

**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 <sub>in</sub> = 24V, V <sub>DIM</sub> < 0.6V			400	µA
input filter	capacitor				

**OUTPUT**

parameter	conditions/description	min	nom	max	units
voltage range	V <sub>in</sub> is at least 1.5~4V higher than V <sub>out</sub>	2		32	VDC
current range	V <sub>in</sub> -V <sub>out</sub> > 1.5~4V	300		700	mA
current accuracy	300~700mA		±8	±12	%
current stability	V <sub>in</sub> = 24V, V <sub>out</sub> = 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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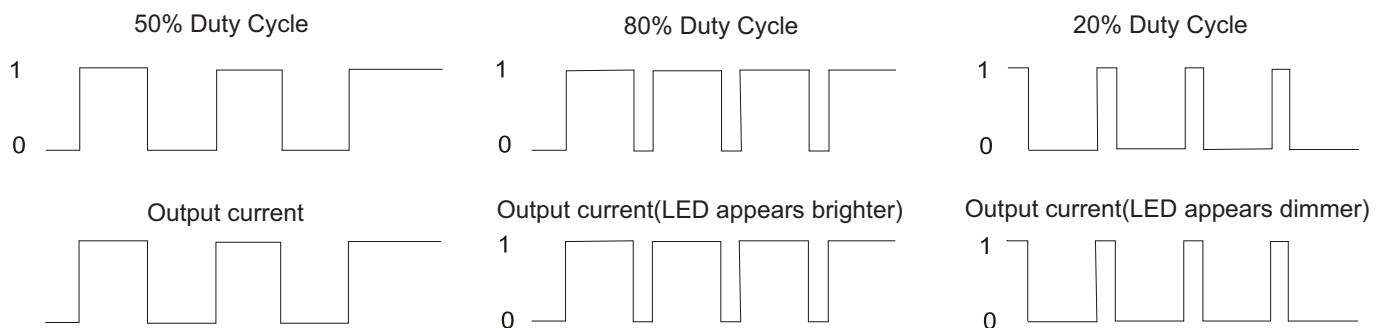
## DIMMING AND CONTROL

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	%

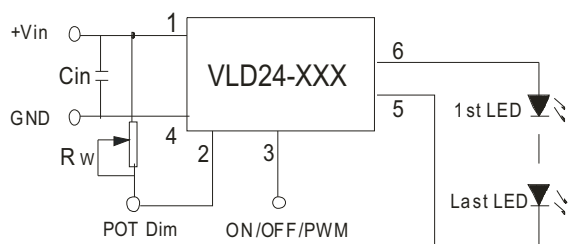
## DIGITAL DIMMING CONTROL



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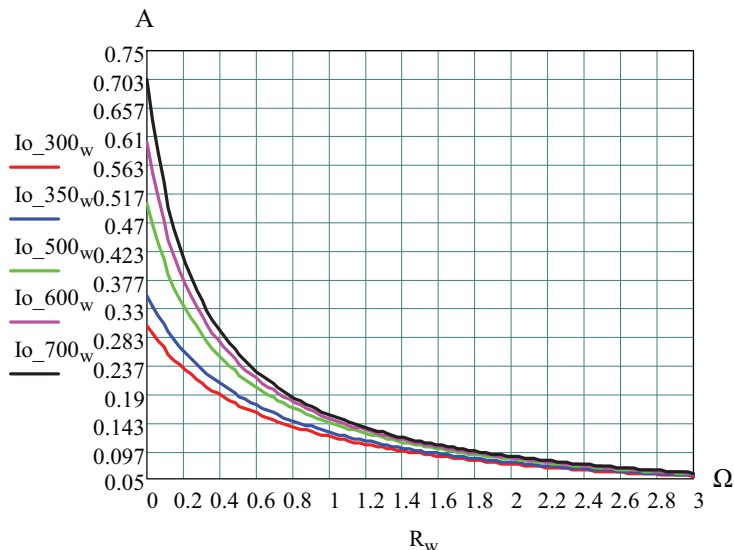
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## ANALOG DIMMING CONTROL



$C_{in} = 47\mu F$  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

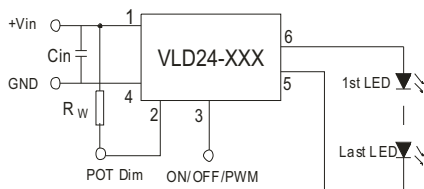


Figure 1a. Series Configuration

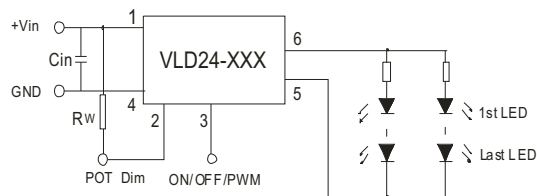
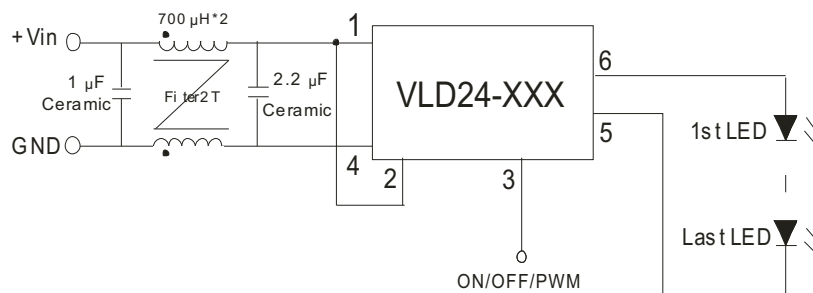


Figure 1b. Parallel Configuration

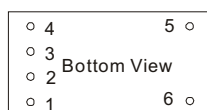
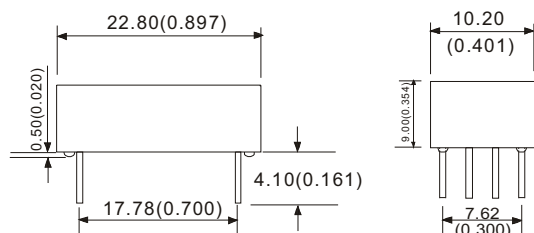
## EMS FILTER CIRCUITS



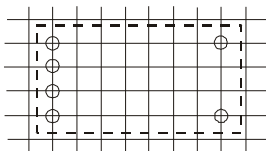
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## MECHANICAL DRAWING AND PIN-OUT



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



Third Angle Projection 

### FOOTPRINT DETAILS

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