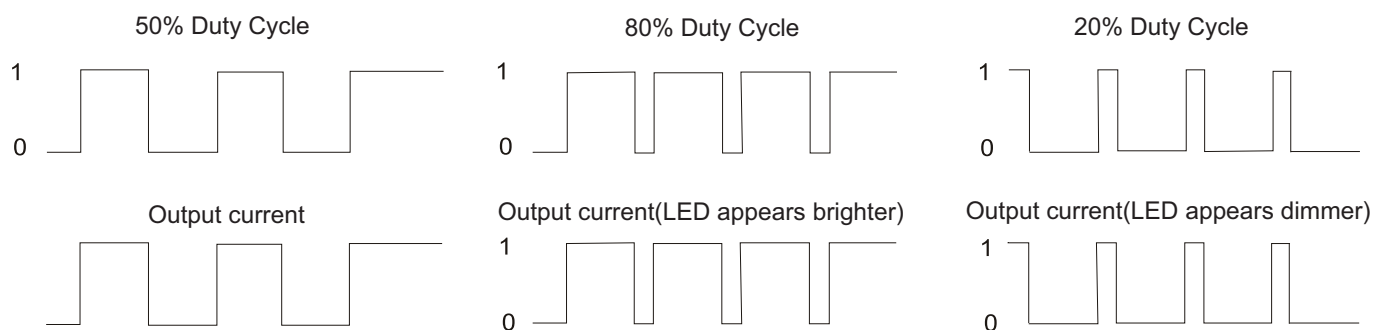
DIMMING AND CONTROL

parameter	conditions/description	min	nom	max	units
remote on/off	dc-dc ON (Vr on pin3) dc-dc OFF		open or 2.8V	Vr<6V Vr <0.6V	
remote pin current	Vr = 5V			1	mA
PWM frequency			0.2	10	kHz

GENERAL

parameter	conditions/description	min	nom	max	units
ambient temp.	300/350mA	-40		85	°C
	500/600/700mA	-40		71	°C
storage temp.		-55		125	°C
max. case temp.				100	°C
RoHS	yes				
case material	plastic (UL94V-0)				
dimensions	22.8 x 10.2 x 9.5 (L x W x H)				
weight			3.5		g
efficiency	at full load			95	%

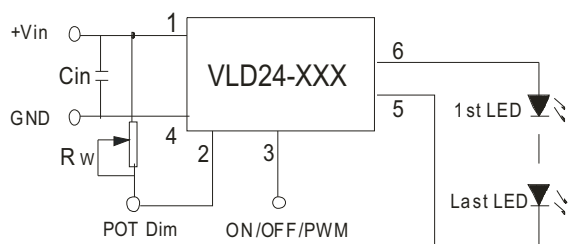
DIGITAL DIMMING CONTROL



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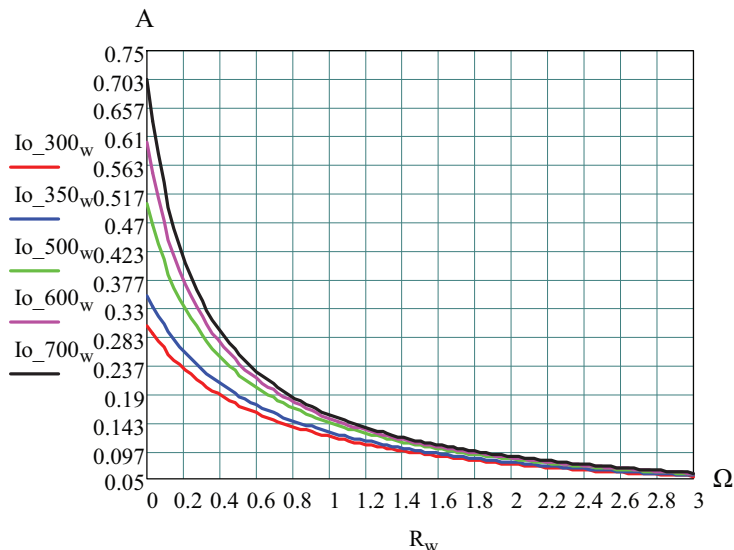
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ANALOG DIMMING CONTROL



$C_{in} = 47\mu F$ for best performance

I_o can be set between 0A and $I_o(\max)$ with trim pot R_w . For example, to set the output current (I_o) to 200mA using the VLD24-350, choose $R_w=0.4\Omega$. The trim pot should be placed close to pins 1 and 2 with shortest possible leads.



TYPICAL APPLICATION CIRCUITS

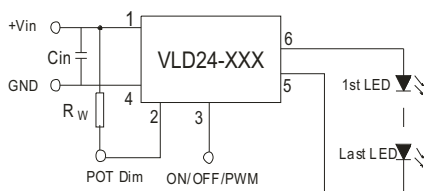


Figure 1a. Series Configuration

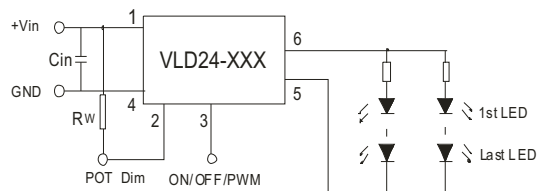
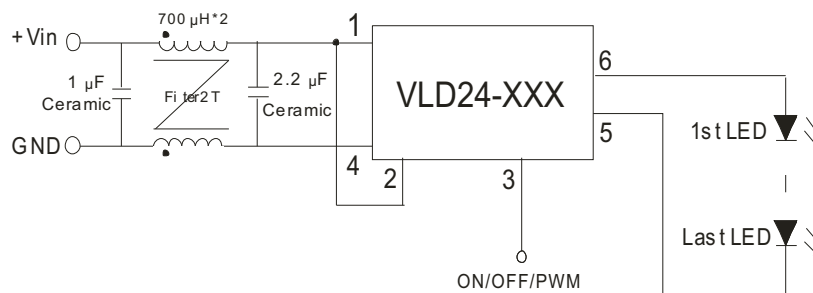


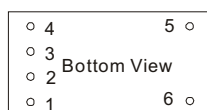
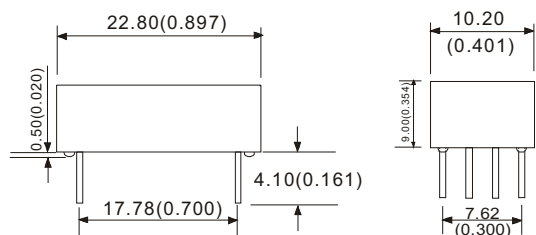
Figure 1b. Parallel Configuration

EMS FILTER CIRCUITS

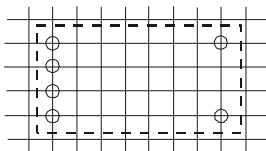


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MECHANICAL DRAWING AND PIN-OUT


RECOMMENDED FOOTPRINT
 Top view, grid: 2.54mm (0.1inch),
 diameter: 1.00mm (0.039inch)



Third Angle Projection

FOOTPRINT DETAILS

Pin	Function	Comments
1	V _{in}	DC Supply
2	Analog Dim	Set Output Current
3	ON/OFF/PWM	Output enable/PWM
4	GND	Do not connect to -V _{out}
5	-V _{out}	LED Cathode connection
6	+V _{out}	LED Anode connection

Note:

Unit: mm (inch)

Pin diameter: 0.50mm (0.020inch)

Pin tolerances: ±0.10mm (±0.004inch)

General tolerances: ±0.25mm (±0.010inch)