DC-DC Constant Current Step-Down LED driver

LDD-L series

Features:

- DC/DC step-down converter
- Constant current: 350mA or 700 mA
- Wide input voltage: 9 ~ 36VDC
- Wide output LED string voltage: 2 ~ 32VDC
- High efficiency up to 95%
- Built-in EMI filter, comply with EN55015 and FCC part 15 without additional input filter and capacitors
- Built-in PWM dimming and remote ON/OFF control
- Protections: Short circuit / over temperature
- Cooling by free air convection
- Fully encapsulated with IP67 level for pin and wire style
- Non-potted, optional conformal coating for SMD style (Order No.: LDD-350 LSC)
- Compact size
- Low cost, high reliability
- Suitable for driving illumination LED
- 3 years warranty

LDD-350L W	Blank : pin style
	W : wire style
	S : SMD style

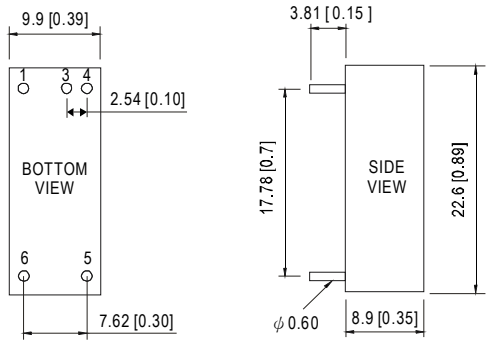
SPECIFICATION

ORDER NO.			LDD-350L	LDD-700L
OUTPUT	CURRENT RANGE		350mA	700mA
	VOLTAGE RANGE Note.4		2 ~ 32VDC for LDD-350~700L/LW ; 2~ 28VDC for LDD-350~700LS	
	CURRENT ACCURACY (Typ.)		±5% at 24VDC input	
	RIPPLE & NOISE(max.) Note.2			200mVp-p
	SWITCHING FREQENCY		40KHz ~ 1000KHz	
	EXTERNAL CAPACITANCE LOAD (max.)		2.2uF	
INPUT	VOLTAGE RANGE		9 ~ 36VDC for LDD-350~700L/LW ; 9~ 32VDC for LDD-350~700LS	
	EFFICIENCY (max.)		95% at full load and 24VDC/36VDC input for LDD-350~700L/LW ; 95% at full load and 24VDC input for LDD-350~700LS	
	DC CURRENT	Full load Note.3	350mA	700mA
		No load	5mA	
	FILTER		Capacitor	
PWM DIMMING & ON/OFF CONTROL	REMOTE ON/OFF		Leave open if not use	
			Power ON with dimming: DIM ~ -Vin >3.5 ~ 8VDC or open circuit	
			Power OFF : DIM ~ -Vin < 0.5VDC or short	
	PWM FREQUENCY		100 ~ 1KHz	
	QUIESCENT INPUT CURRENT IN SHUTDOWN MODE(max.)		1mA at PWM dimming OFF and 24VDC input	
PROTECTION	SHORT CIRCUIT		Regulated at rated output current	
			Protection type: Can be continued, recovers automatically after fault condition is removed	
	OVER TEMPERATURE		Tj 150℃ typically(IC1) detect on main control IC	
			Protection type : Shut down, recovers automatically after temperature goes down	
ENVIRONMENT	WORKING TEMP.		-40 ~ + 85℃(Refer to derating curve)	
	WORKING HUMIDITY		20% ~ 90% RH non-condensing for LDD-350~700L/LW ; 20% ~ 85% RH non-condensing for LDD-350~700LS	
	STORAGE TEMP., HUMIDITY		-55 ~ +125℃, 10 ~ 95% RH	
	TEMP. COEFFICIENT		±0.03% / ℃	
	VIBRATION		10 ~ 500Hz, 2G 10min./1 cycle, period for 60min. each along X, Y, Z axes	
	OPERATING CASE TEMP. (max.)		100℃	
EMC	EMC EMISSION		Compliance to EN55015, FCC part 15 class B	
	EMC IMMUNITY		Compliance to EN61000-4-2,3,4,6,8, light industry level, criteria A	
OTHERS	MTBF		2000Khrs min. MIL-HDBK-217F (25℃)	
	DIMENSION		22.6*9.9*8.9mm or 0.89"*0.39"*0.35" inch (L*W*H) for LDD-350~700L/LW ; 25.4*10.5*9.3mm or 1"*0.4135"*0.366" inch (L*W*H) for LDD-350~700LS	
	WEIGHT		LDD-350~700L:4g ; LDD-350~700LW:7.3g ; LDD-350~700LS :3.4g	
	POTTING MATERIAL		Expoxy(UL94-V0) for LDD-350~700L/LW ; without potted for LDD-350~700LS	
NOTE	1.All parameters are specified at normal input(24VDC), rated load, 25℃ 70% RH ambient. 2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1uf capacitor. 3.Test condition: 24VDC input. 4.Output voltage will always step down by 3 volts from input DC voltage.			

■ Mechanical Specification

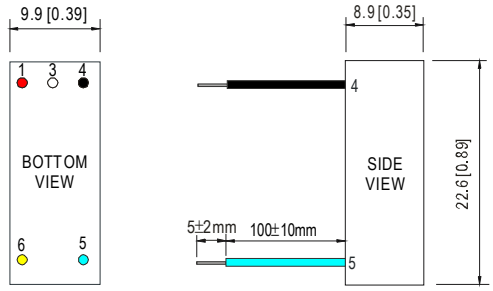
Blank type(LDD– 350~700L):

Unit: mm (inch)



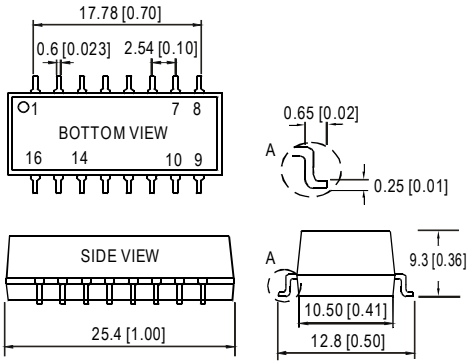
NOTE: Pin tolerance ±0.05mm

W type(LDD – 350~700LW):

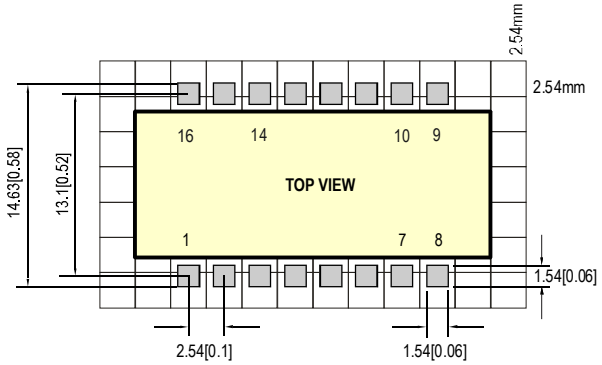


NOTE: All wires UL3385 22AWG

S type(LDD – 350~700LS):



■ Recommended PCB layout (for LDD-350~700LS)



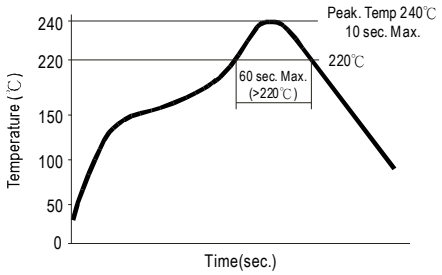
■ Pin Configuration

Pin No.	Output	Comment
1	+Vin	DC Supply
3	PWM DIM	ON/OFF and PWM Dimming (Leave open if not used)
4	-Vin	Don't connect to -Vout
5	-Vout	LED - Connection
6	+Vout	LED + Connection

Pin No.	Output	Comment
1	+Vin (Red)	DC Supply
3	PWM DIM (White)	ON/OFF and PWM Dimming (Leave open if not used)
4	-Vin (Black)	Don't connect to -Vout
5	-Vout (Blue)	LED - Connection
6	+Vout (Yellow)	LED + Connection

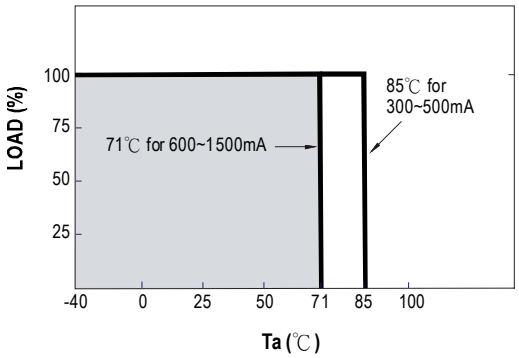
Pin No.	Output	Comment
1	+Vin	DC Supply
7,8	+Vout	LED + Connection
9,10	-Vout	LED - Connection
14	PWM DIM	ON/OFF and PWM Dimming (Leave open if not used)
16	-Vin	Don't connect to -Vout
others	N.C	LED - Connection

■ Reflow Soldering Curve (for LDD-350~700LS)



Remark : The curve applies only to the " Hot Air Reflow Soldering"

■ Derating Curve



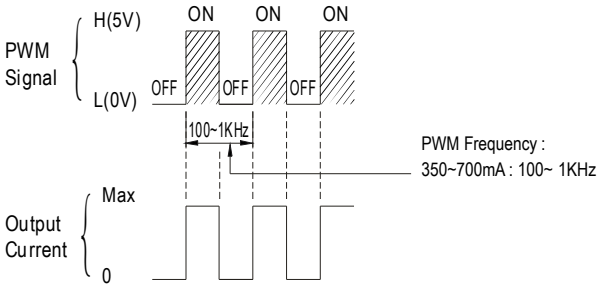
■ PWM Dimming Control (for 350~700mA)

Io Adjustment by PWM signal :

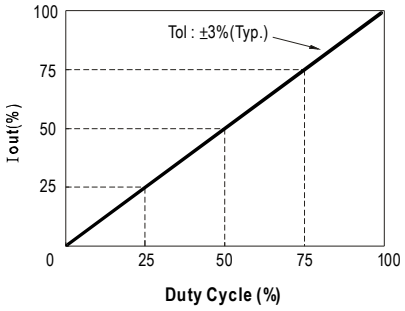
350 ~ 700mA :

H: > 3.5~8VDC or open circuit

L: < 0.5VDC or short



◎ During PWM dimming operation, the output current will change to PWM style.



■ Efficiency VS Output Voltage (Number of LEDs)

Fig-1 12VDC input, 1~3 LEDs(Vf=3V)

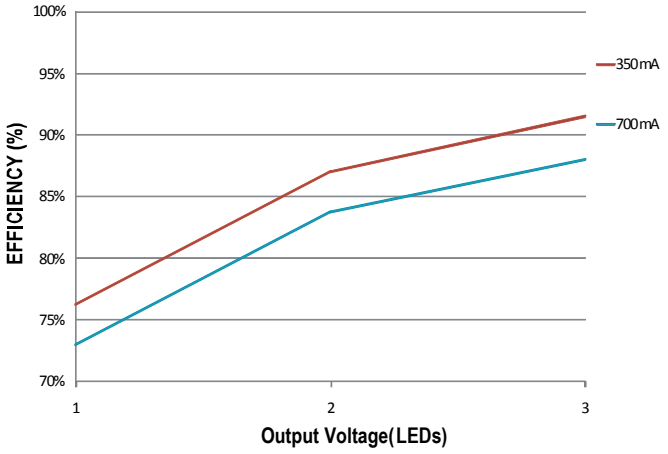


Fig-2 24VDC input, 1~7 LEDs(Vf=3V)

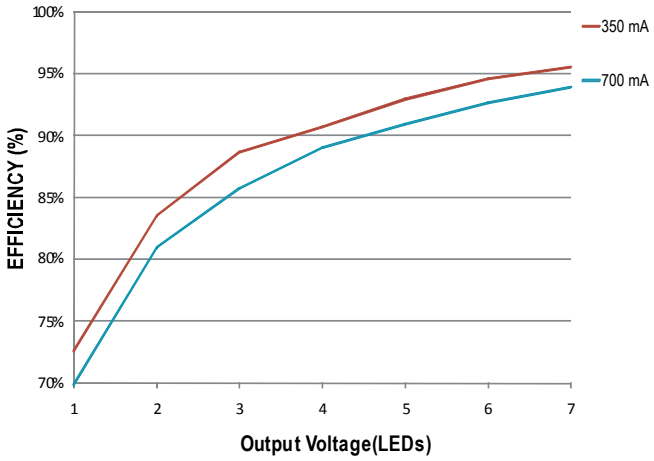


Fig-3 36VDC input, 1~10 LEDs(Vf=3V)