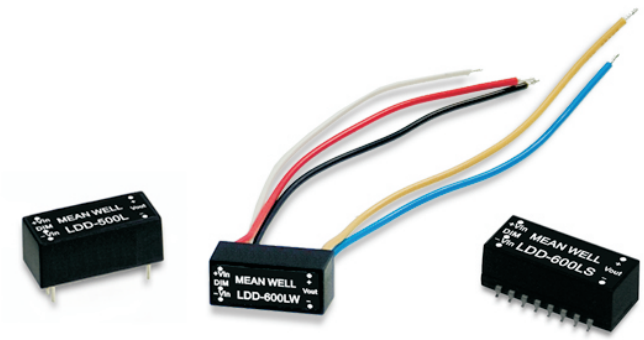
DC-DC Constant Current Step-Down LED driver — LDD-L series



Features :

- DC/DC step-down converter
- Constant current output: 300mA to 700mA
- 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 part15 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-350LSC)
- Compact size
- Low cost, high reliability
- Suitable for driving illumination LED
- 3 years warranty

FC CE

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

SPECIFICATION

ORDER NO.			LDD-300L□	LDD-350L□	LDD-500L□	LDD-600L□	LDD-700L□
OUTPUT	CURRENT RANGE		300mA	350mA	500mA	600mA	700mA
	VOLTAGE RANGE Note.4		2 ~ 32VDC for LDD-300~700L/LW ; 2~ 28VDC for LDD-300~700LS				
	CURRENT ACCURACY (Typ.)		±5% at 24VDC input				
	RIPPLE & NOISE(max.) Note.2		150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p
	SWITCHING FREQENCY		40KHz ~ 1000KHz				
	EXTERNAL CAPACITANCE LOAD (max.)		2.2uF				
INPUT	VOLTAGE RANGE		9 ~ 36VDC for LDD-300~700L/LW ; 9~ 32VDC for LDD-300~700LS				
	EFFICIENCY (max.)		95% at full load and 24VDC/36VDC input for LDD-300~700L/LW ; 95% at full load and 24VDC input for LDD-300~700LS				
	DC CURRENT	Full load Note.3	300mA	350mA	500mA	600mA	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-300~700L/LW ; 20% ~ 85% RH non-condensing for LDD-300~700LS				
	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-300~700L/LW ; 25.4*10.5*9.3mm or 1"*0.4135"*0.366" inch (L*W*H) for LDD-300~700LS				
	WEIGHT		LDD-300~700L:4g ; LDD-300~700LW:7.3g ; LDD-300~700LS :3.4g				
	POTTING MATERIAL		Expoxy(UL94-V0) for LDD-300~700L/LW ; without potted for LDD-300~700LS				
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.						

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DC-DC Constant Current Step-Down LED driver

LDD-L series



Features :

- DC/DC step-down converter
- Constant current output: 1000mA to 1500mA
- Wide input voltage: 6 ~ 36VDC
- Wide output LED string voltage: 2 ~ 30VDC
- High efficiency up to 95%
- Built-in EMI filter, comply with EN55015 and FCC part15 without additional input filter and capacitors
- Built-in PWM +analog dimming and remote ON/OFF control
- Protections: Short circuit
- 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-1000HSC)
- Compact size
- Low cost, high reliability
- Suitable for driving illumination LED
- 3 years warranty

LDD-1000H□L	Blank : pin style
	W : wire style
	S : SMD style

SPECIFICATION

ORDER NO.			LDD-1000L□	LDD-1200L□	LDD-1500L□
OUTPUT	CURRENT RANGE		1000mA	1200mA	1500mA
	VOLTAGE RANGE Note.4		2 ~ 30VDC		
	CURRENT ACCURACY (Typ.)		±5% at 24VDC input		
	RIPPLE & NOISE(max.) Note.2		1.5Vp-p	1.5Vp-p	1.5Vp-p
	SWITCHING FREQENCY		1000KHz		
	EXTERNAL CAPACITANCE LOAD (max.)		2.2uF		
INPUT	VOLTAGE RANGE		6 ~ 36VDC		
	EFFICIENCY (max.)		95% at full load and 24VDC/36VDC input for LDD-1000~1500L/LW		
	DC CURRENT	Full load Note.3	990mA	1160mA	1450mA
		No load	5mA		
	FILTER		Capacitor		
PWM DIMMING & ON/OFF CONTROL	REMOTE ON/OFF		Leave open if not use		
			Power ON with dimming: DIM ~ -Vin >2.5 ~ 5.5VDC or open circuit		
			Power OFF : DIM ~ -Vin < 0.4VDC or short		
	PWM FREQUENCY		100 ~ 500Hz		
	QUIESCENT INPUT CURRENT IN SHUTDOWN MODE(max.)		1mA at PWM dimming OFF and 24VDC input		
ANALOG DIMMING & ON/OFF CONTROL	REMOTE ON / OFF		Leave open if not use		
			Power ON with dimming : DIM ~ -Vin>0.5~2.5VDC or open circuit		
			Power OFF : DIM ~ -Vin<0.4VDC or short		
PROTECTION	SHORT CIRCUIT		Regulated at rated output current		
			Protection type: Can be continued, recovers automatically after fault condition is removed		
ENVIRONMENT	WORKING TEMP.		-40 ~ + 71℃ (Refer to derating curve)		
	WORKING HUMIDITY		20% ~ 90% RH non-condensing for LDD-1000~1500L/LW ; 20%~85% RH non-condensing for LDD-1000~1500LS		
	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		31.8*20.3*12.2mm or 1.25"*0.8"*0.48" inch (L*W*H) for LDD-1000~1500L/LW ; 31.8*20.3*10.9mm or 1.25"*0.8"*0.43" inch (L*W*H) for LDD-1000~1500LS		
	WEIGHT		LDD-1000~1500L:15.6g ; LDD-1000~1500LW:18g ; LDD-1000~1500LS:12.8g		
	POTTING MATERIAL		Expoxy(UL94-V0) for LDD-1000~1500L/LW ; without potted for LDD-1000~1500LS		
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: 36VDC input. 4.Output voltage will always step down by 3 volts from input DC voltage.				

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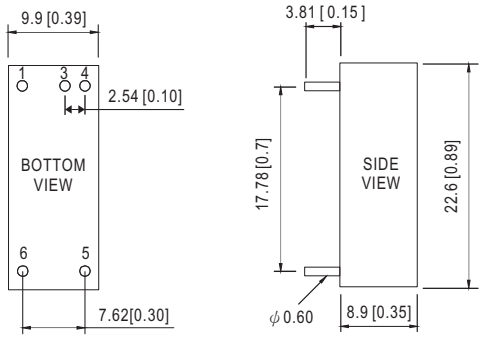
■ Mechanical Specification

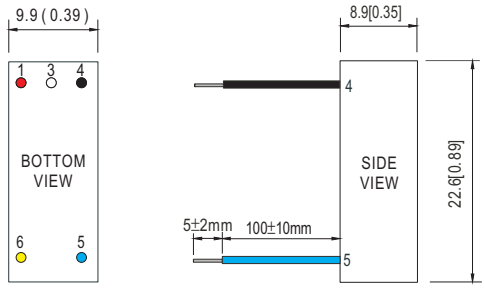
Blank type(LDD－300~700L):

Unit: mm (inch)



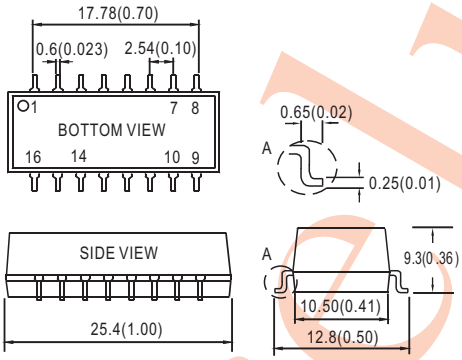
NOTE: Pin tolerance ±0.05mm

W type(LDD－300~700LW):



NOTE: All wires UL3385 22AWG

S type(LDD－300~700LS):



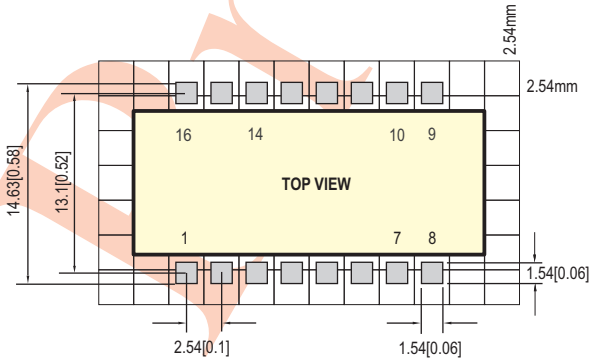
■ Pin Configuration

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	No connection

■ Recommended PCB layout (for LDD-300~700LS)



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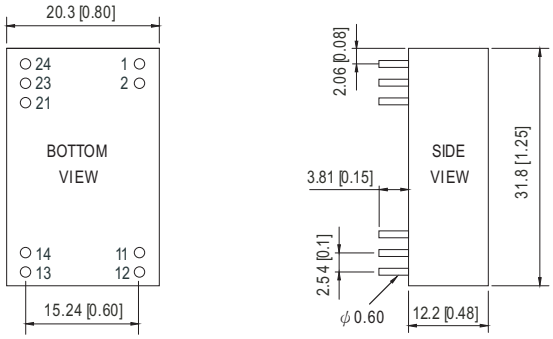
■ Mechanical Specification

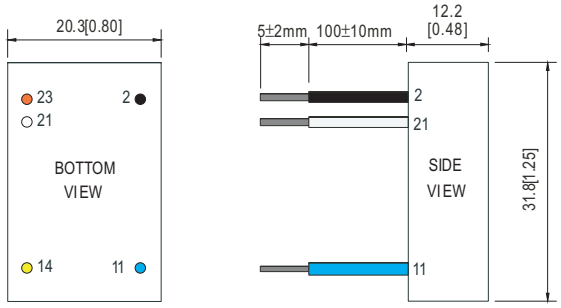
Blank type(LDD－1000~1500L):

Unit: mm (inch)



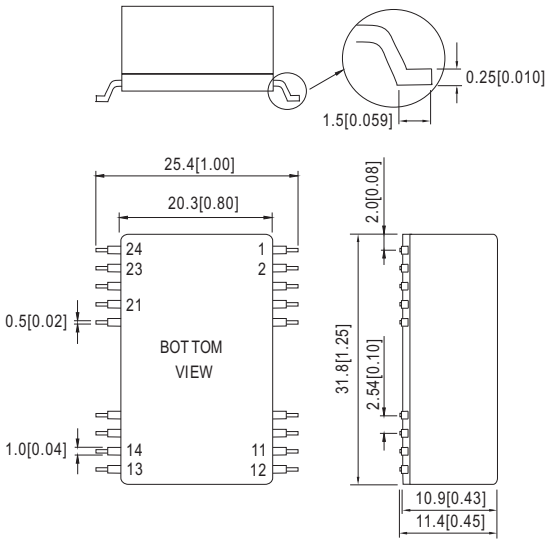
NOTE: Pin tolerance ±0.05mm

W type(LDD－1000~1500LW):

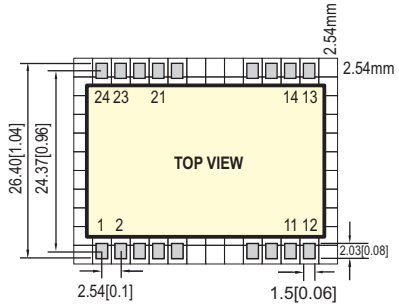


NOTE: All wires UL3385 22AWG

S type(LDD －1000~1500LS):



■ Recommended PCB layout (for LDD-1000~1500LS)



■ Pin Configuration

Pin No.	Output	Comment
1,2	-Vin	Don't connect to -Vout
11,12	-Vout	LED - Connection
13,14	+Vout	LED + Connection
21	PWM +analog DIM	ON/OFF and PWM / analog Dimming (Leave open if not used)
23,24	+Vin	DC Supply

Pin No.	Output	Comment
2	-Vin (Black)	Don't connect to -Vout
11	-Vout (Blue)	LED - Connection
14	+Vout (Yellow)	LED + Connection
21	PWM +analog DIM (White)	ON/OFF and PWM / analog Dimming (Leave open if not used)
23	+Vin (Red)	DC Supply

Pin No.	Output	Comment
1,2	-Vin	Don't connect to -Vout
11,12	-Vout	LED - Connection
13,14	+Vout	LED + Connection
21	PWM +analog DIM	ON/OFF and PWM / analog Dimming (Leave open if not used)
23,24	+Vin	DC Supply
others	N.C	No connection

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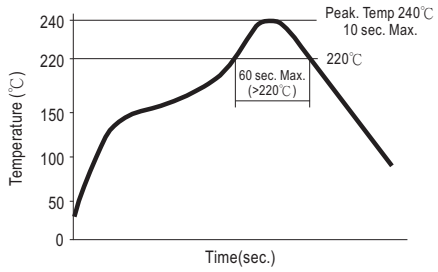
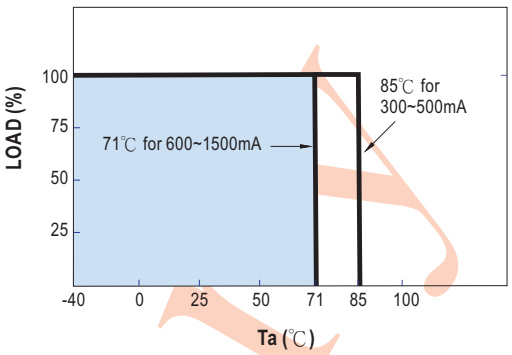
Reflow Soldering Curve (for LDD-300~1500LS)

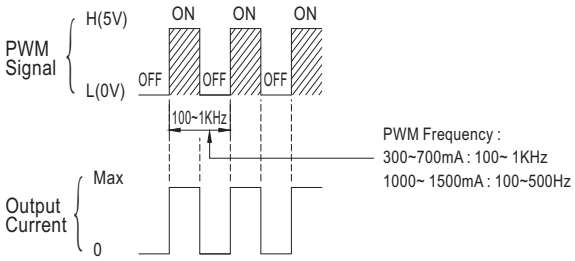


Remark : The curve applies only to the " Hot Air Reflow Soldering"

Derating Curve

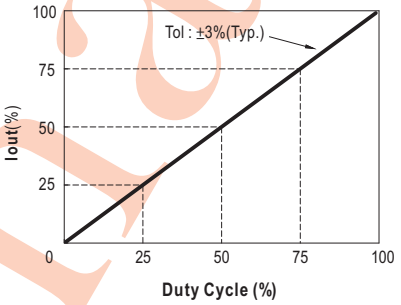


PWM Dimming Control

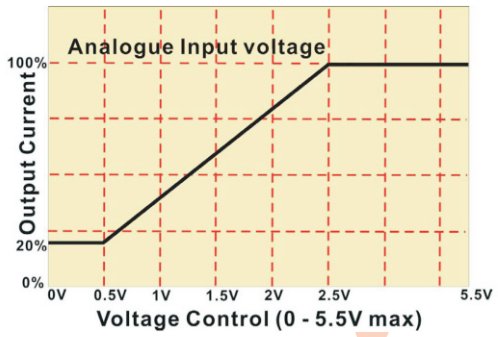


PWM Frequency :
300~700mA : 100~ 1KHz
1000~ 1500mA : 100~500Hz

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

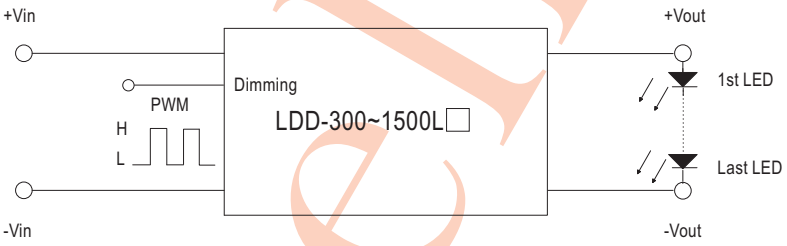


Analog Dimming Control for 1000~ 1500mA



Standard Application

Io Adjustment by PMW :



300 ~ 700mA :

H: > 3.5~8VDC or open circuit

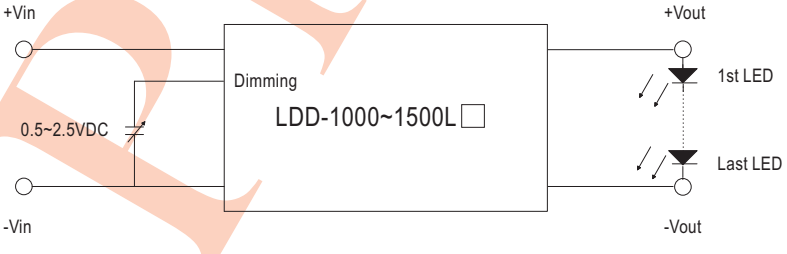
L: < 0.5VDC or short

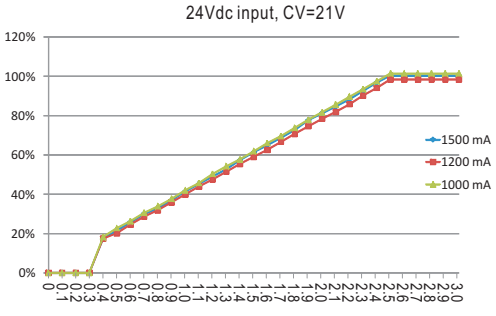
1000 ~ 1500mA :

H: > 2.6~5.5VDC or open circuit

L: < 0.4VDC or short

Io Adjustment by DC voltage :





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■ Efficiency VS Output Voltage(Number of LEDs)

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

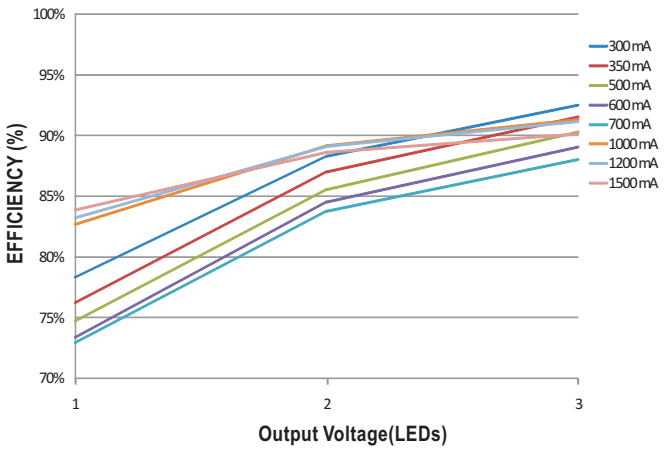


Fig-2 24VDC input, 1~7 LEDs(Vf=3V)

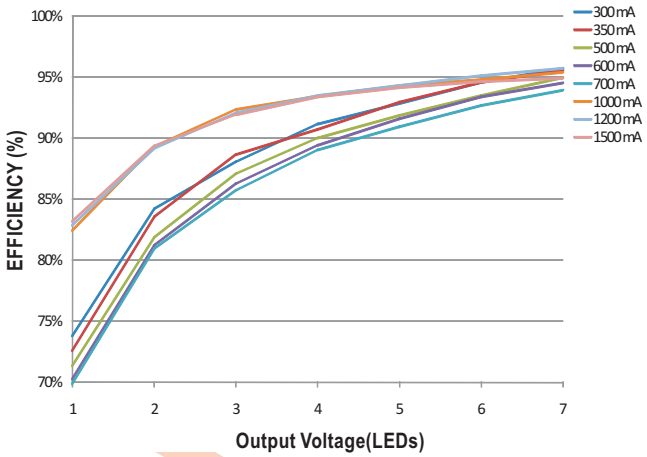
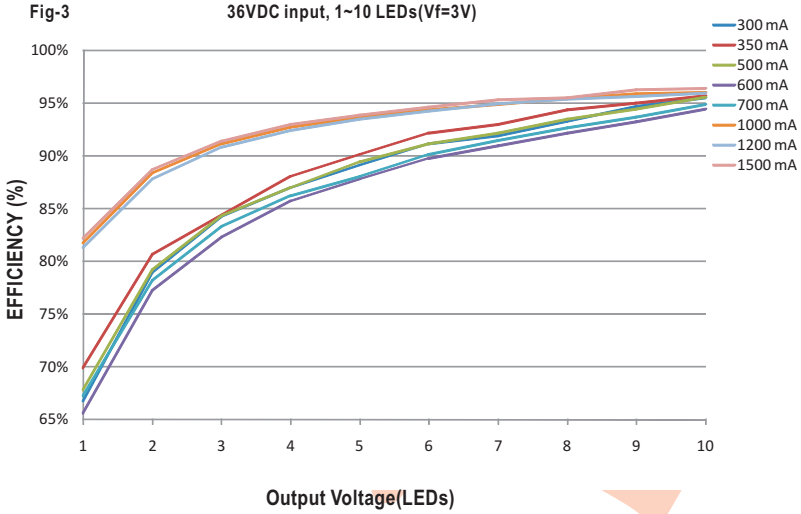


Fig-3 36VDC input, 1~10 LEDs(Vf=3V)



Preli

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