

SOSEN LED Driver, Your Smart Choice

Specifications

SS-680MS Series LED Driver

Model: SS-680MS-XX

Description: 680W LED Driver

Rev.: V02

Release Date: 2024-10-09

SS-680MS Series LED Driver

SOSEN
LED DRIVER



LED DRIVER

MS Series



Features:

- Input voltage: 180-528Vac
- Efficiency up to 96%
- Dimming: 0-10V,PWM,Resistor,Timing,DALI-2
- Isolated Dim-to-Off
- Surge protection: IEC: CM: 10kV, DM: 6kV
ANSI: CM: 6kV, DM: 6kV
- AUX Power: 12V/0.3A
- Constant Lumen, Life Warning
- Lifespan Early Warning
- LED module over-temperature protection
- IP67
- Communication function with PC
- Type HL, suitable for hazardous locations
- Protections: SCP/OTP/UVF
- Warranty: 5 years



Description:

SS-680MS series product is 680W constant current LED Driver with wide O/P voltage range and adjustable O/P current by program. LED luminaries manufactures can easily design luminaries and reduce cost.

Applications:

Stadium lighting, Horticultural lighting ,High Mast Lighting, Fish lighting

Model List:

Model	AC Input Range	Max. Pout	Vout Range	Full Power Working Voltage	Iout	Iout (DALI-2)	Default Output Current	THD (Typ.)	PF (Typ.)	Eff. (Typ.)	Max.Tc
SS-680MS-145*	180-528Vac	680.4W	73-145V	108-145V	0.7-6.3A	3.49-6.3A	4.69A	5%	0.95	94.5%	90°C
SS-680MS-200*	180-528Vac	680W	100-200V	150-200V	0.7-4.53A	2.51-4.53A	3.4A	5%	0.95	95.0%	90°C
SS-680MS-290*	180-528Vac	680W	145-290V	210-290V	0.35-3.23A	1.8-3.23A	2.34A	5%	0.95	95.5%	90°C
SS-680MS-400*	180-528Vac	680W	200-400V	300-400V	0.35-2.26A	1.25-2.26A	1.7A	5%	0.95	96.0%	90°C

Note:

- Default Tested: at 347Vac, full load, Ta 25°C;
- The performance of the LED Driver can be guaranteed within the full power Vo range. The voltage lower than full power Vo range, it is need to test the performance with the LED module.

1/27

SS-680MS Series LED Driver

“★” Means Additional Function

“★”	DALI (suffix:D)	AUX 12V (suffix:H)	NTC (suffix:N)	Timing	0-10V/PWM Dim /Resistor (suffix:B)	Output- Ground	Remark
BH		✓		✓	✓		
BHN		✓	✓	✓	✓		
DH	✓	✓					
DHN	✓	✓	✓				
BH-G		✓		✓	✓	✓	
BHN-G		✓	✓	✓	✓	✓	
DH-G	✓	✓				✓	
DHN-G	✓	✓	✓			✓	

Input Characteristics:

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	200Vac		277Vac	<Ta:50°C
	277Vac		480Vac	<Ta:55°C
AC Input Range	180Vac		528Vac	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			4A	200Vac, Full load
Max Input Power			800W	200Vac, Full load
Max Inrush Current(220Vac)			12A	Cold start
Max Inrush Current(347Vac)			19A	Cold start
Max Inrush Current(480Vac)			25A	Cold start
Standby Power			0.5W	230Vac/50Hz, Dim-off
Power Factor	0.95	0.97		347Vac/60Hz, Full load
	0.90			200-480Vac, 80-100% load
THD		5%	10%	347Vac/60Hz, Full load
			20%	200-480Vac, 80-100% load

SS-680MS Series LED Driver

O/P Characteristics(SS-680MS-145*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	73V		145V	Power derated @73-108V
Rated O/P Voltage	108V		145V	Po=Vo*Io=680.4W, Full load
Rated O/P Current	4.69A		6.3A	4.69A for 145V,6.3A for 108V
Adj. O/P Current (AOC)Range	0.7A		6.3A	Adjustable by program
	3.49A		6.3A	DALI-2
No Load Voltage			160V	
Efficiency @220Vac	92.5%	93.5%		O/P 145V/4.69A
Efficiency @347Vac	93.5%	94.5%		O/P 145V/4.69A
Efficiency @480Vac	94.5%	95.0%		O/P 145V/4.69A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	200-480Vac,Full load
			0.7S	200-480Vac,DALI-2,Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc:0°C~90°C
OTP	90°C	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-680MS Series LED Driver

O/P Characteristics(SS-680MS-200*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	100V		200V	Power derated @100-150V
Rated O/P Voltage	150V		200V	$P_o = V_o \cdot I_o = 680W$, Full load
Rated O/P Current	3.4A		4.53A	3.4A for 200V, 4.53A for 150V
Adj. O/P Current (AOC) Range	0.7A		4.53A	Adjustable by program
	2.51A		4.53A	DALI-2
No Load Voltage			220V	
Efficiency @220Vac	93.0%	94.0%		O/P 200V/3.4A
Efficiency @347Vac	94.0%	95.0%		O/P 200V/3.4A
Efficiency @480Vac	95.0%	95.5%		O/P 200V/3.4A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	200-480Vac, Full load
			0.7S	200-480Vac, DALI-2, Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc: 0°C~90°C
OTP	90°C	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-680MS Series LED Driver

O/P Characteristics(SS-680MS-290*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	145V		290V	Power derated @145-210V
Rated O/P Voltage	210V		290V	$P_o = V_o \cdot I_o = 680W$, Full load
Rated O/P Current	2.34A		3.23A	2.34A for 290V, 3.23A for 210V
Adj. O/P Current (AOC) Range	0.35A		3.23A	Adjustable by program
	1.8A		3.23A	DALI-2
No Load Voltage			310V	
Efficiency @220Vac	93.0%	94.0%		O/P 290V/2.34A
Efficiency @347Vac	95.0%	95.5%		O/P 290V/2.34A
Efficiency @480Vac	95.5%	96.0%		O/P 290V/2.34A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	200-480Vac, Full load
			0.7S	200-480Vac, DALI-2, Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc: 0°C~90°C
OTP	90°C	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-680MS Series LED Driver

O/P Characteristics(SS-680MS-400*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	200V		400V	Power derated @200-300V
Rated O/P Voltage	300V		400V	$P_o = V_o \cdot I_o = 680W$, Full load
Rated O/P Current	1.7A		2.26A	1.7A for 400V, 2.26A for 300V
Adj. O/P Current (AOC) Range	0.35A		2.26A	Adjustable by program
	1.25A		2.26A	DALI-2
No Load Voltage			440V	
Efficiency @220Vac	94.0%	95.0%		O/P 400V/1.7A
Efficiency @347Vac	95.0%	96.0%		O/P 400V/1.7A
Efficiency @480Vac	95.0%	96.5%		O/P 400V/1.7A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	200-480Vac, Full load
			0.7S	200-480Vac, DALI-2, Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc: 0°C~90°C
OTP	90°C	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-680MS Series LED Driver

Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
AUX Power	O/P Voltage	10.8V	12V	13.2V	
	O/P Current			300mA	Operate max 15min at 450mA
0-10V Dimming (Optional)	Dim Vmax	0V		12V	Negative dimming by programming
	Dim Range	10%loset		100%loset	DIM+ source current 110uA .
	Rec.Dim Range	0V		10V	Dimming prohibits reverse connection.
PWM Dimming (Optional)	PWM High	9.8V		10.2V	Negative dimming by programming
	PWM Low	0V		0.3V	DIM+ source current 110uA .
	Frequency	1KHz		2KHz	Dimming prohibits reverse connection.
	PWM Duty	0%		100%	
Resistor Dimming (Optional)	Resistance	0Kohm		100Kohm	Not available with negative logic
	Dim Range	10%lomax		100%loset	DIM+ source current 110uA .
Dim to Off	Dim-off	7%	8%	9%	By DC voltage, PWM, resistance dimming ratio
	Dim-on	8%	9%	10%	By DC voltage, PWM, resistance dimming ratio
DALI Dimming Level		1-170(10%)		254(100%)	Logarithmic dimming curve
Timing Curve(Optional)		By programming			DALI models does not support this function
DALI Dimming(Optional)		Meet DALI-2			
Constant Lumen(Optional)		By programming			DALI models does not support this function
Life Warning(Optional)		By programming			DALI models does not support this function
Life Time(Tc≤75°C)		50,000 hours			80% Load
MTBF		205,000 hours			347Vac, Full load, Ta=25°C (MIL-HDBK-217F)
IP Grade		IP67			
Tc		90°C			
Warranty		5 years			Tc: 75°C
Net Weight		2780g			
Dimension		272mm*125mm*44.5mm			L x W x H

NOTE: 1. All the parameters above are tested Ta 25°C and LED load, unless specified.

2. When using resistor dimming (parallel connection of dimming wires), if the number of parallels is: N, the dimming resistor should be realized 0-100% dimming range, resistance value: 91KΩ/N.

7/27

SS-680MS Series LED Driver

Environmental Requirements

Parameter	Min.	Typ.	Max.	Remark
Operating Temperature(Tcase)	-40°C	25°C	+90°C	
Storage Temperature	-40°C	25°C	+90°C	
Operation Humidity	10%RH		90%RH	
Storage Humidity	5%RH		95%RH	
Altitude	-65m		4000m	

Safety and EMI/EMS Standards

Certification	Standard	Status	Remark
UL/cUL	UL8750	✓	
ENEC	EN 61347-1:2015 EN 61347-2-13:2014 EN 61347-2-13:2014/A1:2017	✓	
UKCA	EN 61347-1:2015+A1:2021 EN 61347-2-13:2014+A1:2017 EN 62493:2015 BS EN 61347-1:2015+A1:2021 BS EN 61347-2-13:2014+A1:2017 BS EN 62493:2015	✓	
RCM	AS/NZS61347.2.13	✓	
CCC	GB 19510.14-2009	✓	
CE	EN 61347-2-13:2014 EN61347-1:2008+A1:2011+A2:2013	✓	

Safety and EMI/EMS Standards

EMI/EMS	Criterion	Remark
Conduction Emission	EN55015:2013+A1:2015 FCC Part 15 Subpart B; ANSI C63.4:2014	Class B
Radiation Emission	EN55015:2013+A1:2015 FCC Part 15 Subpart B; ANSI C63.4:2014	Class B
Harmonic Current Emissions	IEC/EN 61000-3-2	Class C
Surge	IEC/EN 61000-4-5	DM: 6kV,CM: 10kV,Criterion B
	ANSI/C82.77-5-2017	DM: 6kV,CM: 6kV,Criterion B
Ring Wave	IEC/EN 61000-4-12;ANSI/C82.77-5-2017	DM: 6kV,CM: 6kV,Criterion B

SS-680MS Series LED Driver

Safety Test Items:

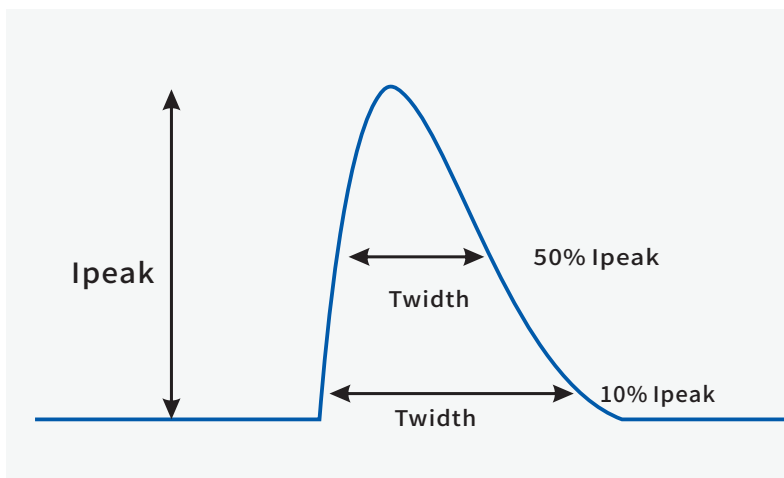
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	ENEC Insulation Requirements	CCC Insulation Requirements	
Input-Case	2000Vac	1500Vac	1875Vac	Basic insulation
Input-Dim	2000Vac	3000Vac	3750Vac	Reinforced insulation
Dim-Case	500Vac	500Vac	500Vac	Basic insulation
Insulation Resistance	$\geq 10M\Omega$			Input-O/P, Test voltage: 500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Leakage Current	$\leq 0.75mA$			480Vac

NOTE:

1. SOSEN warrants the LED Driver itself complies with EMC standard. However, LED Driver's EMC should be re-checked when integrated into lighting systems due to unexpected interference as component.
2. Please short (ACL and ACN), (V+ and V-), (Dim+ and Dim - and Vaux+) when Hi-pot test.
3. The CCC withstand voltage test needs to disconnect the built-in lightning protection tube. According to the IEC 60598-1:14 standard section 10.2, the “built-in lightning protection tube” can be marked on the nameplate to disconnect the discharge tube on testing.

Performance Curves:

Input Inrush Current

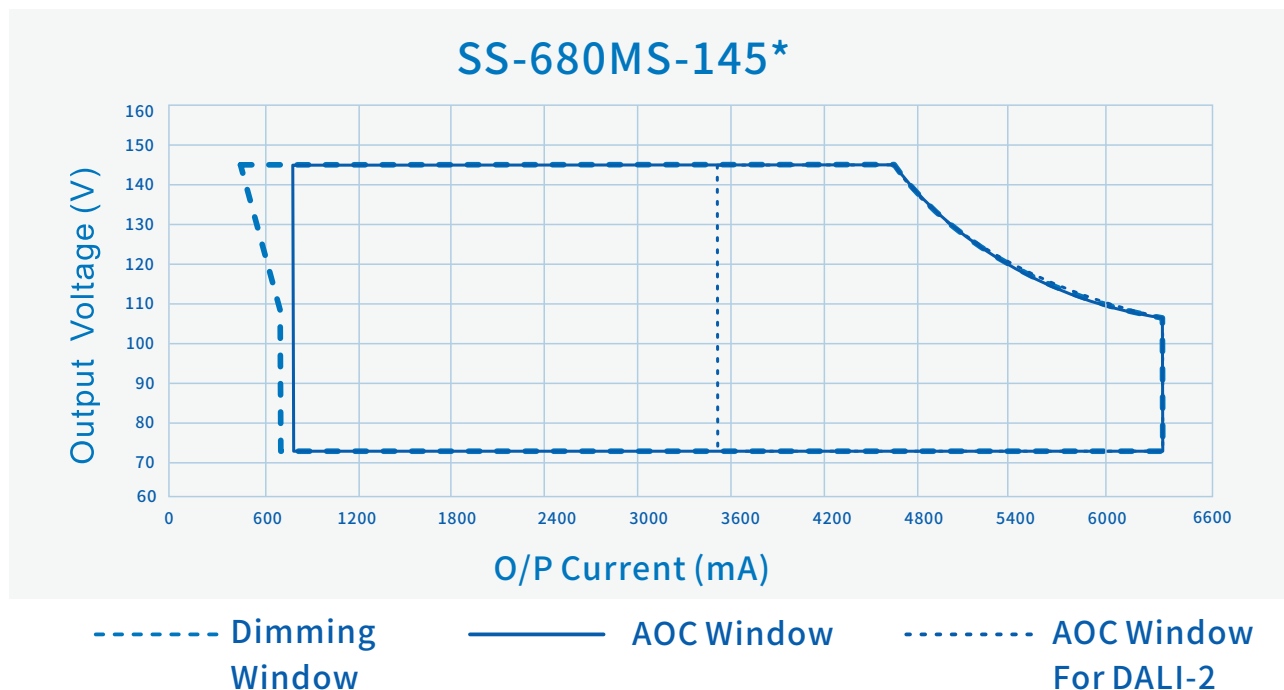


Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
220Vac	12A	10mS	3mS
347Vac	19A	10.5mS	3.5mS
400Vac	22A	11mS	3.7mS
480Vac	25A	12.5mS	4mS

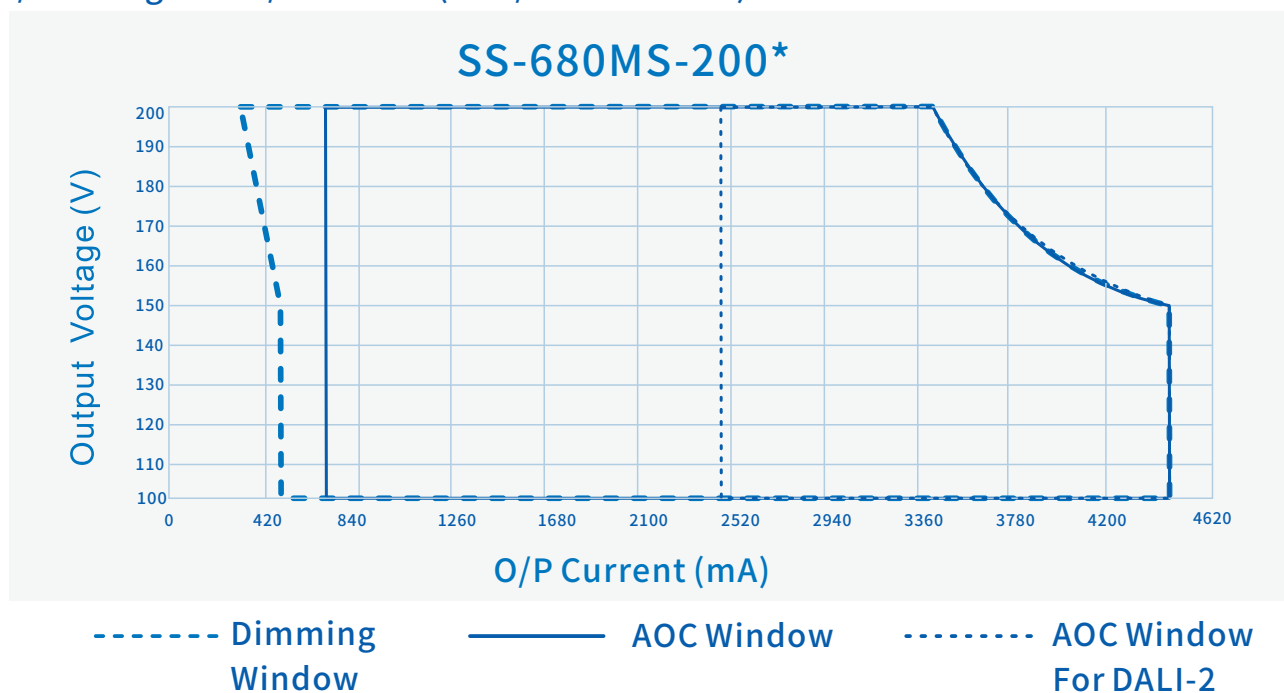
SS-680MS Series LED Driver

Performance Curves:

O/P Voltage Vs. O/P Current(Dim/AOC Window)



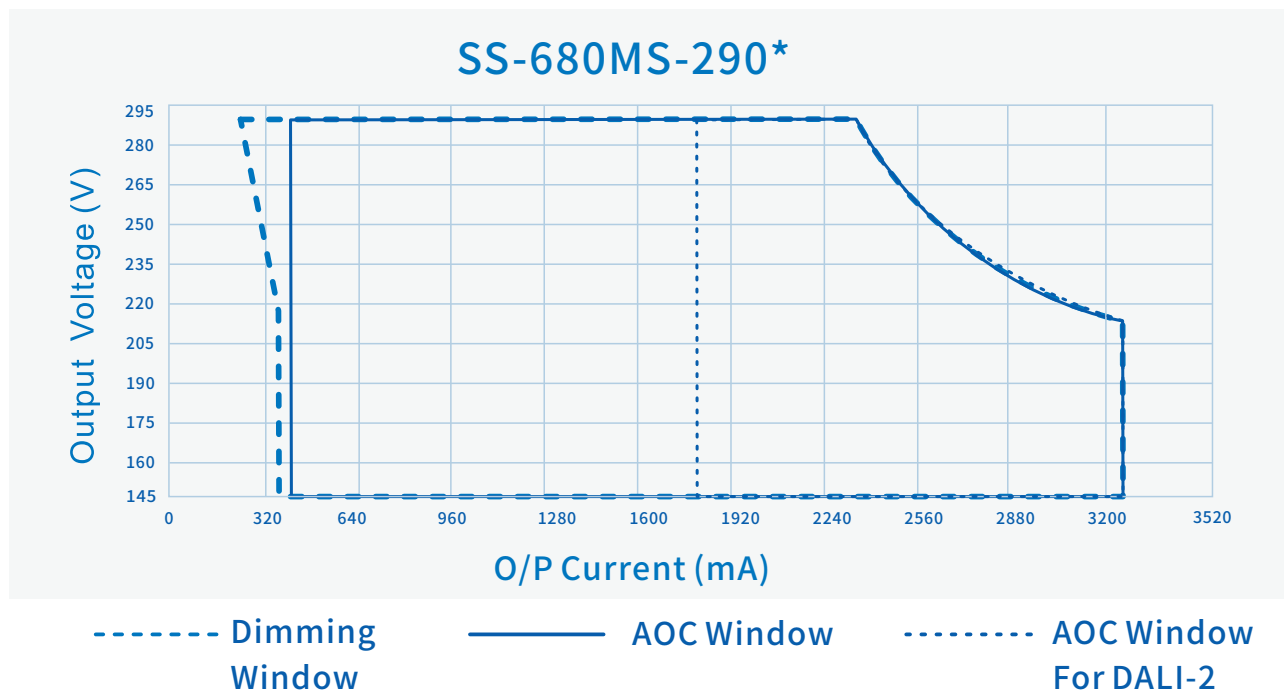
O/P Voltage Vs. O/P Current(Dim/AOC Window)



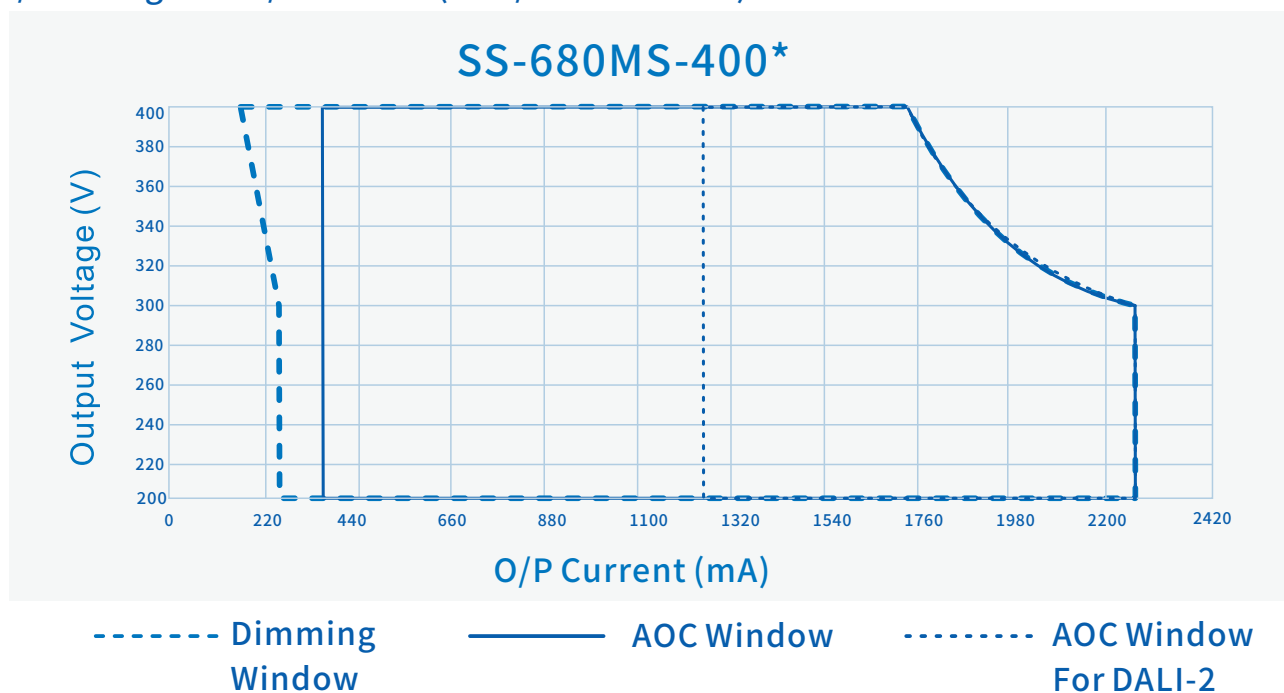
SS-680MS Series LED Driver

Performance Curves:

O/P Voltage Vs. O/P Current(Dim/AOC Window)



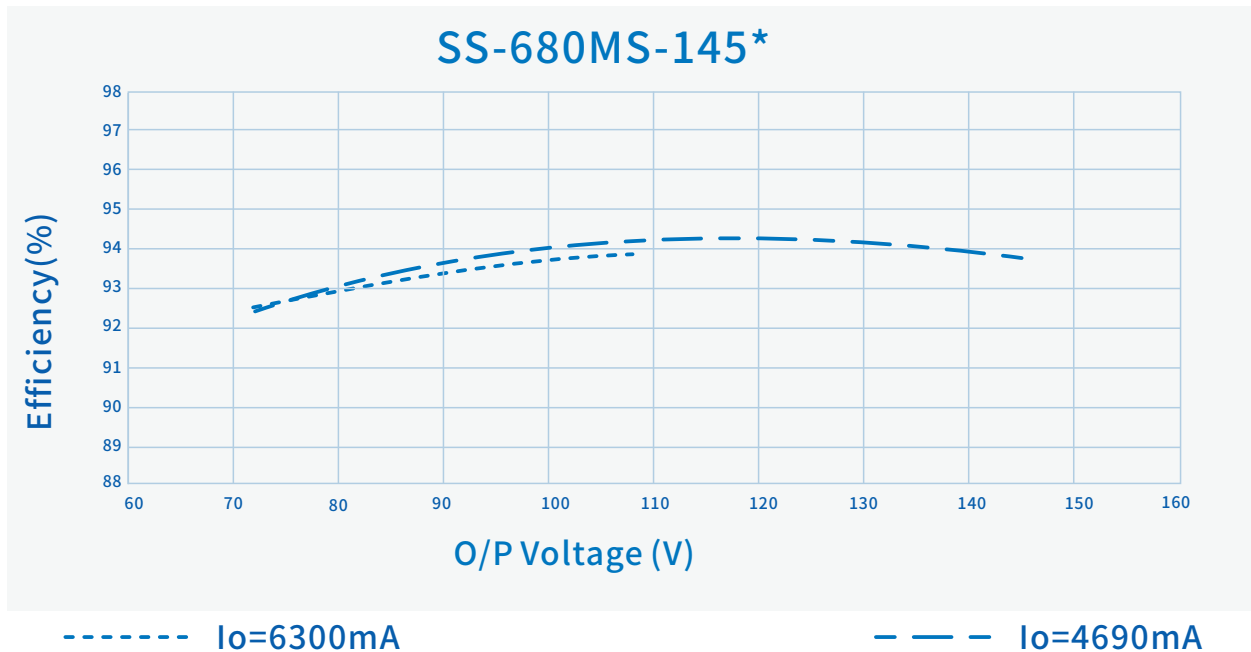
O/P Voltage Vs. O/P Current(Dim/AOC Window)



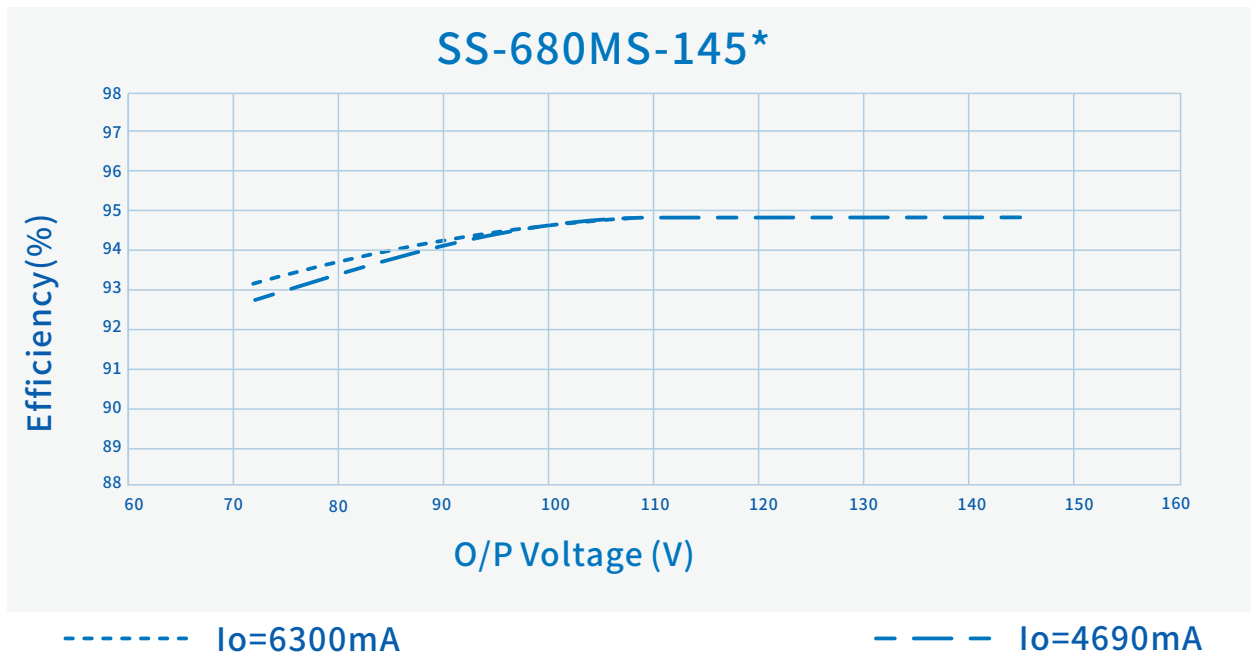
SS-680MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



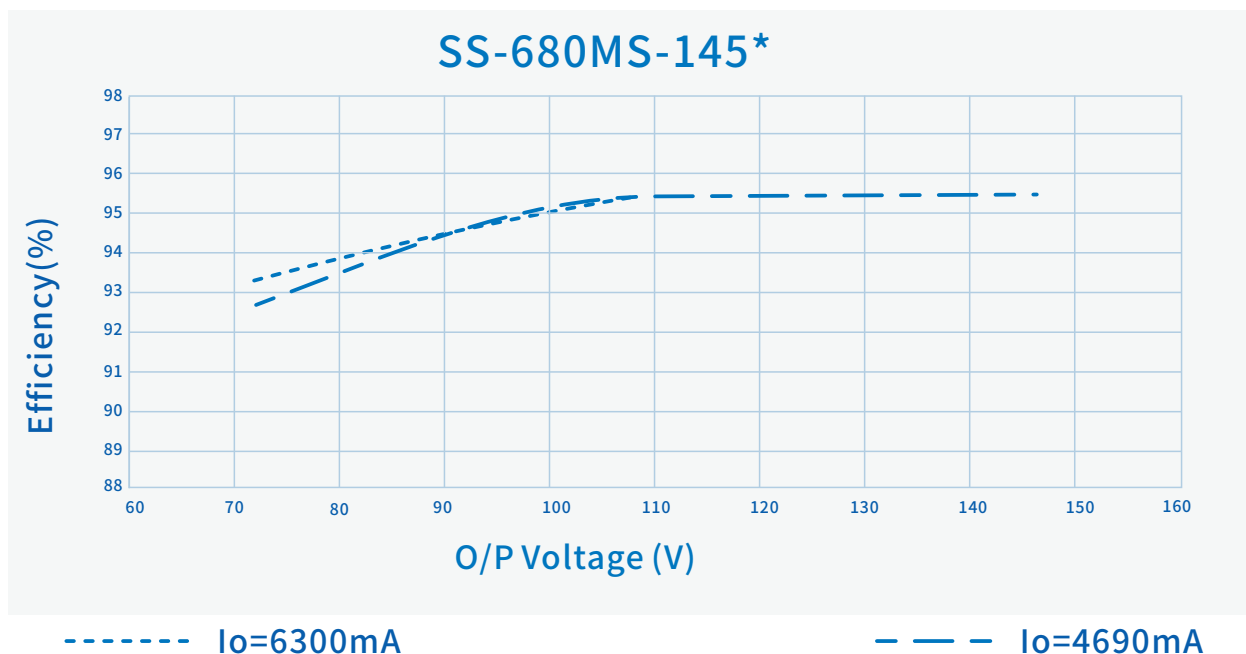
Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



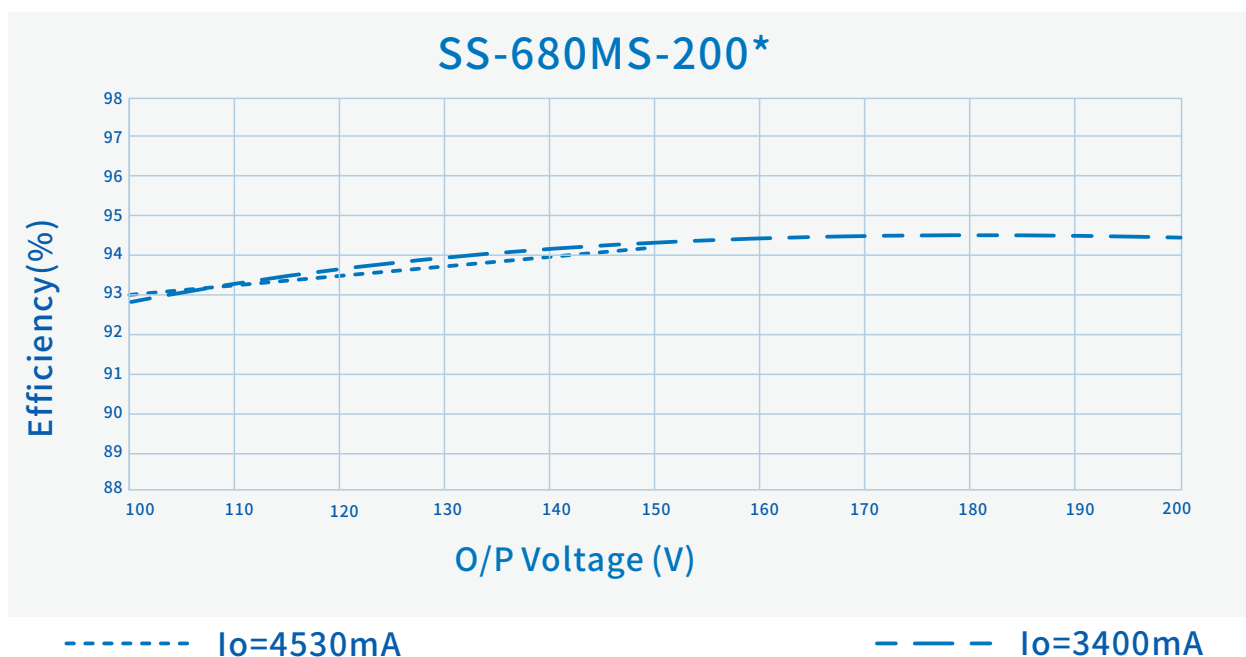
SS-680MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



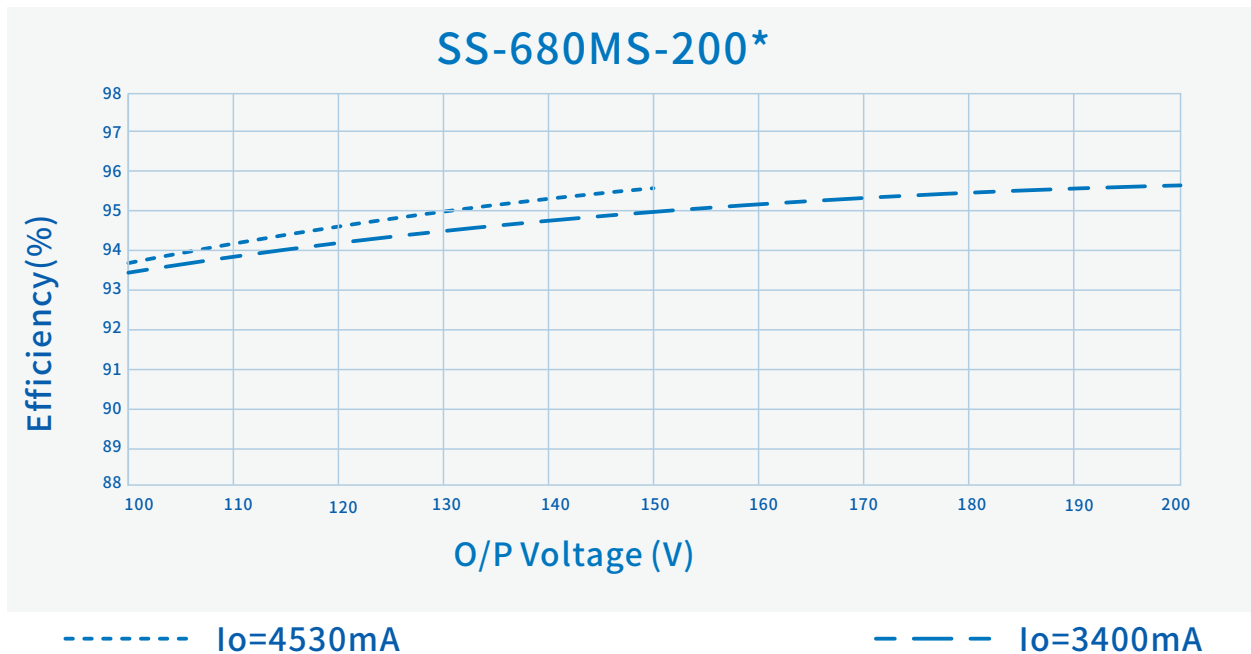
Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



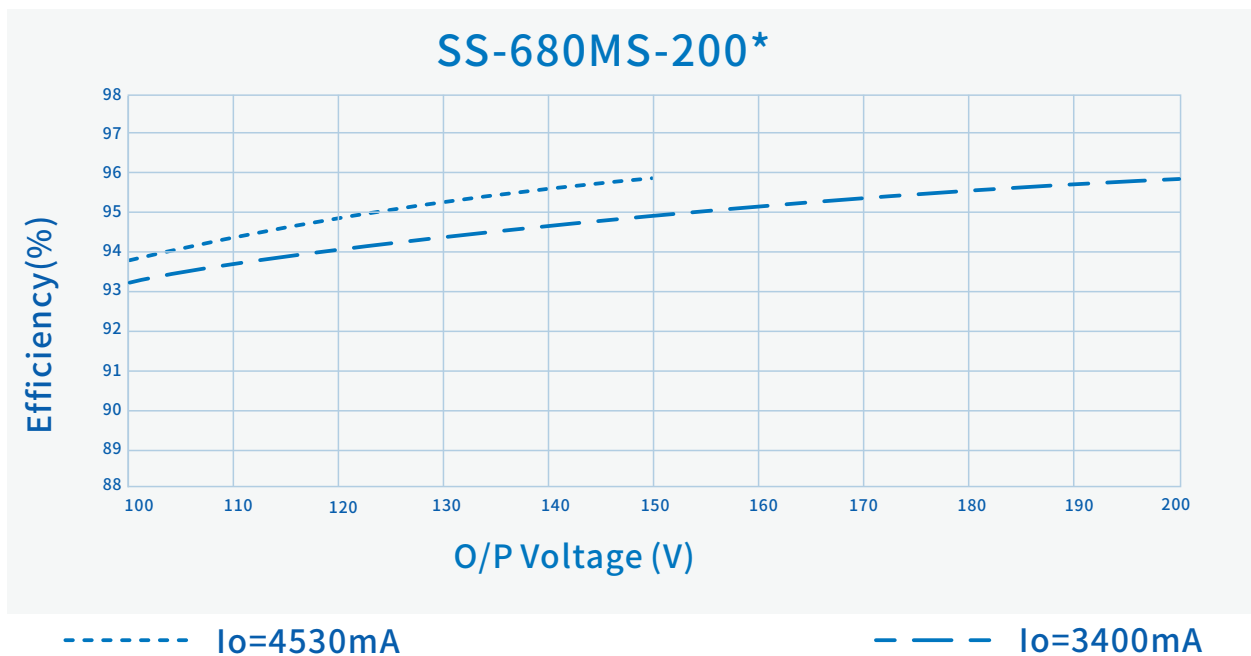
SS-680MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



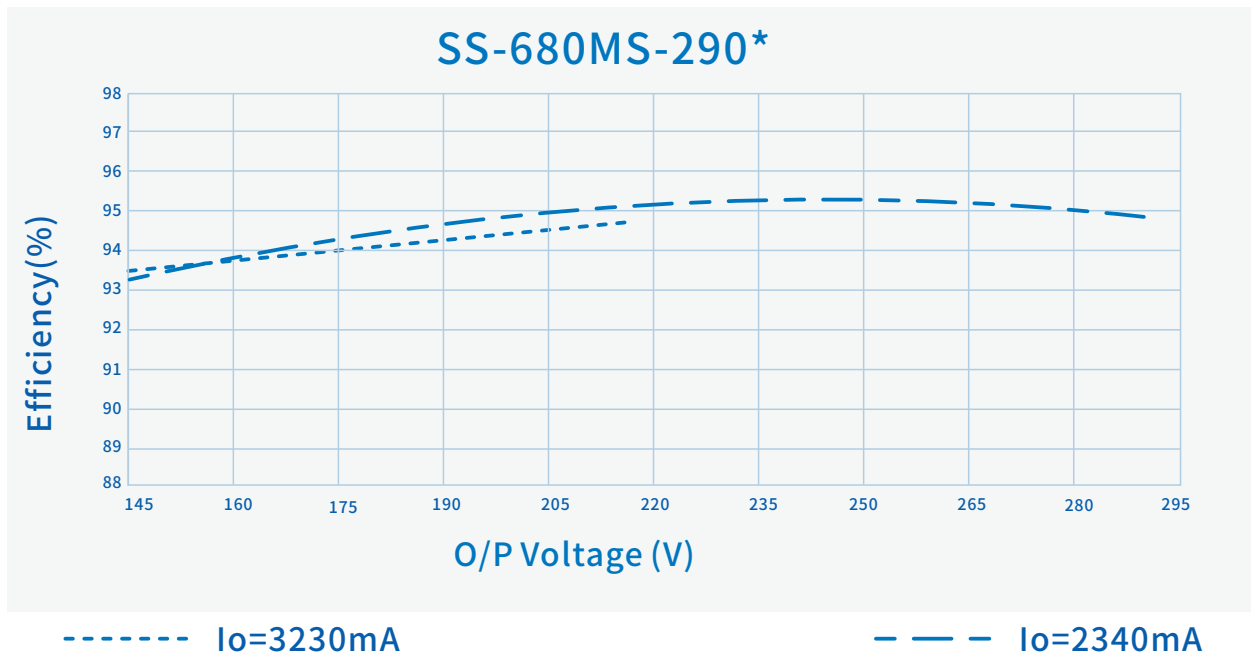
Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



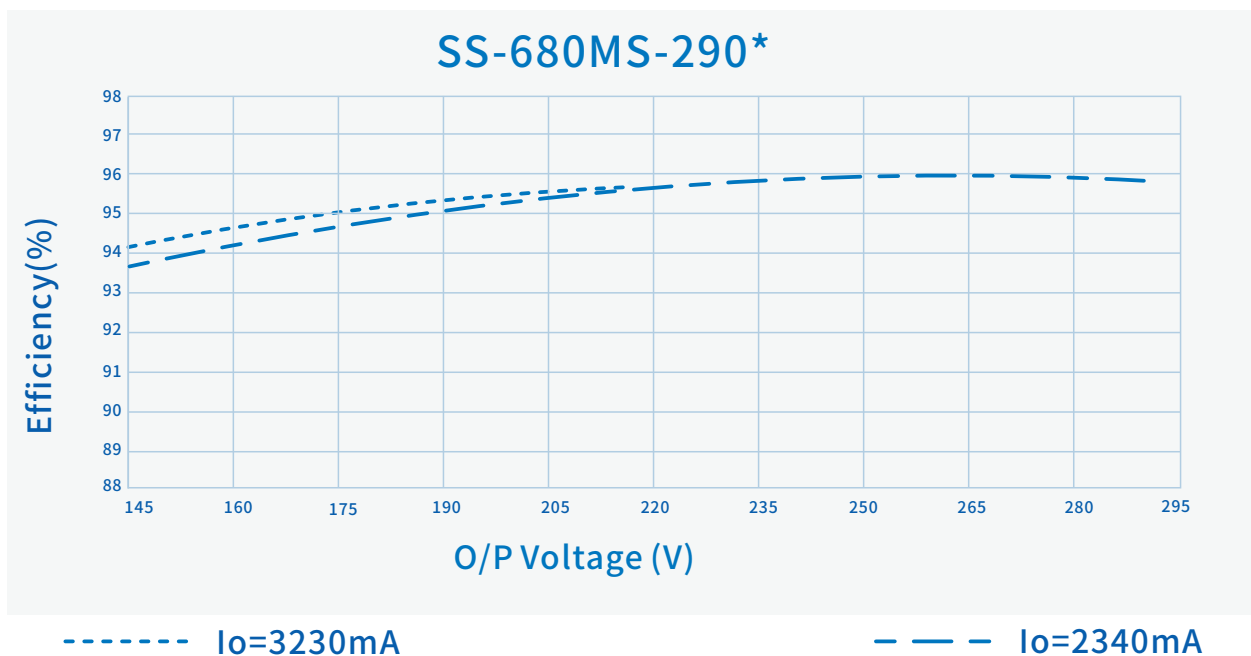
SS-680MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



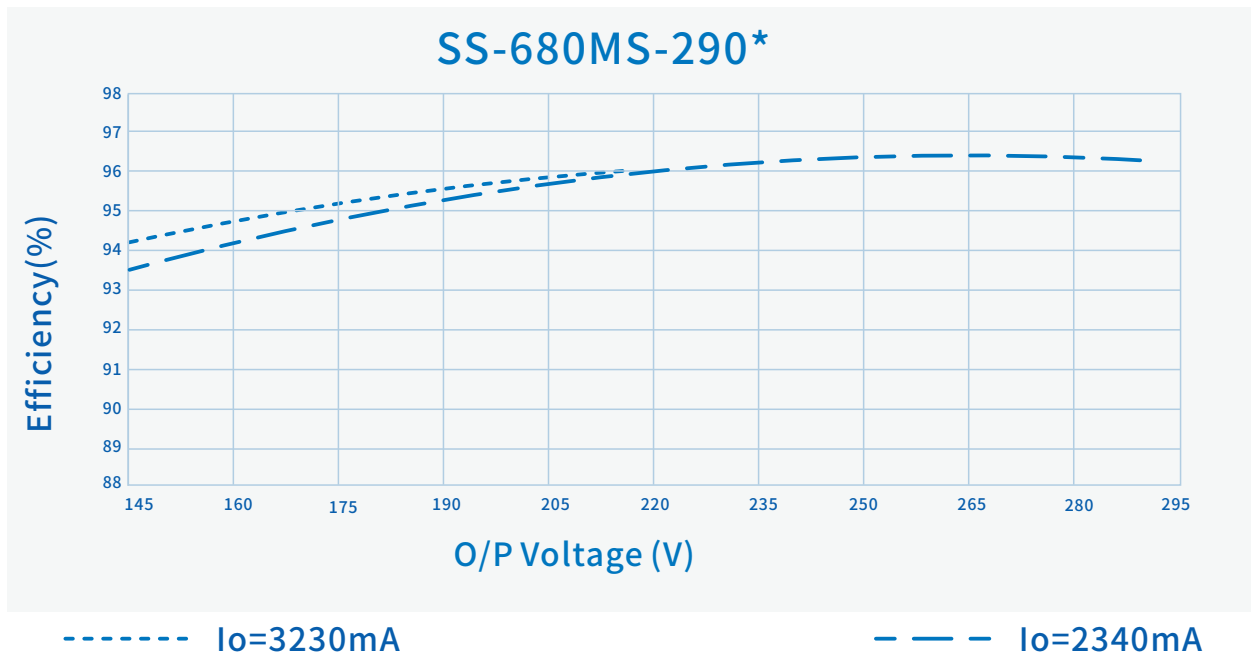
Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



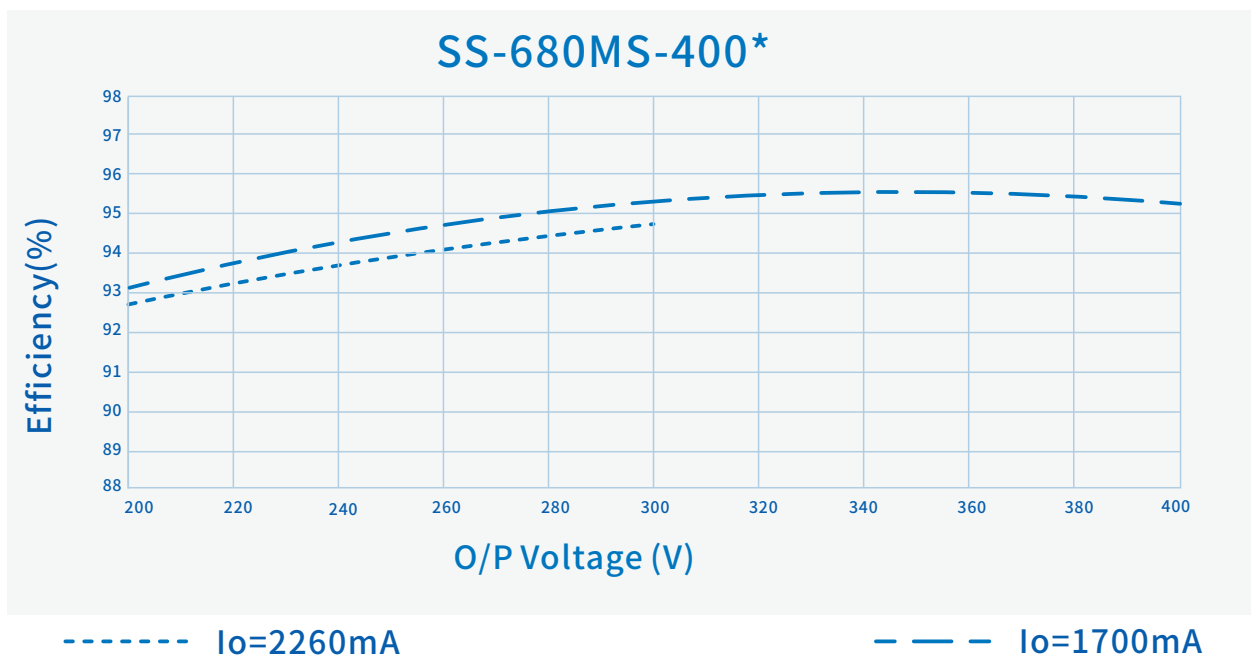
SS-680MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



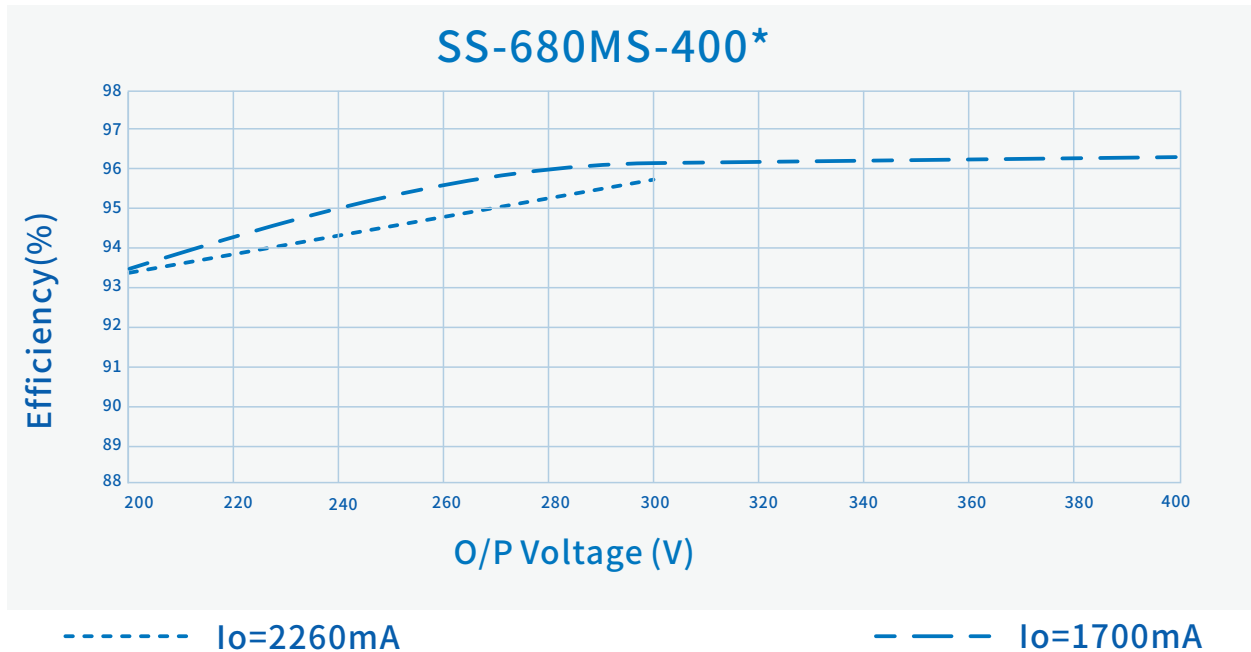
Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



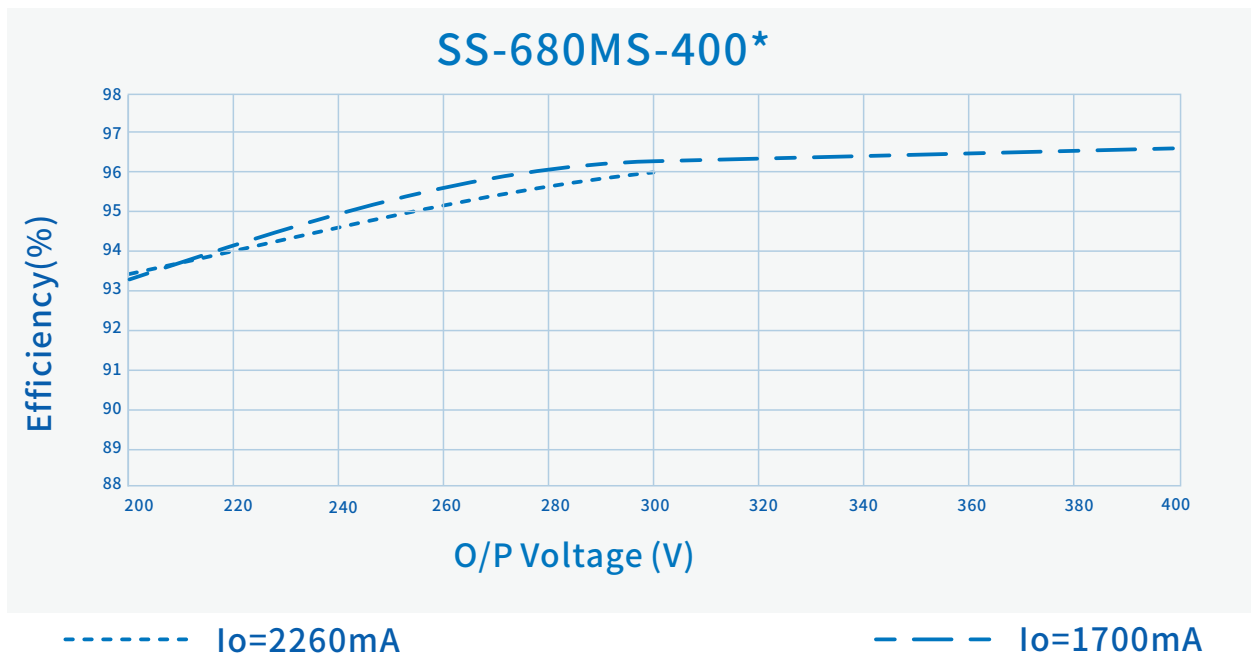
SS-680MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



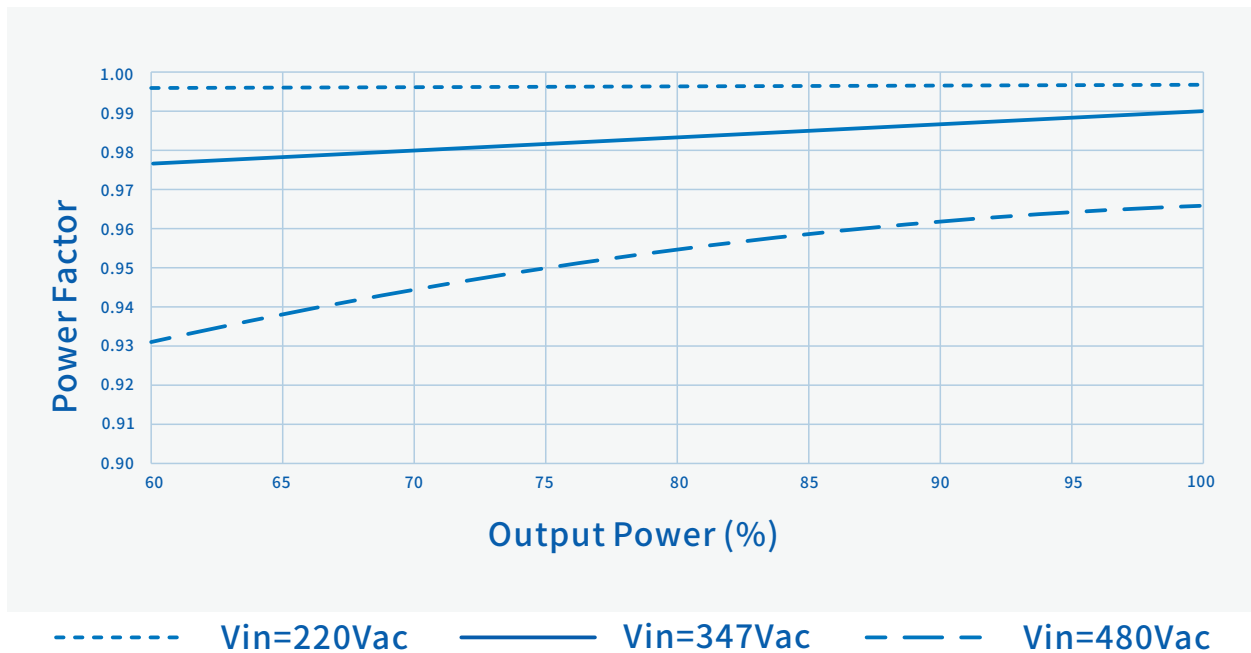
Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



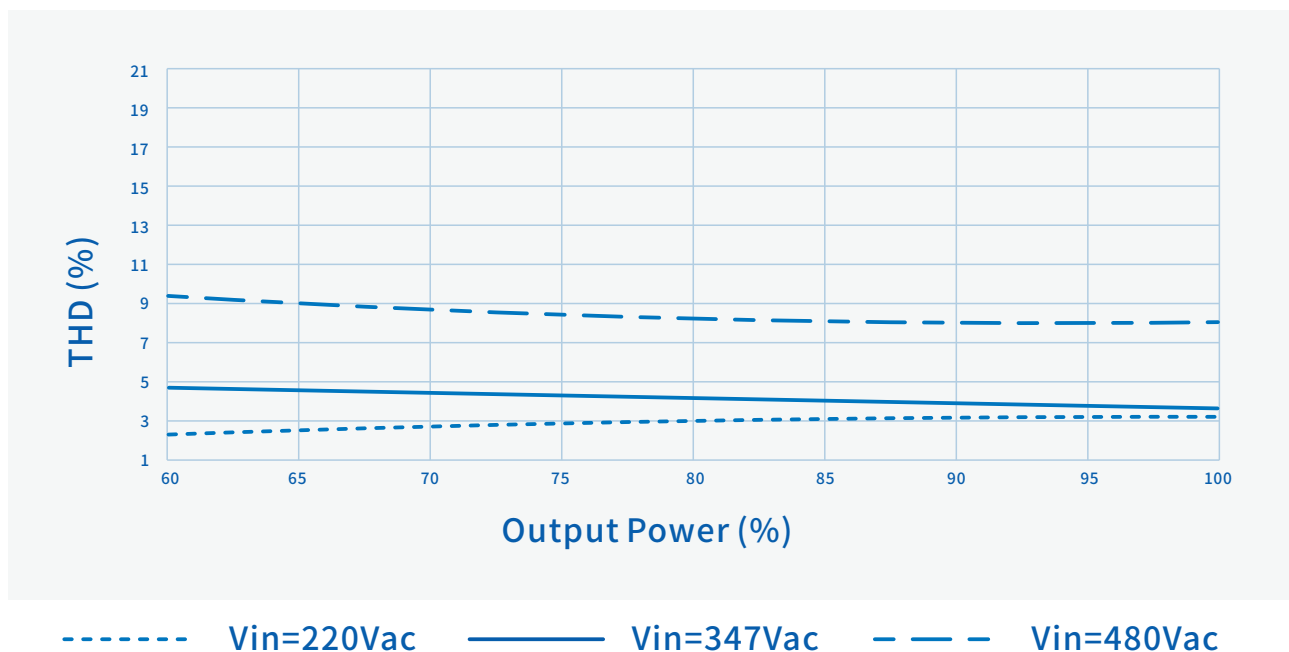
SS-680MS Series LED Driver

Performance Curves(SS-680MS-145*):

Power Factor Vs. O/P Power



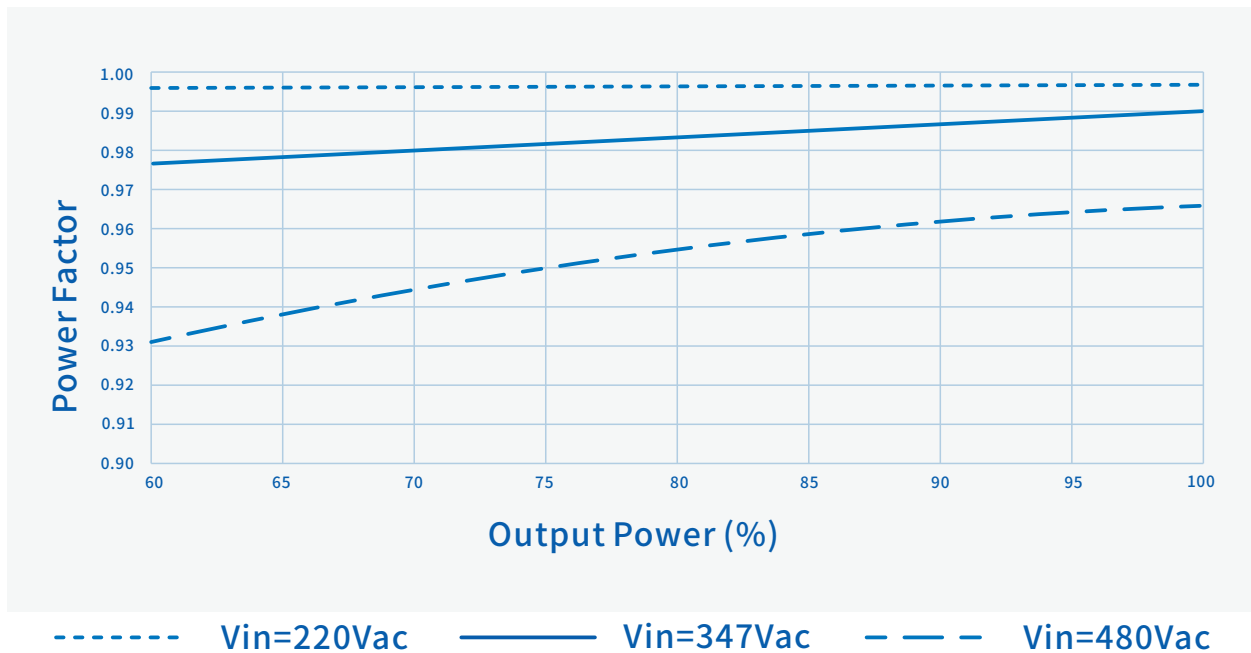
THD Vs. O/P Power



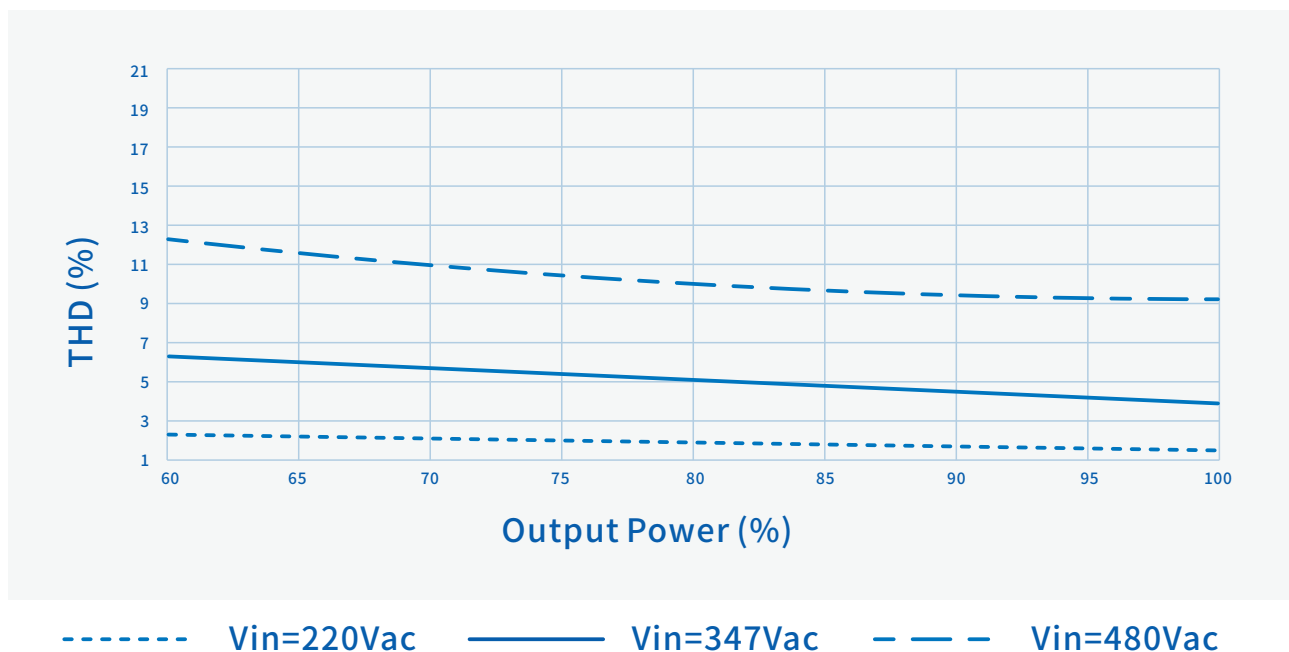
SS-680MS Series LED Driver

Performance Curves(SS-680MS-200*):

Power Factor Vs. O/P Power



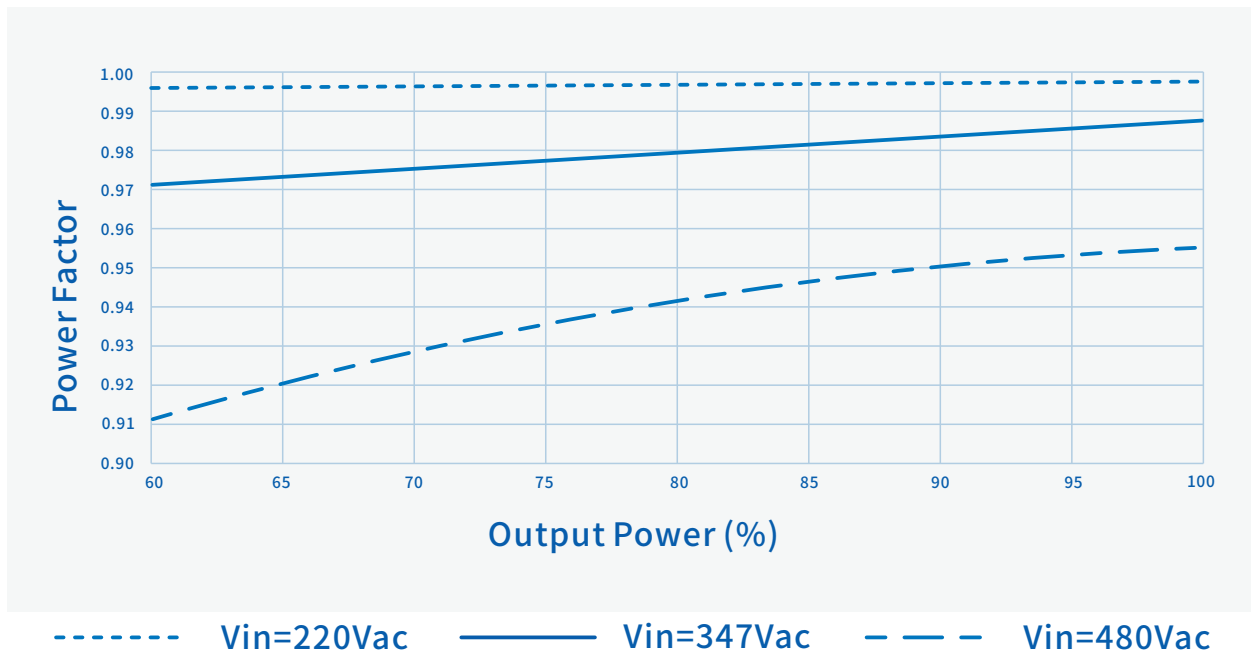
THD Vs. O/P Power



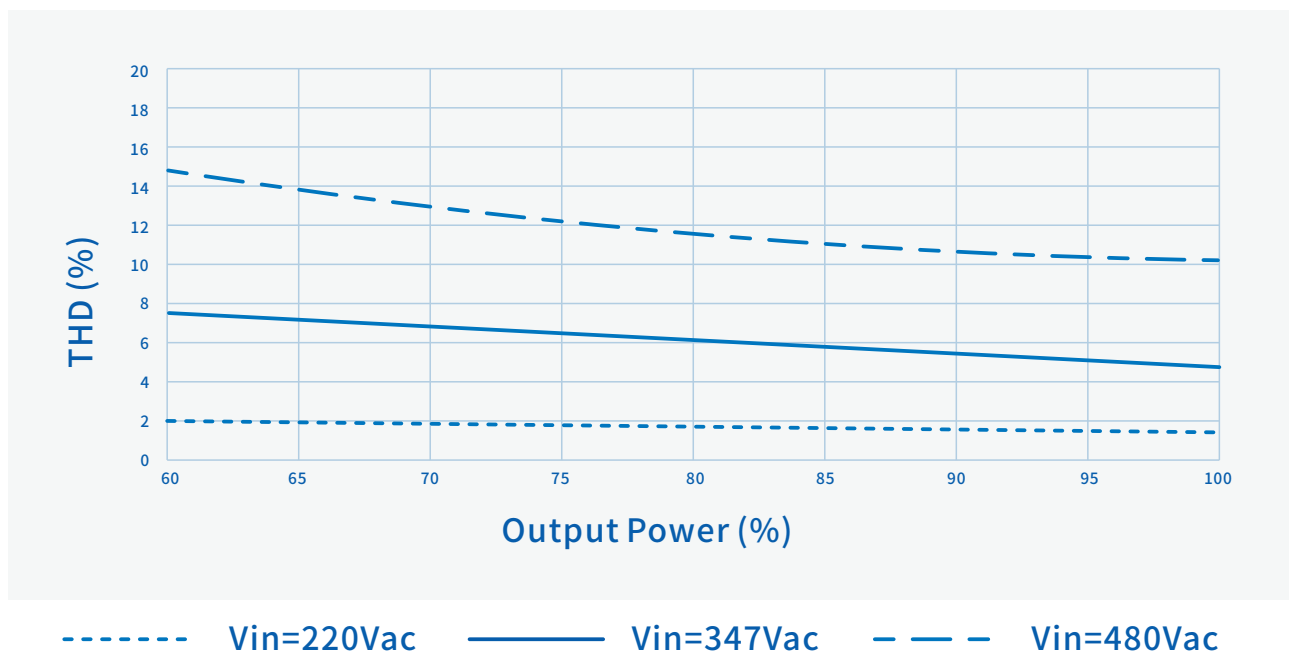
SS-680MS Series LED Driver

Performance Curves(SS-680MS-290*):

Power Factor Vs. O/P Power



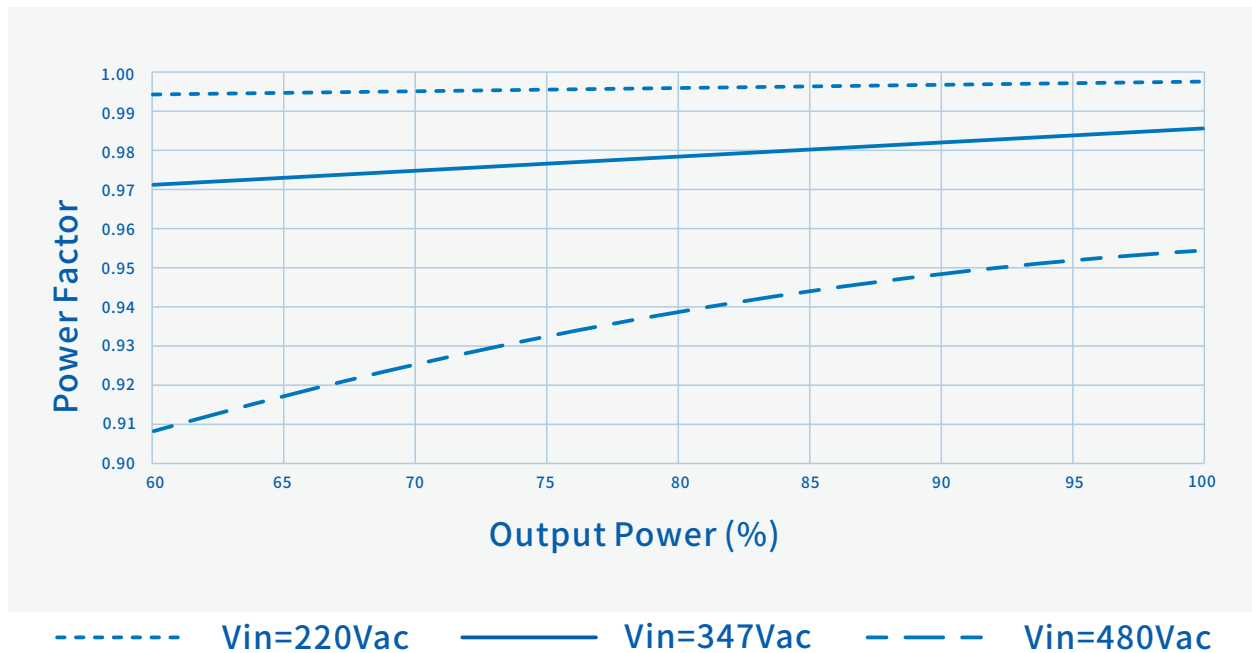
THD Vs. O/P Power



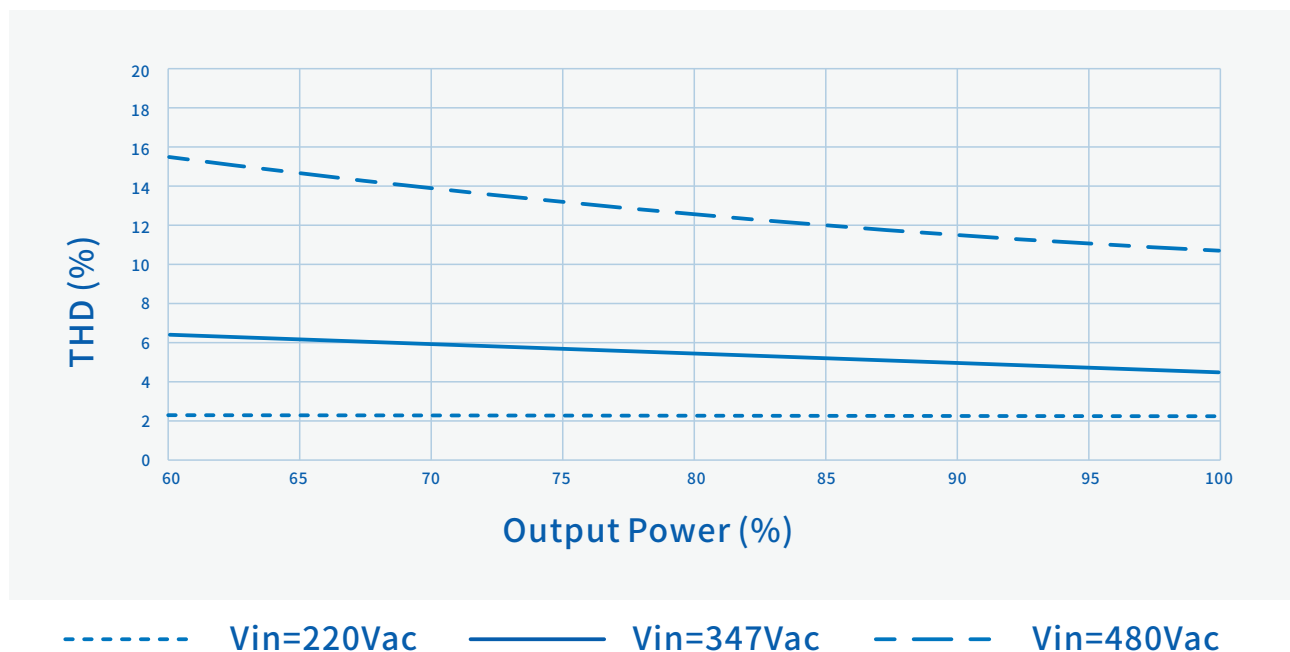
SS-680MS Series LED Driver

Performance Curves(SS-680MS-400*):

Power Factor Vs. O/P Power



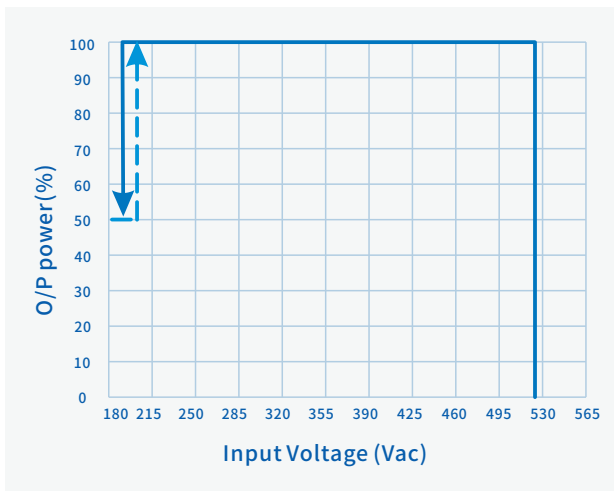
THD Vs. O/P Power



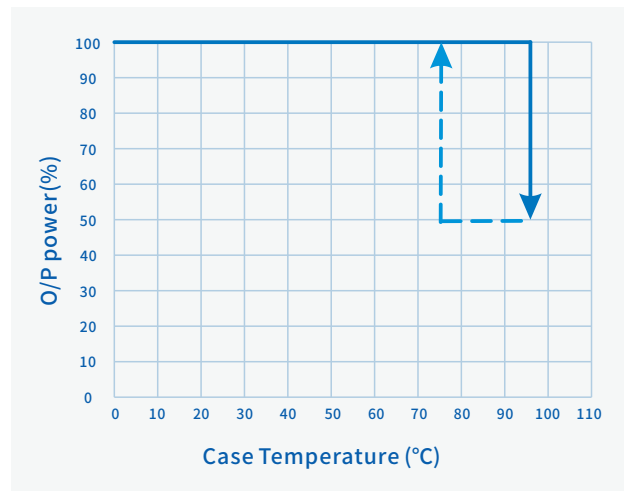
SS-680MS Series LED Driver

Performance Curves:

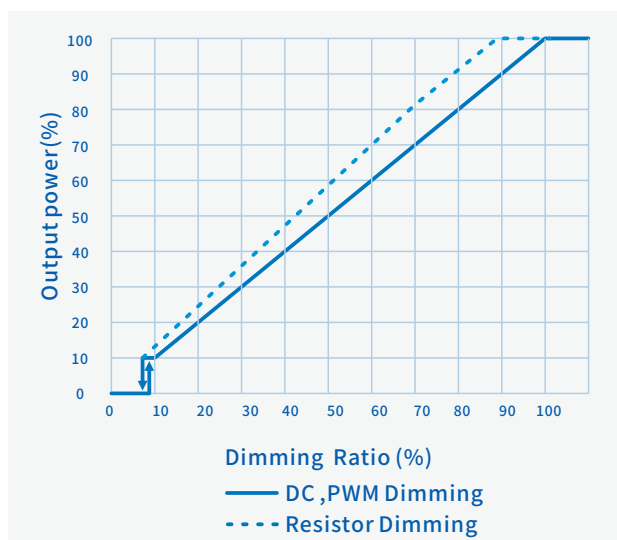
O/P Power Vs. Input Voltage



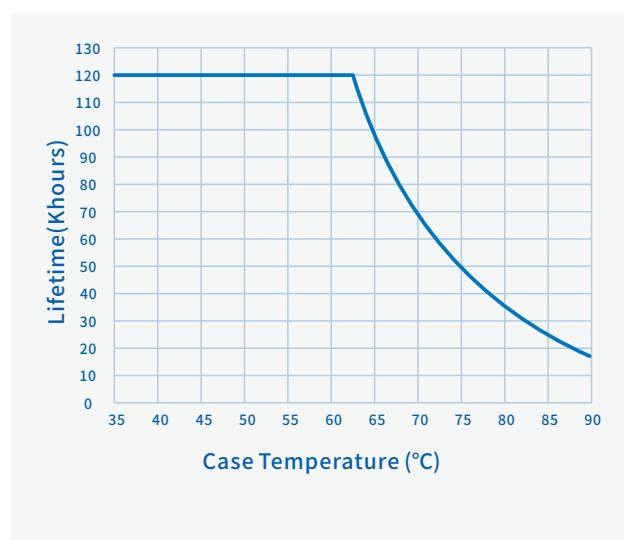
O/P Power Vs. Case Temperature



O/P Power Vs. Dimming



Lifetime Vs. Case Temperature



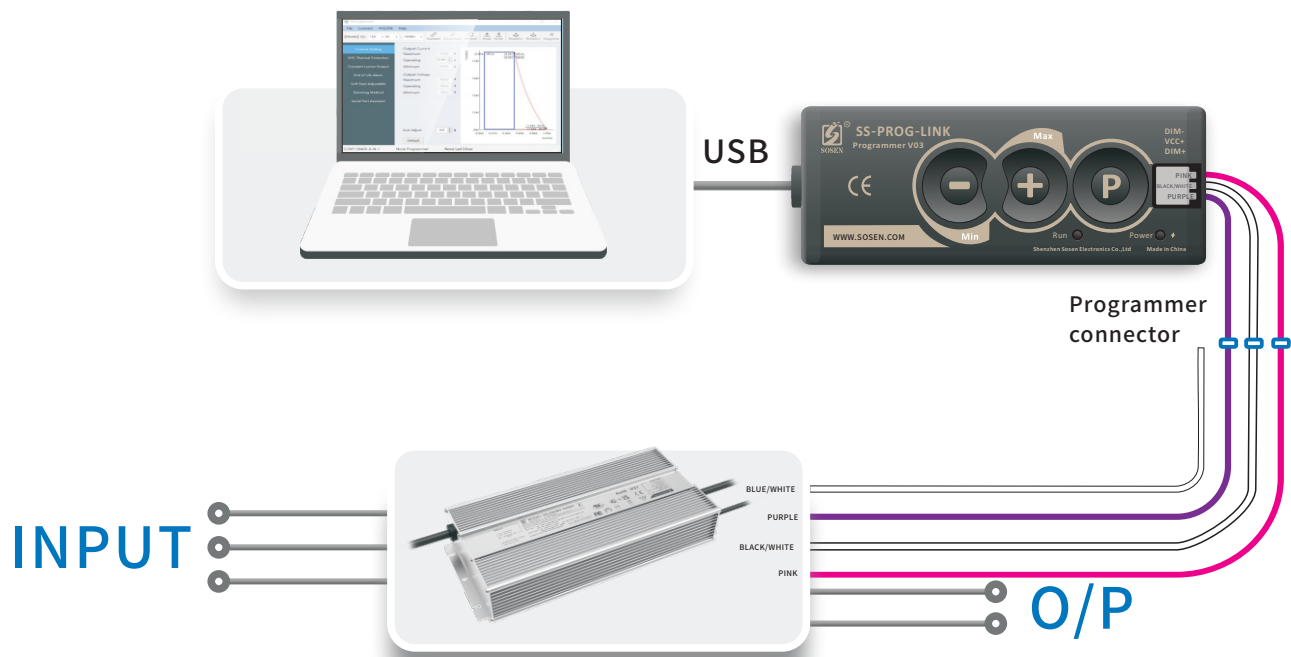
SS-680MS Series LED Driver

Programming connection diagram:

Legacy Timer: Driver's O/P follows the pre-programmed timing curve after turn-on.

Auto-Adjust by Percentage: Driver's O/P will be adjusted by automatically changed dimming curve by the period percentage based on the latest 5 dimming curve.

Auto-Adjust by Mid-point: Driver's O/P will be adjusted by automatically changed dimming curve by mid-point based on the latest 5 dimming curve.



Constant Lumen Output

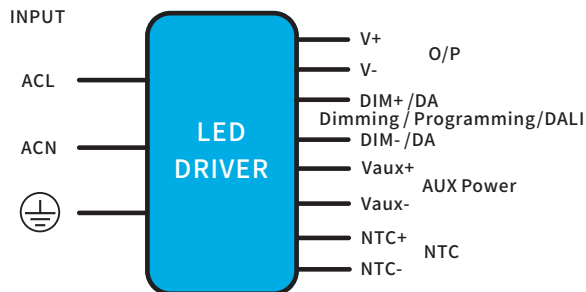
Constant Lumen Output are design to maintain fixture's stable output lumen by increasing driver's output current within driver's life span to counteract LED lumen degradation.

Note:

1. Programming could be completed by off-line mode either without turn on the driver nor without PC, other than the traditional on-line mode.
2. The DALI-2 models only support setting the rated output current through SS-DALI-PUSH and does not support programming through SS-PROG-LINK with PC.

SS-680MS Series LED Driver

Mechanical Characteristics



AC Input Cable(Exposed Length $450\pm 10\text{mm}$):

Global model: SOOW,3*17AWG,O.D: 9.8mm,Brown:L,Blue:N,Yellow/Green:⊕

DC O/P Cable(Exposed Length $250\pm 10\text{mm}$):

Global model: SJOW,2*17AWG,O.D: 7.7mm,Brown:V+, Blue:V-
Global model: SJOW,3*17AWG,O.D: 7.7mm,Brown:V+, Blue:V-,
Yellow/Green:GND(-G)

BH/DH Model:

DIM/AUX Power/Programming Cable

(Exposed Length $220\pm 10\text{mm}$):

UL model: 21996, 4*22AWG, O.D: 5.6mm, Purple: DIM+, Pink: DIM-,
Black/White: Vaux+, Blue/White: Vaux-

DHN Model:

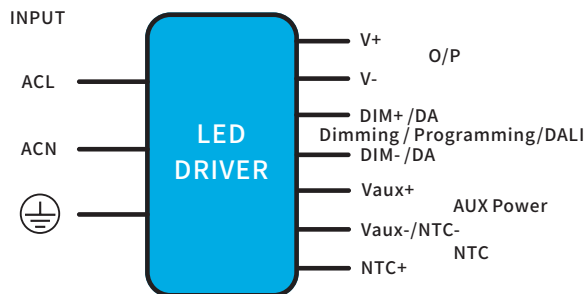
DIM/AUX Power/Programming Cable

(Exposed Length $220\pm 10\text{mm}$):

UL model: 21996, 4*22AWG, O.D: 5.6mm, Purple: DIM+, Pink: DIM-,
Black/White: Vaux+, Blue/White: Vaux-

NTC Cable(Exposed Length $220\pm 10\text{mm}$):

Global model: SJOW,2*17AWG,O.D: 7.7mm,Brown:NTC+, Blue:NTC-



AC Input Cable(Exposed Length $450\pm 10\text{mm}$):

Global model: SOOW,3*17AWG,O.D: 9.8mm,Brown:L,Blue:N,Yellow/Green:⊕

DC O/P Cable(Exposed Length $250\pm 10\text{mm}$):

Global model: SJOW,2*17AWG,O.D: 7.7mm,Brown:V+, Blue:V-

BHN Model:

DIM/AUX Power/Programming/NTC Cable

(Exposed Length $220\pm 10\text{mm}$):

UL model: 21996, 5*22AWG, O.D: 6.0mm, Purple: DIM+, Pink: DIM-,
Black/White: Vaux+, Blue/White: Vaux-/NTC-, Red/White: NTC+

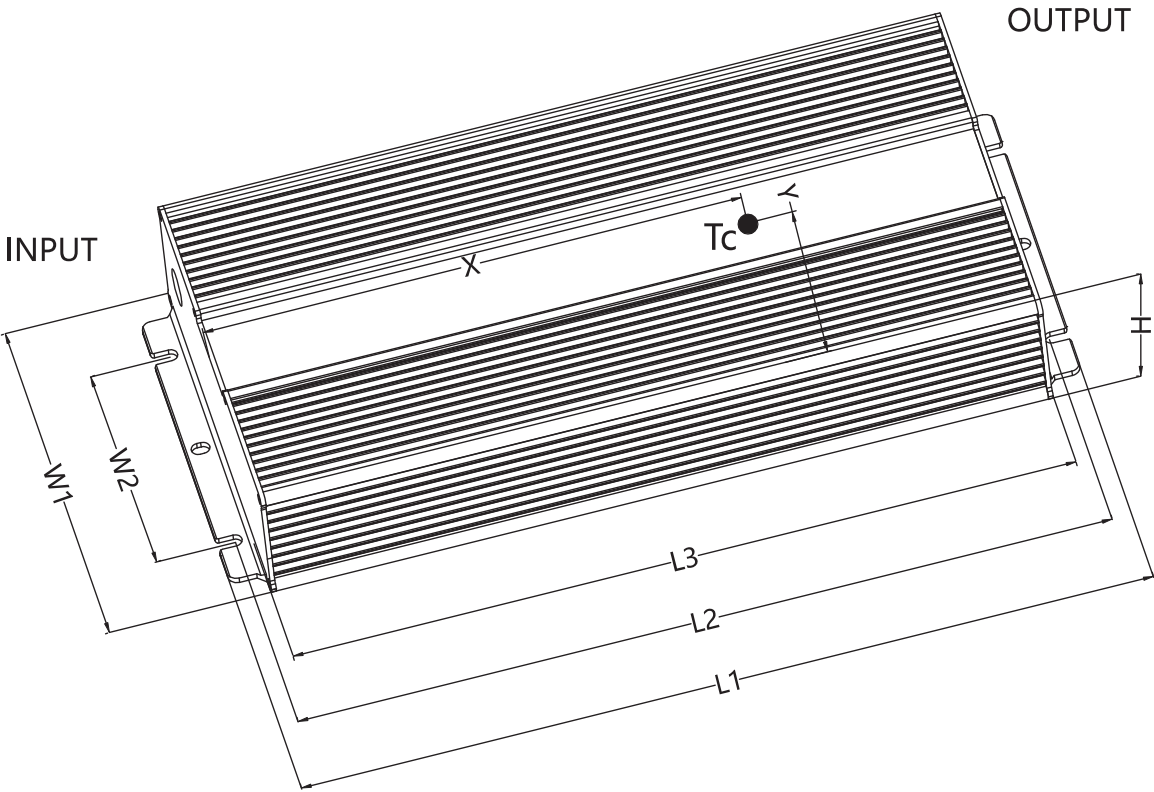
SS-680MS Series LED Driver

Mechanical Characteristics

Name Description	Standard Code	mm(In.)
Overall Length	L1	272(10.71)
Mounting Hole Length	L2	261(10.28)
Case Length	L3	250(9.84)
Case Height	H	44.5(1.75)

Note:
1,Please follow the "LED Driver User Manual" obtained from SOSEN's official website for assembly.
2,AC Input Cable,DC O/P Cable, DIM/AUX Power/Programming Cable:
Peeled length of cable:43±5mm,
Tinned length of wire:10±2mm

Name Description	Standard Code	mm(In.)
Case Width	W1	125(4.92)
Mounting Hole Width	W2	78(3.07)
TC Point Position	X	168(6.61)
TC Point Position	Y	62(2.44)



SS-680MS Series LED Driver



Assembly Tips

1. Please take isolation and waterproof measures if the dimming cable is not in use.

Package

- Outside carton dimension: $L \times W \times H = 495\text{mm} \times 385\text{mm} \times 162\text{mm}$;
- 6PCS/Carton;
- Net weight/Piece: 2.78kg; Gross weight/Carton: 18.2kg;
- Please refer to the product name, model number, manufacturer identification, QC PASS, manufacturing date on the package.

Transportation

Packaging is designed suitable for transportation by trucks, vessels and flights. The products should be avoided direct sunlight and rain, loaded/unloaded with caution.

Storage

The product storage meets the standard of the GB 3873—83.
Products should be rechecked if stored for over 1 year before assembly.

RoHS

Products comply with RoHS Directive (2011/65/EU) and amendment 2015/863/EU.

Revision History

Version	Description of Update	Updated Date	Remark
V00	Original Release	2023/08/02	
V01	Add Model	2024/08/08	
V02	Updating the output power derating curve	2024/10/09	