

Specification for Approval

Product Name: 60W Constant Current Driver
Product Model: X6-060M052L
 X6-060V052L
Rev: E.2

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Prepared By	Checked By	Approved By

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CUSTOMER AUTHORIZED SIGNATURE		
Tested By	Checked By	Approved By
(Company seal)Return one copy to MOSO with approved signature and company seal.		

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Product Feature:

- Input voltage range: 90~305Vac;
- Constant current design;
- Output current adjustable by Built-in potentiometer;
- THD<10%;
- 3-in-1 dimmable: 0~10Vdc, PWM , Resistor;
- Output and Dimming Signal Isolating, Dim to off;
- Standby power<0.5W;
- Surge protection:4KV line-line, 6KV line-earth;
- Protections: OVP, SCP;
- IP67 design for indoor and outdoor applications;
- 5 years warranty.

Application

- Suitable for LED roadway lighting, industrial lighting, etc.

DESCRIPTION

The X6-60W is constant-current output IP67 LED driver that operates from 90-305Vac input with excellent power factor and low THD. It is created for industrial lights, tunnel and street lights. The high efficiency of these drivers and compact metal case enable them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, output over voltage and short circuit protection.

Models

Model Number	Input voltage range (Vac)	Max Output Power (W)	Output Voltage Range (Vdc)	Default output current (A)	Output current adjust range(A)	Typical Efficiency	Typical THD	Typical PF
								230Vac
X6-060Y052L	90-305	60	28-52	1.34	0.67-1.34	88%	5%	0.96

Notes:

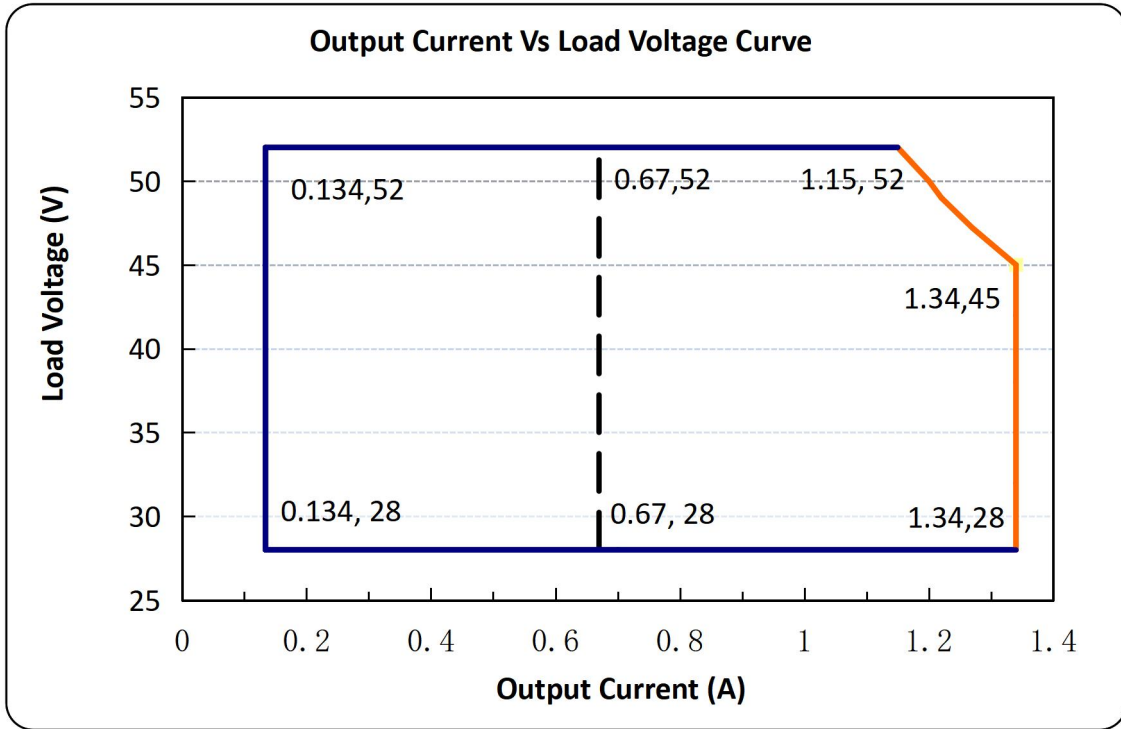
Y=V means no dimmable, Y=M means 0-10V/PWM dimming.

Model -A means forward dimming, and model -B means reverse dimming

Remark: All specifications are measured at 25°C ambient temperature, input voltage 230Vac/50Hz, and the typical value tested by full load, if no specific note.

OPERATING AREA I-V

X6-060Y052L



Notes: 1.The area to the right of the dotted line is the adjustable range of the output current

2. The adjustable current range is on the right of the dotted line

INPUT SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Notes			
Input Voltage	90Vac	100-277Vac	305Vac				
Input Frequency	47Hz	50/60	63Hz				
Leakage Current	-	-	0.75mA	277Vac/60Hz			
Input AC Current	-	-	0.8A	100-277Vac with full load			
Inrush Current	-	-	0.3A ² S	230Vac input with full load, Ta=25°C (cold start)			
Power Factor	0.97	0.99	-	120Vac, 50-60Hz, full load			
	0.95	0.96	-	230Vac, 50-60Hz, full load			
	0.90	0.92	-	277Vac, 50-60Hz, full load			
THD	-	5%	10%	100-240Vac 50-60Hz , 70%-100% load			
	-	-	15%	277Vac, 50Hz/60Hz , 70%-100% load			
Max. NO. of PSUs on Circuit Breaker	B10	12	B16	19	B25	29	230Vac 100% load
	C10	19	C16	31	C25	48	

OUTPUT SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-8%	-	+8%	
Output Current set range(A) X6-060Y052L	0.67	-	1.34	
Total Output Current Ripple(pk-pk)	-	150%	200%	20MHz BW, full load & LED Load, ripple is different with difference LED load.
Startup Overshoot Current	-	5%	10%	100~277Vac & full load, LED Load
No Load Output Voltage(V) X6-060Y052L	-	-	70	
Line Regulation	-3%	-	+3%	25°C±10°C ambient temperature, input voltage changes from 100Vac to 277Vac.
Load Regulation	-5%	-	+5%	25°C±10°C ambient temperature, 230Vac input, load changes from 60% to 100%.
Turn-on Delay Time	-	-	3S	120Vac, 100% load
	-	0.5S	1S	230Vac, 100% load
Standby Power	-	-	0.5W	@230Vac/50Hz, Dimming Off

GENERAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Notes
Efficiency @120Vac X6-060Y052L	85%	86%	-	Measured at full load and 25°C ambient temperature
Efficiency @230Vac X6-060Y052L	87%	88%	-	Measured at full load and 25°C ambient temperature
Efficiency @277Vac X6-060Y052L	87%	88%	-	Measured at full load and 25°C ambient temperature
Dielectric Strength	Input-Output	-	3750Vac	5mA/60S
	Input-PE	-	1875Vac	
	Output- PE	-	1600Vac	
Grounding Resistance	-	-	0.1Ω	25A/60S at 25°C ambient temperature
Insulation Resistance	10MΩ	-	-	Input-Output, Input-PE, Output-PE, 500Vdc/60S/25°C/70%RH
MTBF	-	200000 Hours	-	230Vac/25°C, 80% load (MIL-HDBK-217F)
Lifetime	-	50000Hours	-	230Vac&100% load, 75°C case temperature,

				refer to lifetime VS Tc curve for details
Operating Temperature	-40°C		60°C	
Operating Case Temperature for Safety Tc_s	-40°C	-	+85°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+75°C	5 Years Warranty Humidity: 10% to 95% RH
Storage Temperature	-40°C	-	+85°C	Humidity: 10% to 100% RH
Dimensions (L×W×H)mm	L119*W65*H34			
Net Weight	470±50g/PCS			
Package	L424mm*W354m*H146mm; 12PCS/Ctn, Gross Weight: 6.3Kg			

Note: All specifications are tested by Cree XLamp XP-G2 and typical measured at 230Vac and 25°C unless otherwise stated.

DIMMING

Parameter		Min.	Typ.	Max.	Notes
0~10V Absolute Maximum Voltage on the Vdim (+) Pin		-	10V	-	
0~10V Source Current on Vdim(+)Pin		-	100uA	200uA	
Dimming Output Range	X6-060M052L	10% I _{max}	-	100% I _{max}	I _{max} =1.34A
Recommended Dimming Range for 0-10V		0V	-	10V	Default 0-10V/PWM dimming
PWM_in High Level		9.7V	-	10.3V	
PWM_in Low Level		0V	-	0.3V	
PWM_in Frequency Range		300Hz	-	2KHz	
PWM_in Duty Cycle		1%	-	99%	

SAFETY STANDARDS

Safety Category	Country / Territory	Standards	Whether have Certification
CCC	China	GB19510.1, GB19510.14	√
CE	Europe	EN61347-1, EN61347-2-13	√
		EN62493	√
		EN62384	√
ENEC			
CB	CB Countries	IEC61347-1, IEC61347-2-13	√
BIS	India	IS 15885(PART 2/SEC 13)	
UL	USA	UL 8750	
CUL	Canada	CSA C22.2 No.250.13	
KC	South Korea	K61347-1, K61347-2-13	
PSE	Japan	J61347-1, J61347-2-13	
SAA	Australia	AS/NZS IEC 61347.2.13	
		AS/NZS 61347.1	

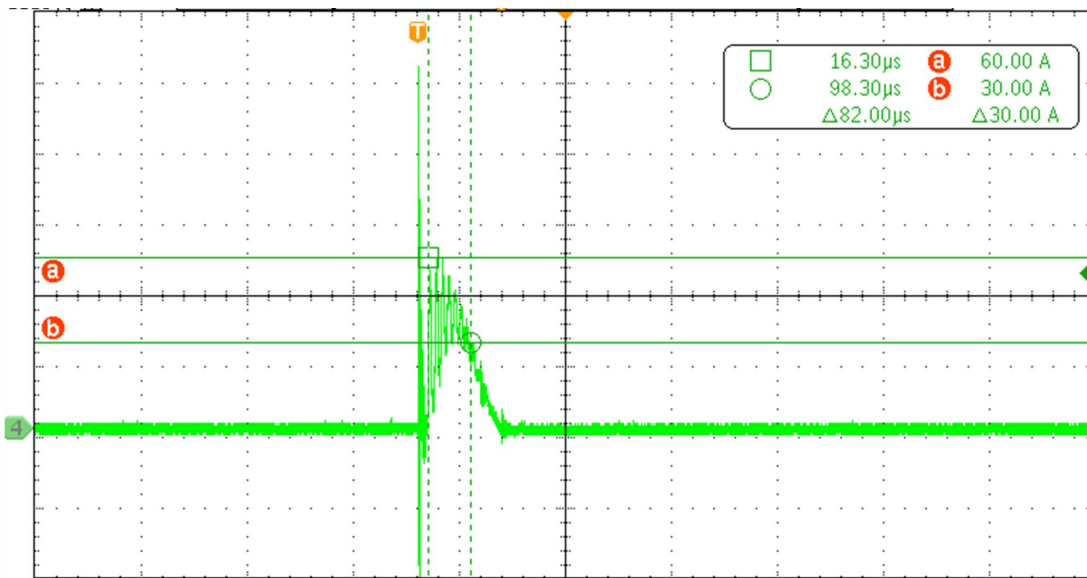
EMC COMPLIANCE

EMC Category	Country / Territory	Standards	Whether have Certification
CCC	China	GB/T 17743, GB 17625.1	√
CE	Europe	EN 55015	√
		EN 61000-3-2, EN 61000-3-3	√
		EN61000-4-2,3,4,5,6,11	√
		EN 61547	√
		KC	South Korea
		K00015	
PSE	Japan	J55015	
FCC	USA	FCC part 15	

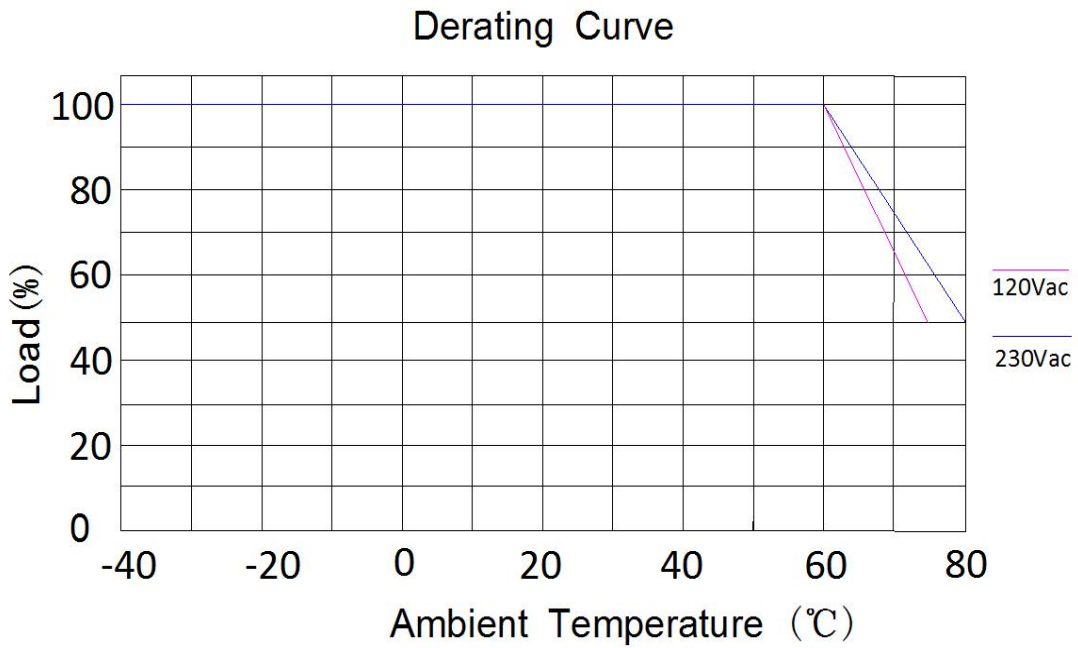
NOTE:

This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

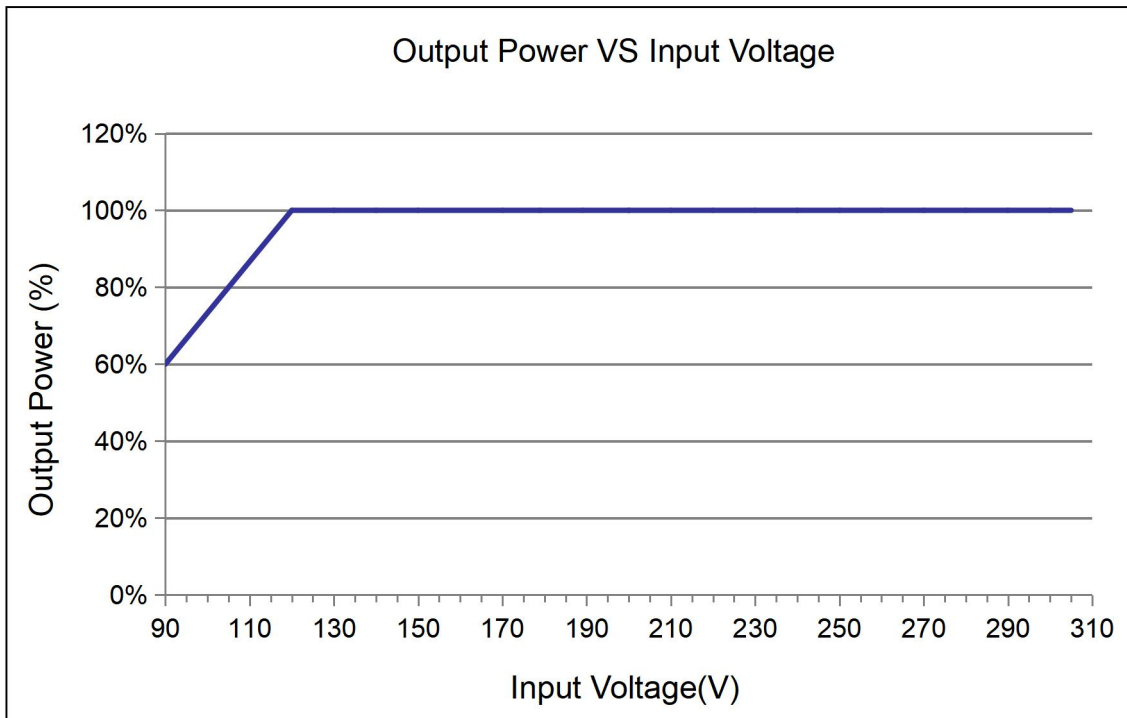
INRUSH CURRENT WAVEFORM



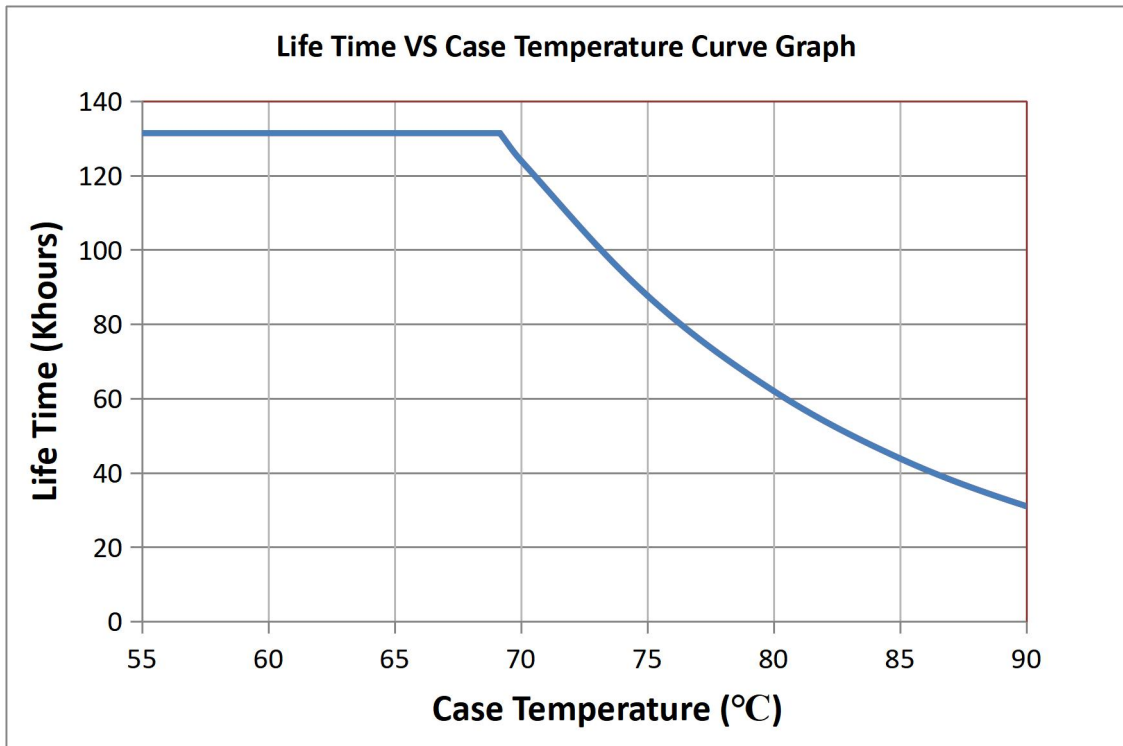
DERATING CURVE



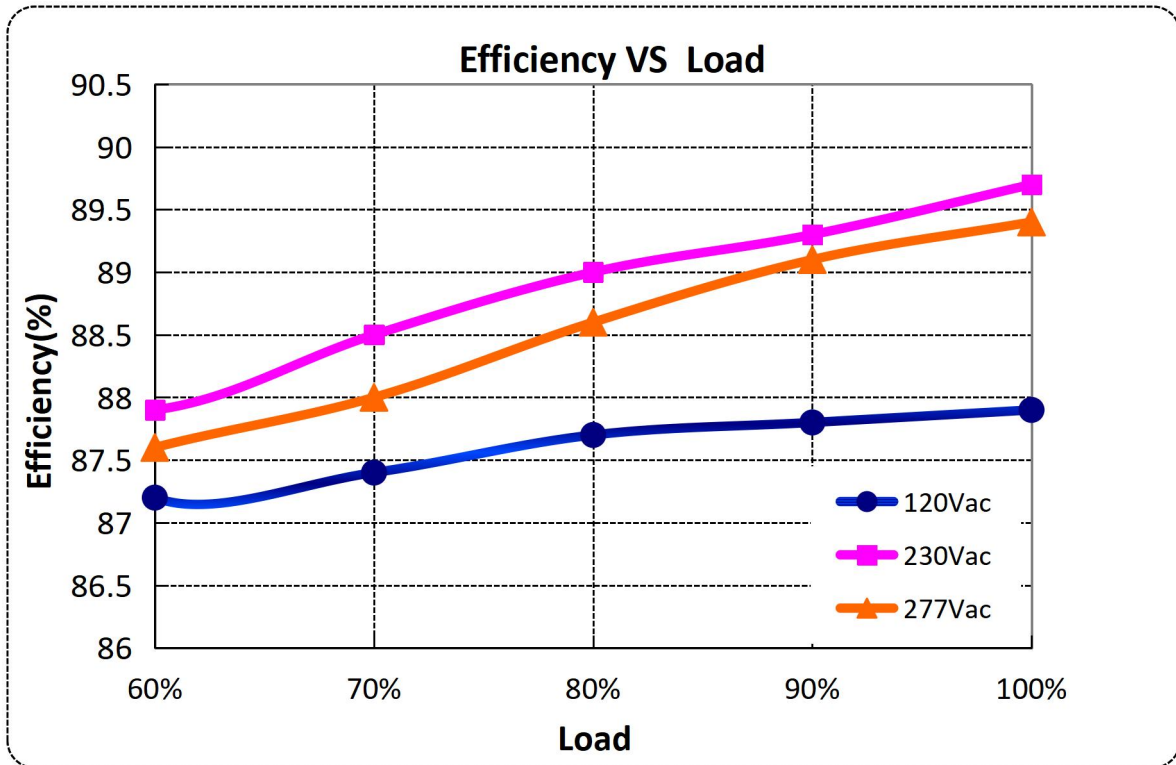
OUTPUT POWER VS INPUT VOLTAGE



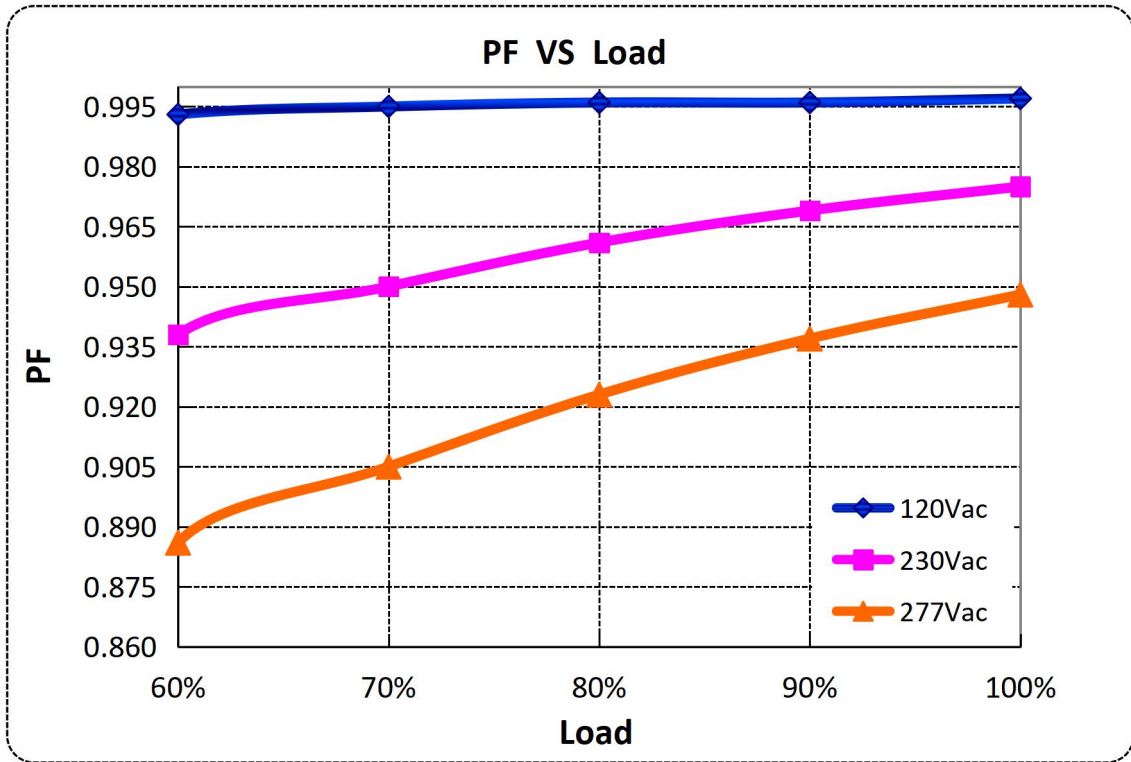
LIFETIME VS CASE TEMPERATURE



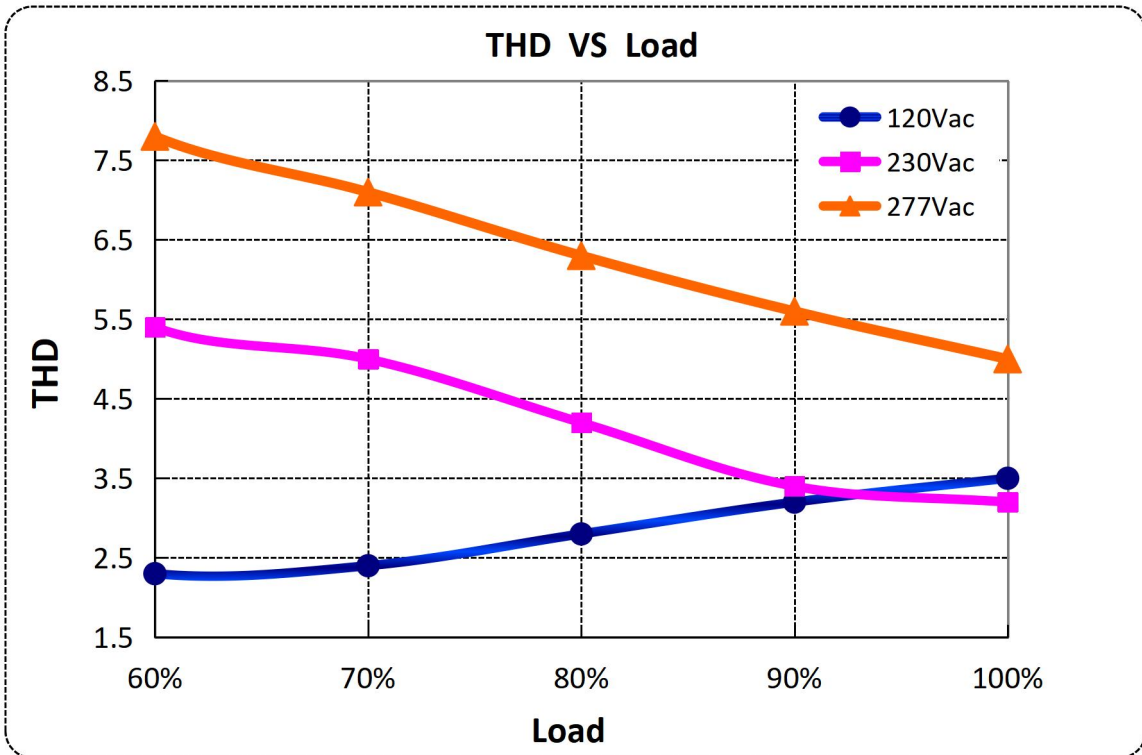
EFFICIENCY VS LOAD



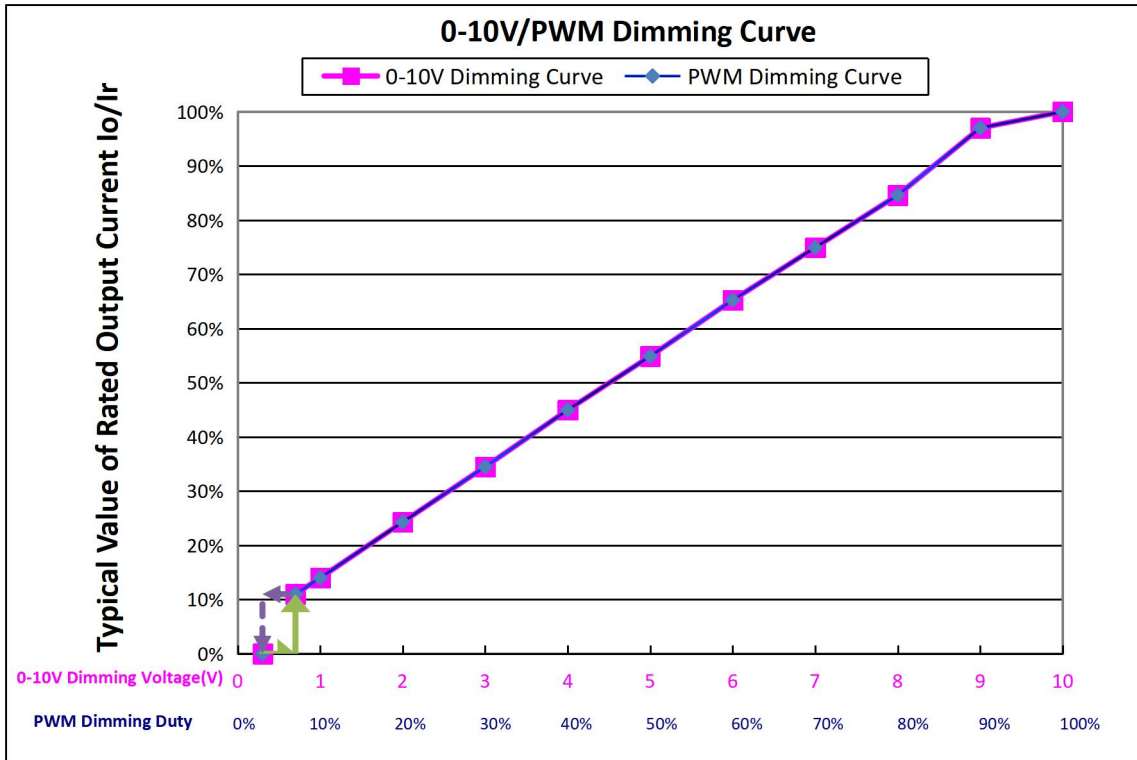
POWER FACTOR VS LOAD



TOTAL HARMONIC DISTORTION



0-10V/PWM DIMMING CURVE



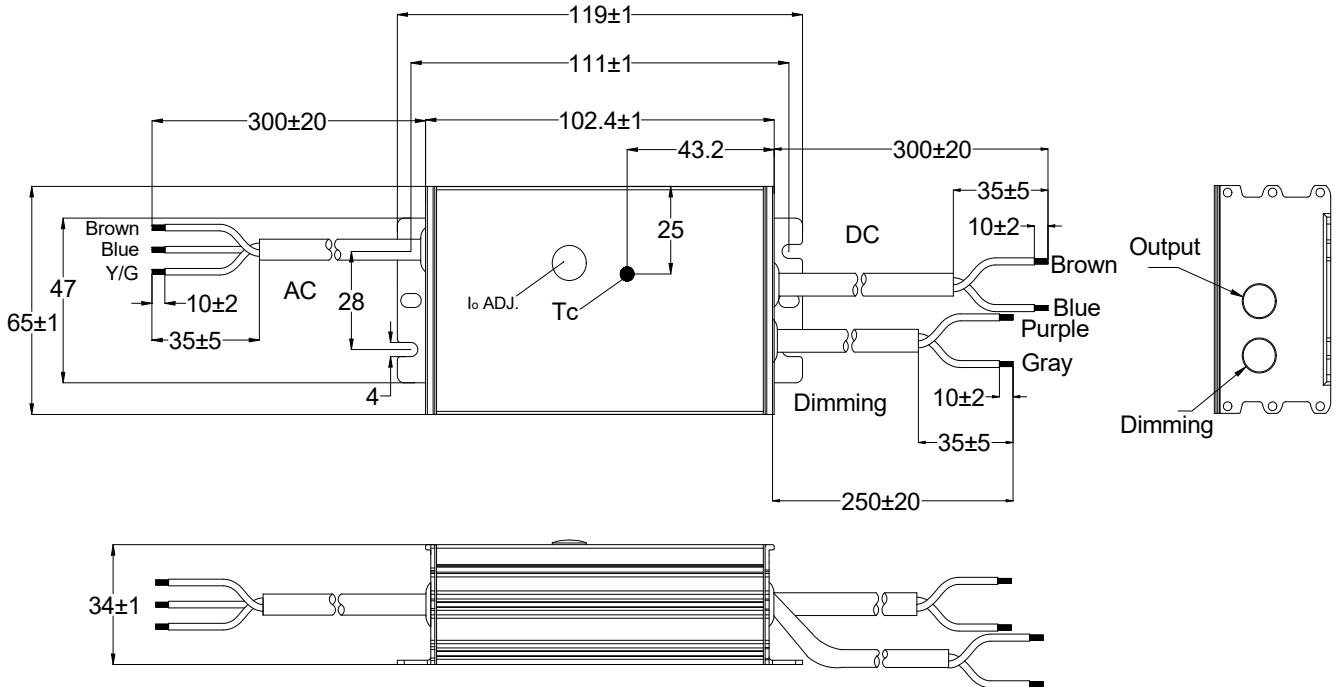
NOTE: Dimming off mode is to reduce the output voltage. After dimming off, the power output still has residual voltage. The opening voltage of the lamp should be higher than the residual voltage.

PROTECTIONS

Parameter	Notes
Short Circuit Protection	Constant current mode and auto recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.
Output over Voltage Protection	Run into protection model when output voltage exceeds limit, and return to normal when the fault.

MECHANICAL OUTLIN

X6-060M052L



Wire	Specification	Note
Input	CCC+VDE H05RN-F *3C L=300±20mm	CCC/CE
Output	CCC+VDE H05RN-F *2C L=300±20mm	CCC/CE
Dimming	UL 2733 22AWG *2C L=250±20mm	Y=M

LABEL



CASE LABEL

