

SOSEN LED Driver, Your Smart Choice

Specifications

SS-60VH-E Series LED Driver

Model: SS-60VH-EXXX

Description: 60W LED Driver

Rev.: V02

Release Date: 2024-04-10

SS-60VH-E Series LED Driver

SOSEN
LED DRIVER



LED DRIVER

VH-E Series



Features:

- Efficiency up to 87%
- Isolated dimming: 0-10V, PWM, Resistor, Timing
- IP67
- Protections: SCP/OTP/OVP
- Class P
- Class 2 (Only for 54B Model)
- Type HL, suitable for hazardous locations
- Surge protection: CM: 10kV, DM: 6kV
- Warranty: 5 years



Description:

VH-E series are constant current LED Driver with wide O/P voltage range and adjustable O/P current by program. LED luminaries manufacturers can easily design luminaries and reduce cost.

Applications:

High Pole lighting, High bay lighting, Stadium lighting, Plant lighting, Street lighting, Fish lighting, Stage lighting, Tunnel lighting

Model List:

Model	AC Input Range	Max. Pout	Vout Range	Full Power Vo Range	Iout	THD(Typ.)	PF(Typ.)	Eff.(Typ.)	Max.Tc
SS-60VH-E54B	90-305Vac	60W	27-54V	36-54V	0.35-1.67A	10%	0.95	87%	90°C
SS-60VH-E86B	90-305Vac	60W	43-86V	54-86V	0.35-1.1A	10%	0.95	87%	90°C

Note:

1. Default Tested: at 220Vac, full load, Ta 25°C.
2. 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.

SS-60VH-E Series LED Driver

Input Characteristics:

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	100Vac		277Vac	
AC Input Range	90Vac		305Vac	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			0.8A	100Vac, Full load
Max Input Power			75W	100Vac, Full load
Max Inrush Current(120Vac)			65A	Cold start
Max Inrush Current(220Vac)			135A	Cold start
Max Inrush Current(277Vac)			170A	Cold start
No Load Power			3W	220Vac/50Hz, No load
Power Factor	0.95	0.97		220Vac/50Hz, Full load
	0.90			100-277Vac/50Hz, 80-100% load
THD		8%	10%	220Vac/50Hz, Full load
			20%	100-277Vac/50Hz, 80-100% load

SS-60VH-E Series LED Driver

O/P Characteristics(SS-60VH-E54B):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	27V		54V	Power derated @27-36V
Rated O/P Voltage	36V		54V	$P_o = V_o \cdot I_o = 60W$, Full load
Rated O/P Current	1.11A		1.67A	1.67A for 36V, 1.11A for 54V
Adj. O/P Current (AOC) Range	0.35A		1.67A	AOC by programming
No Load Voltage			60V	
Efficiency @120Vac	84.0%	84.5%		O/P 54V/1.11A
Efficiency @220Vac	86.0%	87.0%		O/P 54V/1.11A
Efficiency @277Vac	86.5%	87.5%		O/P 54V/1.11A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			15%	Full load
Start-up Time			1.0S	120Vac, Full load
			0.5S	220Vac, Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-5%		+5%	
Temperature Coefficient	-0.05%/°C		+0.05%/°C	Tc:0°C~90°C
OTP	90°C	100°C	110°C	>Tc Typ., Current derating <Tc Min., Current recovery
Short Circuit Protection				Driver will not be damaged

SS-60VH-E Series LED Driver

O/P Characteristics(SS-60VH-E86B):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	43V		86V	Power derated @43-54V
Rated O/P Voltage	54V		86V	$P_o = V_o \cdot I_o = 60W$, Full load
Rated O/P Current	0.7A		1.1A	1.1A for 54V, 0.7A for 86V
Adj. O/P Current (AOC) Range	0.35A		1.1A	AOC by programming
No Load Voltage			98V	
Efficiency @120Vac	84.0%	84.5%		O/P 86V/0.7A
Efficiency @220Vac	86.0%	87.0%		O/P 86V/0.7A
Efficiency @277Vac	86.5%	87.5%		O/P 86V/0.7A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			15%	Full load
Start-up Time			1.0S	120Vac, Full load
			0.5S	220Vac, Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-5%		+5%	
Temperature Coefficient	-0.05%/°C		+0.05%/°C	Tc: 0°C~90°C
OTP	90°C	100°C	110°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged

SS-60VH-E Series LED Driver

Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
0-10V Dimming (Optional)	Dim Vmax	0V		12V	DIM+ source current 110uA.
	Dim Range	10%Iomax		100%Ioset	Dimming prohibits reverse connection
	Rec.Dim Range	0V		10V	
PWM Dimming (Optional)	PWM High	9.8V		10.2V	DIM+ source current 110uA.
	PWM Low	0V		0.3V	Dimming prohibits reverse connection
	Frequency	1KHz		2KHz	
	PWM Duty	10%		100%	
Resistor Dimming (Optional)	Resistance	10Kohm		100Kohm	DIM+ source current 110uA.
	Dim Range	10%Iomax		100%Ioset	
Dim to Off	Dim off	0.6V	0.8V	1.0V	If the led is less than maximum rated output voltage of 75%,the luminaries may possibly have slight light when dim-to-off. Thus the whole lighting system needs to be tested
	Dim on	0.7V	0.9V	1.1V	
Timing Curve(Optional)		By programming			Set by program (Externally programmable)
Lifetime($T_c \leq 75^\circ\text{C}$)		$\geq 50,000$ hours			220Vac,80% load
MTBF		262,000 hours			220Vac,Full load, $T_a = 25^\circ\text{C}$ (MIL-HDBK-217F)
IP Grade		IP67			
T_c		90°C			
Warranty		5 years			$T_c: 75^\circ\text{C}$
Net Weight		485g			
Dimension		118mm*66mm*31.5mm			L x W x H

NOTE: All the parameters above are tested $T_a 25^\circ\text{C}$ and LED load, unless specified.

SS-60VH-E 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/A1:2021 EN 61347-2-13:2014/A1:2017 EN/IEC62384:2020	✓	
UKCA	EN 61347-1:2015/A1:2021 EN 61347-2-13:2014/A1:2017 EN 62493:2015	✓	
RCM	AS/NZS61347.2.13	✓	
CCC	GB19510.1-2009;GB19510.14-2009	✓	
CE	EN 61347-1:2015/A1:2021 EN 61347-2-13:2014/A1:2017 EN 62493:2015	✓	

EMI/EMS	Criterion	Remark
Conduction Emission	EN IEC 55015:2019+A11:2020	
Radiation Emission	EN IEC 55015:2019+A11:2020	
Harmonic Current Emissions	IEC/EN 61000-3-2:2019+A1:2021	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-60VH-E Series LED Driver

Safety Test Items:

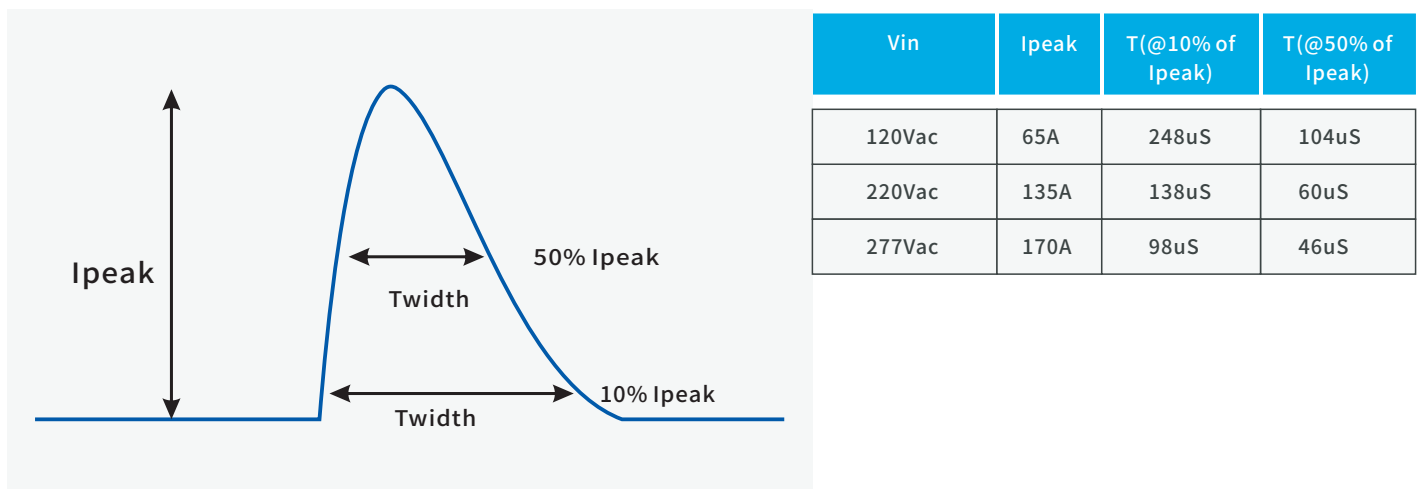
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	ENEC Insulation Requirements	CCC Insulation Requirements	
Input-O/P	1600Vac	3000Vac	3750Vac	Reinforced insulation
Input-Case	1600Vac	1500Vac	1875Vac	Basic insulation
Input-Dim	1600Vac	3000Vac	3750Vac	Reinforced insulation
O/P-Dim	1600Vac	1000Vac	1000Vac	Basic insulation
O/P-Case	500Vac	1000Vac	1000Vac	Basic insulation
Dim-Case	500Vac	250Vac	500Vac	Basic insulation
Insulation Resistance	$\geq 10\text{M}\Omega$			Input-O/P, Test voltage: 500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Leakage Current	$\leq 0.75\text{mA}$			277Vac

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 of components.
2. Please short (ACL and ACN), (V+ and V-), (Dim+ and Dim -) 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:

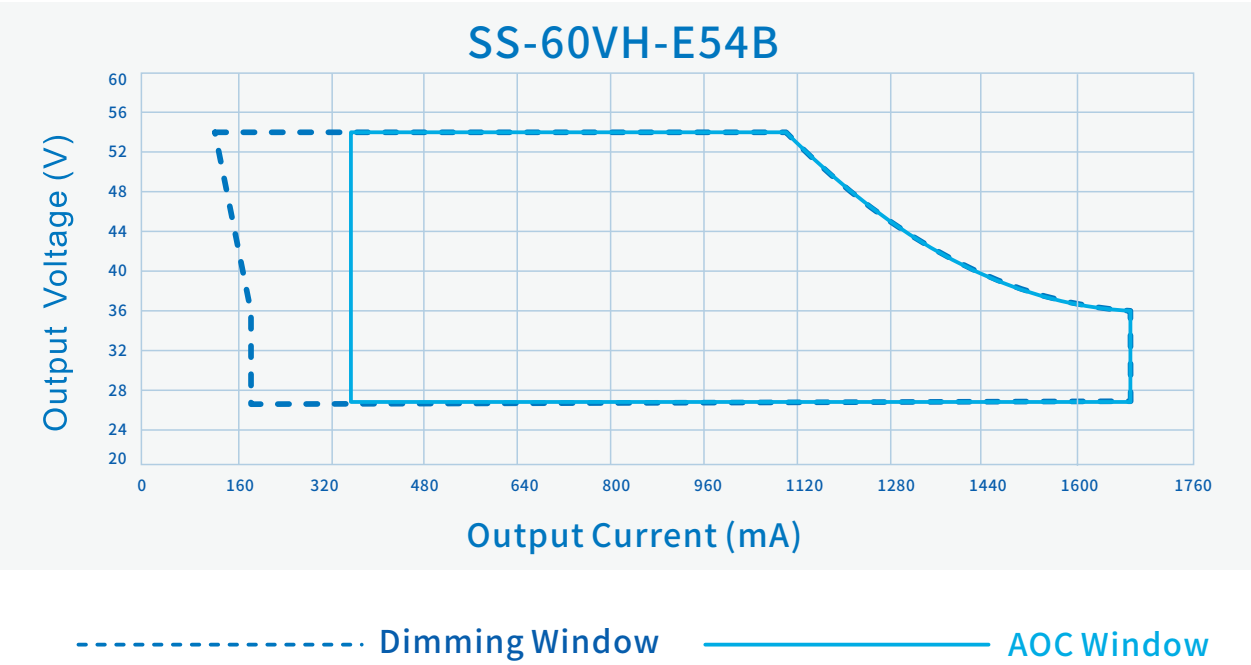
Input Inrush Current



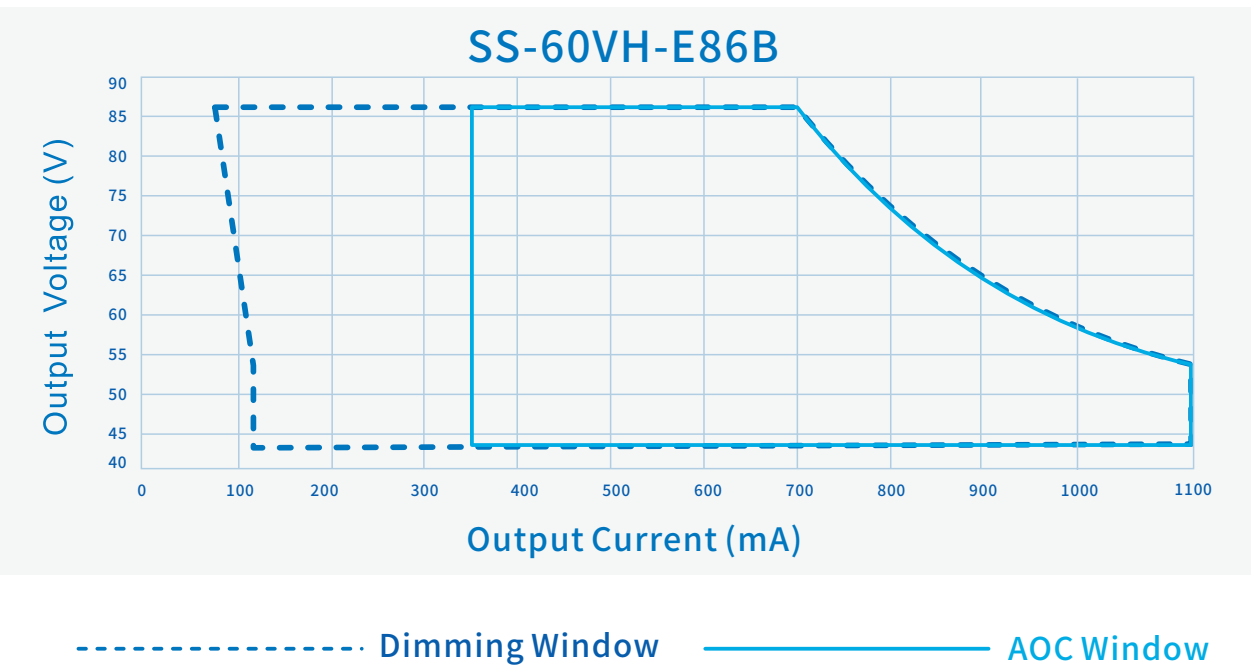
SS-60VH-E Series LED Driver

Performance Curves:

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



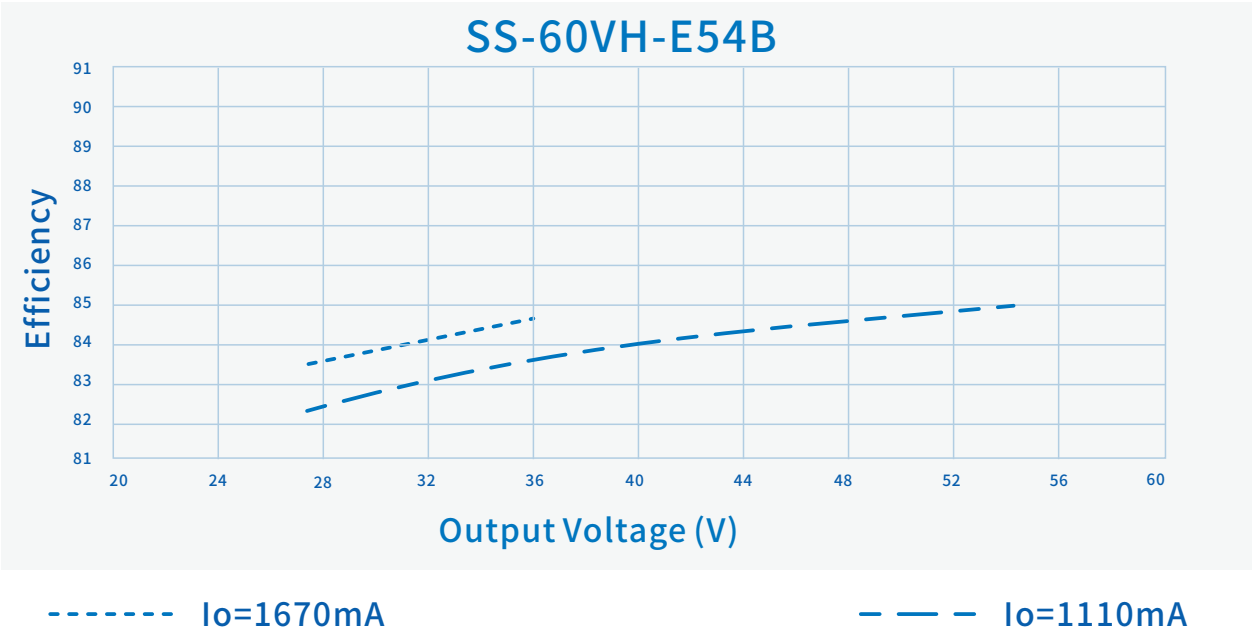
O/P Voltage Vs. O/P Current(Dim/AOC Window)



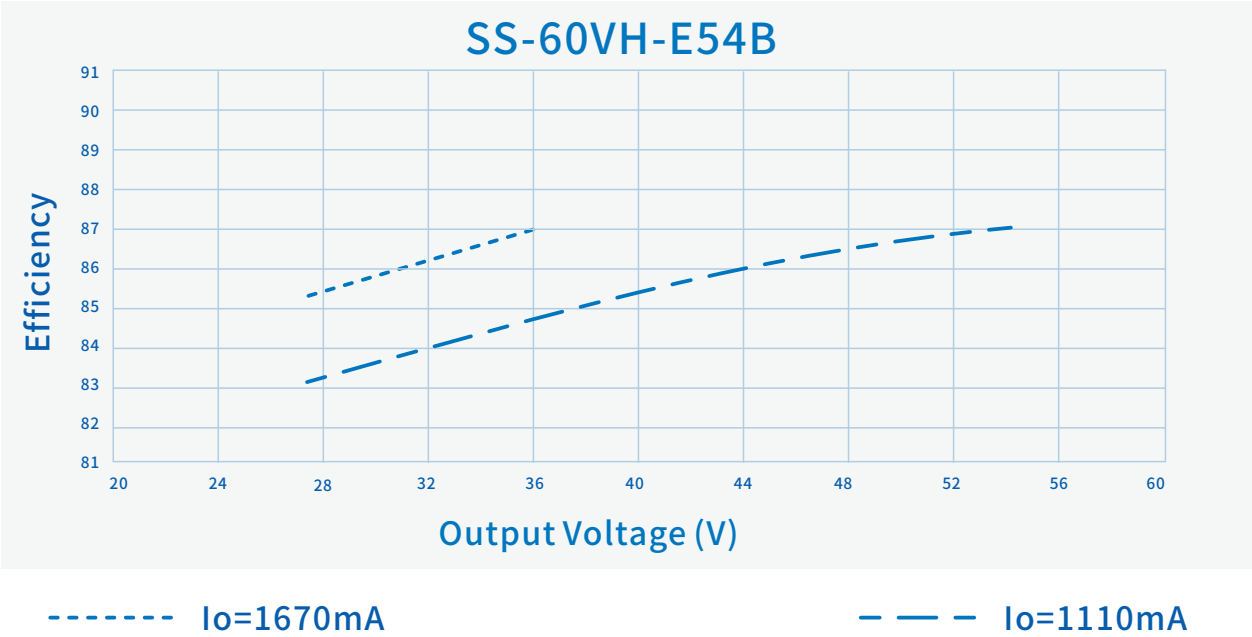
SS-60VH-E Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage (Vin=120Vac)



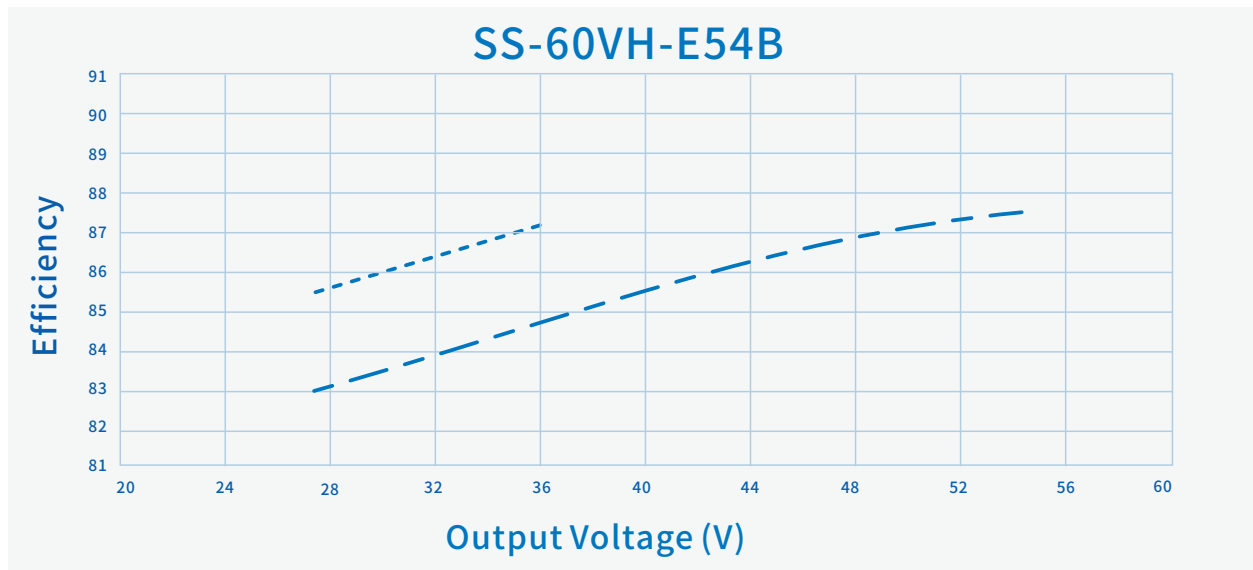
Efficiency Vs. O/P Voltage (Vin=220Vac)



SS-60VH-E Series LED Driver

Performance Curves:

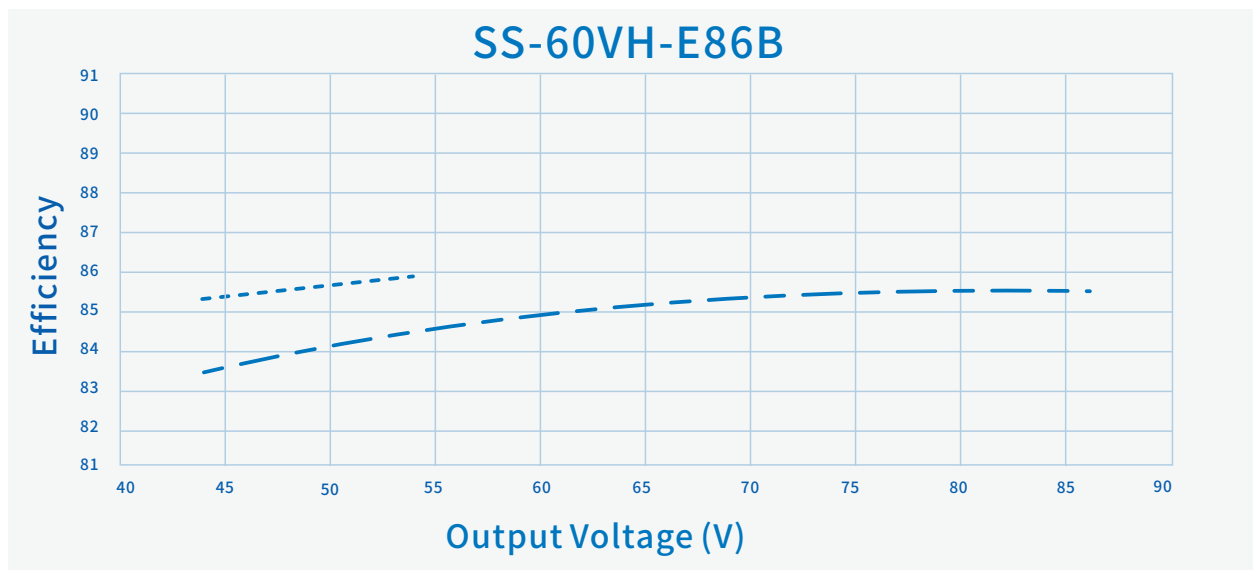
Efficiency Vs. O/P Voltage ($V_{in}=277V_{ac}$)



----- $I_o=1670mA$

- . - $I_o=1110mA$

Efficiency Vs. O/P Voltage ($V_{in}=120V_{ac}$)



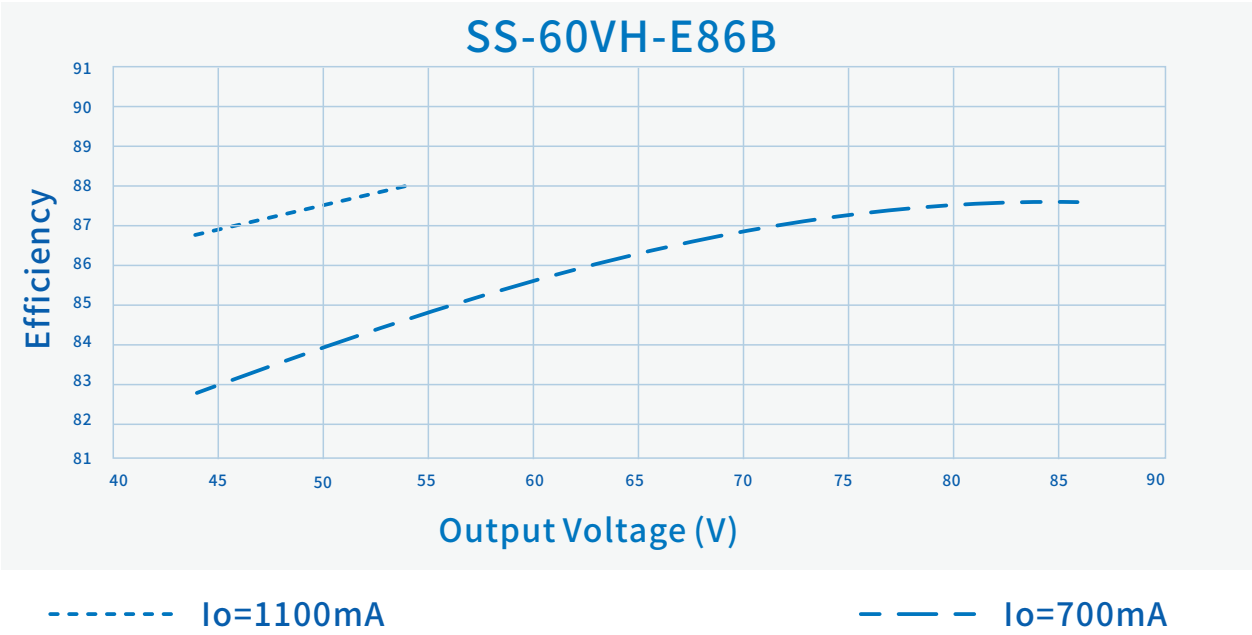
----- $I_o=1100mA$

- . - $I_o=700mA$

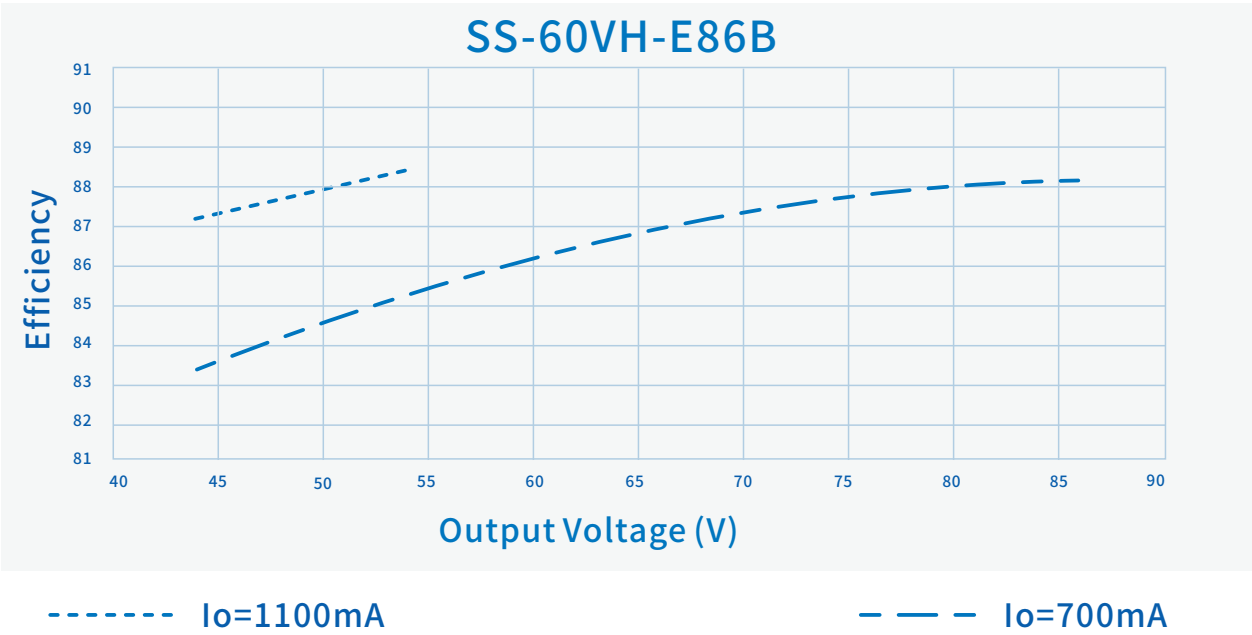
SS-60VH-E Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage (Vin=220Vac)



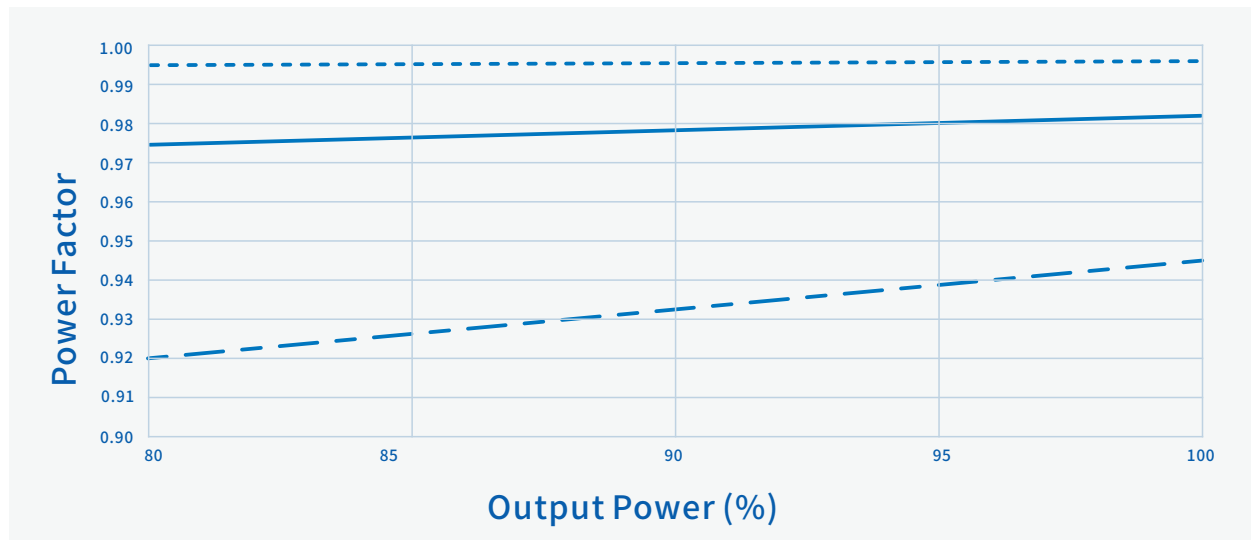
Efficiency Vs. O/P Voltage (Vin=277Vac)



SS-60VH-E Series LED Driver

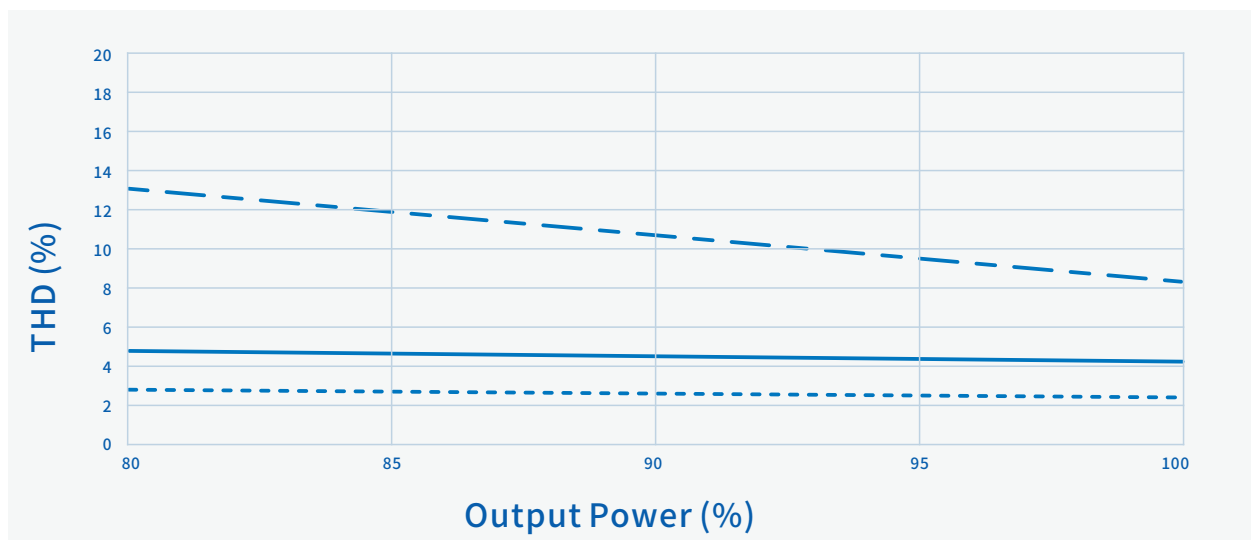
Performance Curves(SS-60VH-E54B):

Power Factor Vs. O/P Power



----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

THD Vs. O/P Power

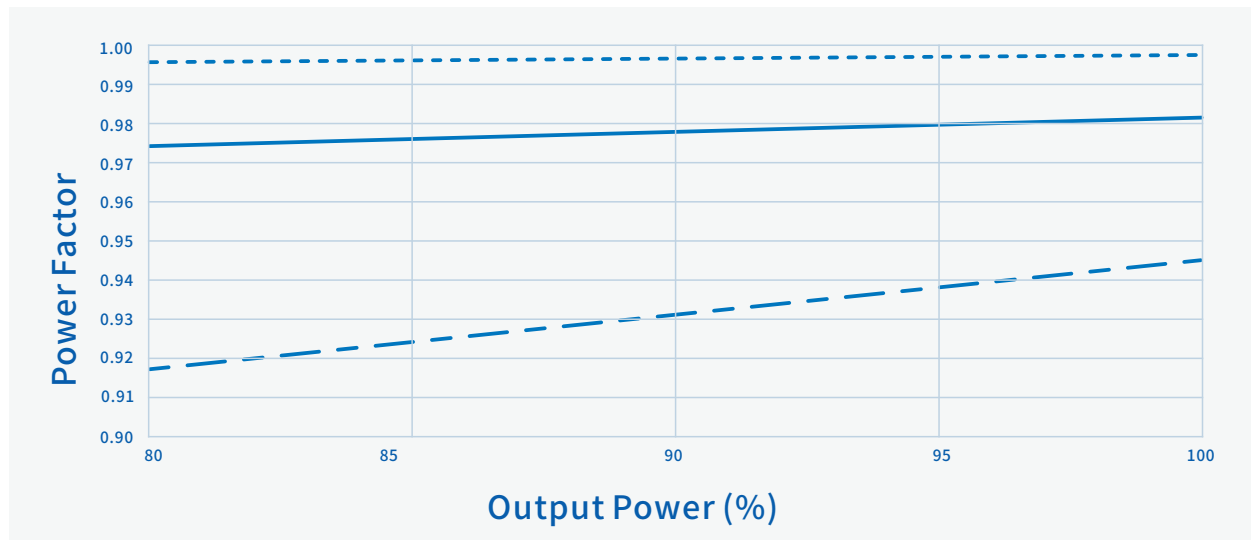


----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

SS-60VH-E Series LED Driver

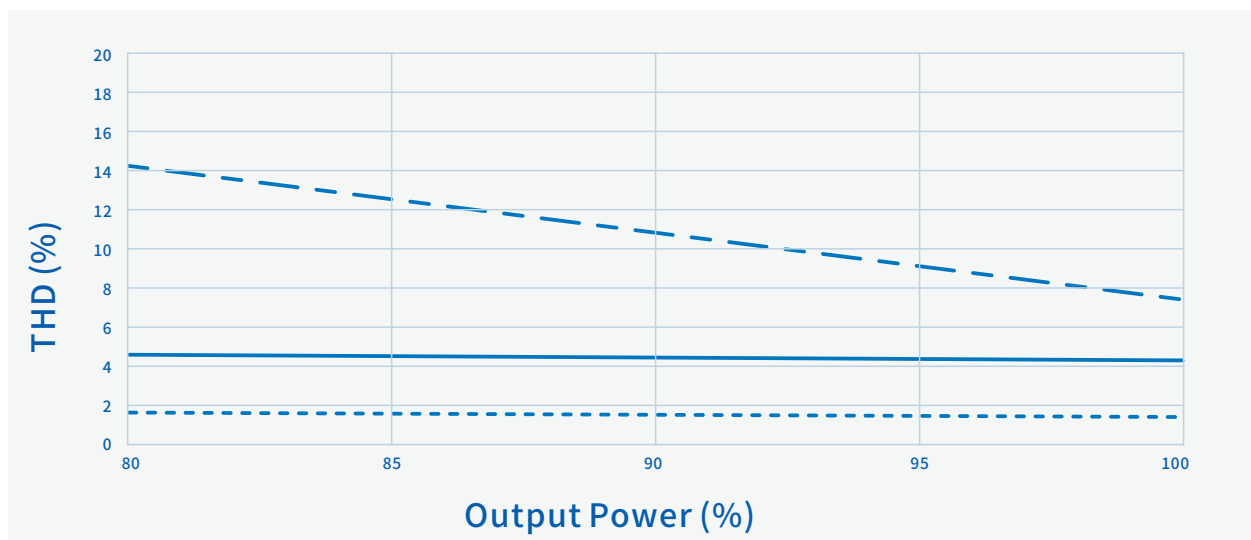
Performance Curves(SS-60VH-E86B):

Power Factor Vs. O/P Power



----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

THD Vs. O/P Power

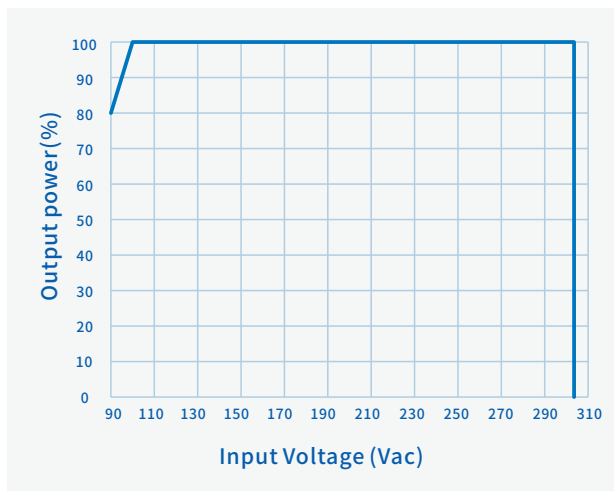


----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

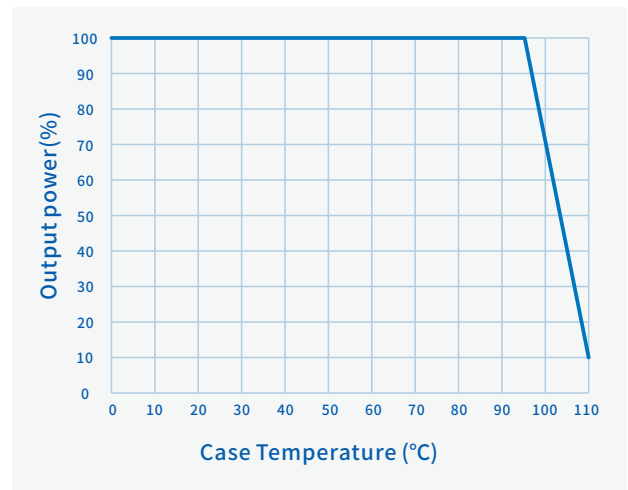
SS-60VH-E Series LED Driver

Performance Curves(SS-60VH-E54B):

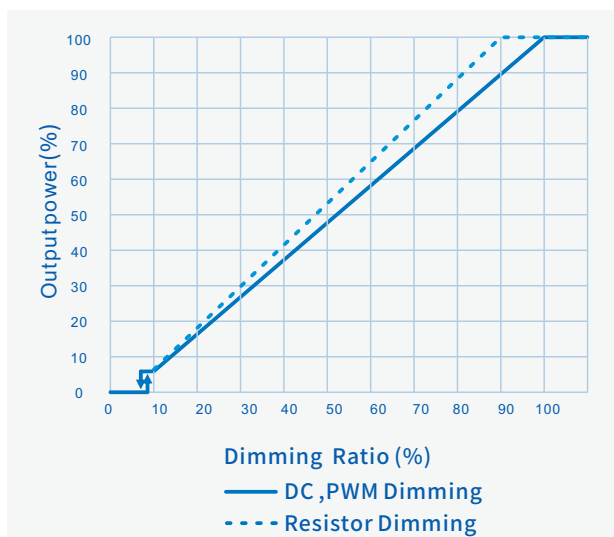
O/P Power Vs. Input Voltage



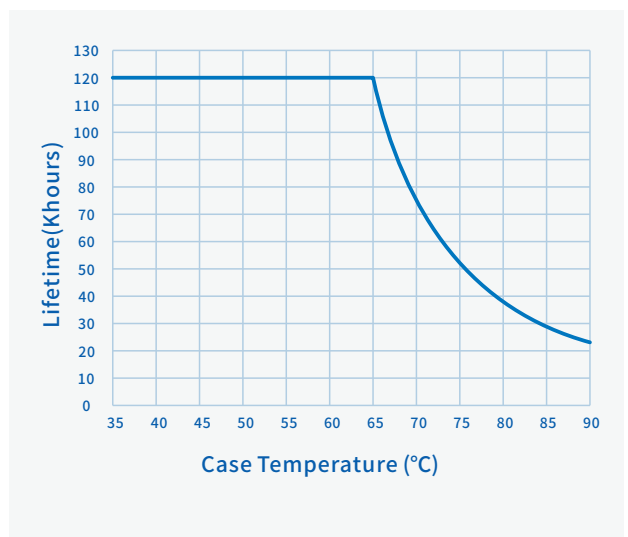
Output power Vs. Case Temperature



O/P Power Vs. Dimming



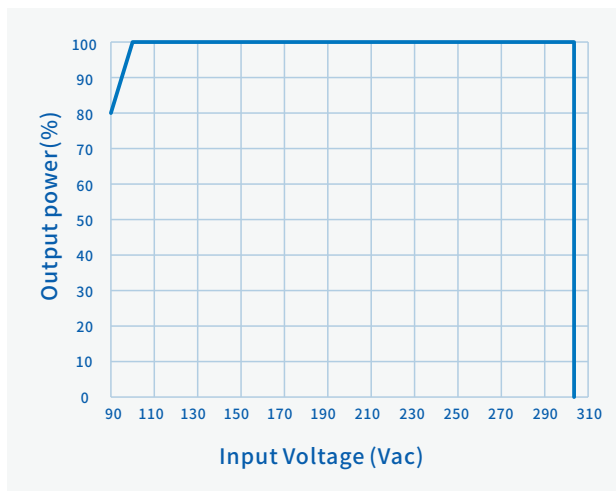
Lifetime Vs. Case Temperature



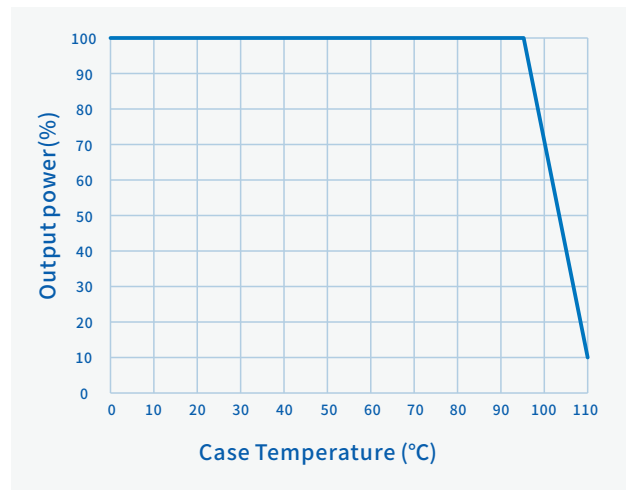
SS-60VH-E Series LED Driver

Performance Curves(SS-60VH-E86B):

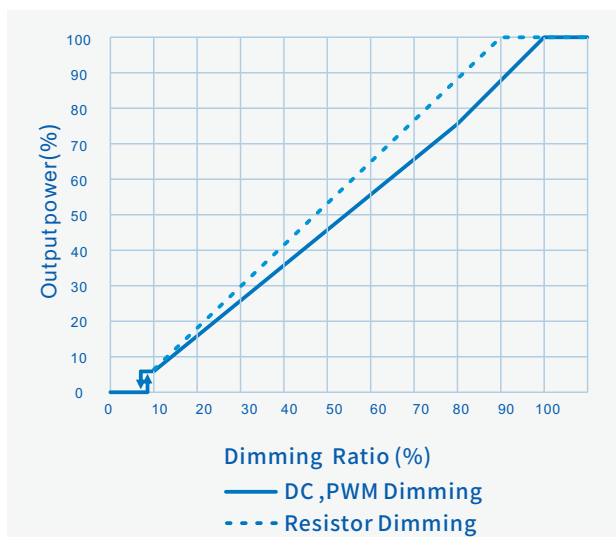
O/P Power Vs. Input Voltage



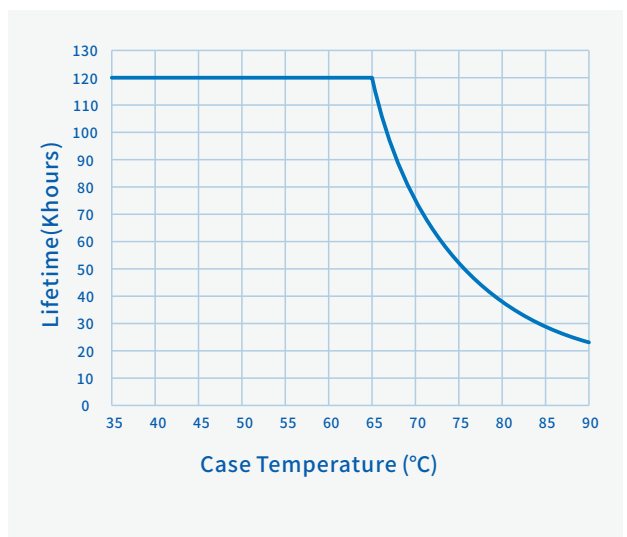
Output power Vs. Case Temperature



O/P Power Vs. Dimming



Lifetime Vs. Case Temperature

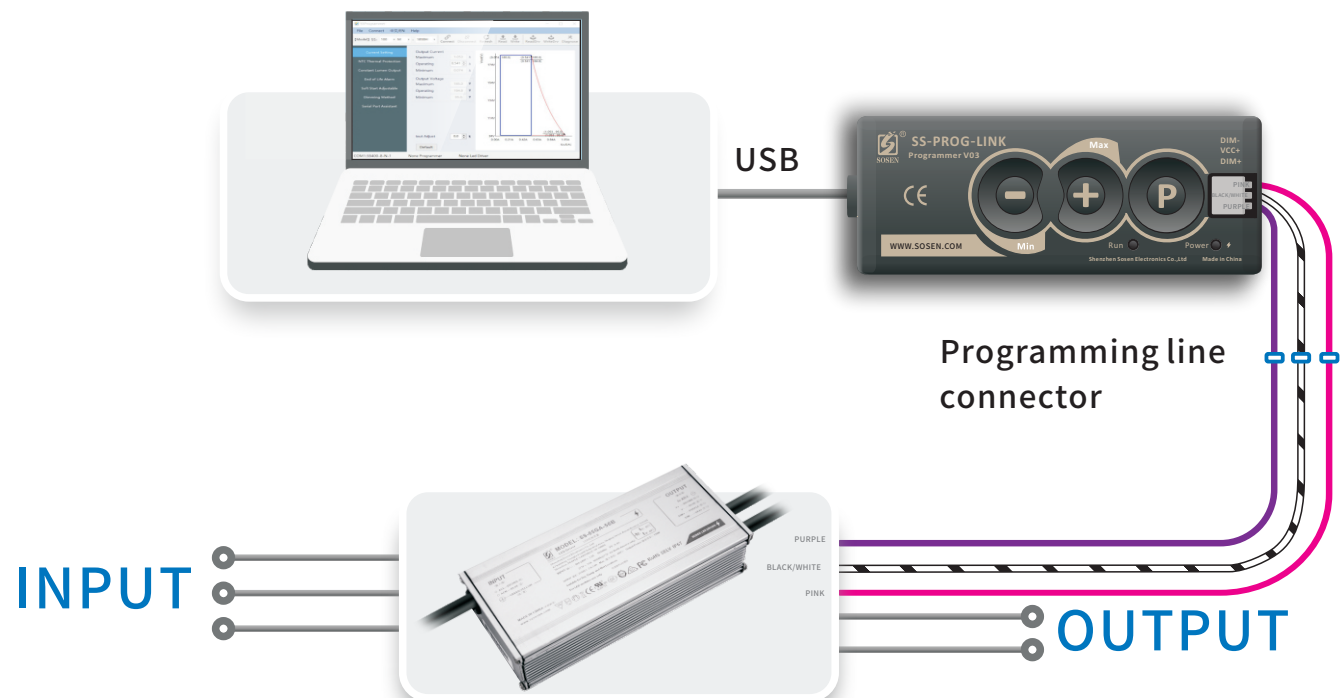


Programming connection diagram:

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.



Note:

For details, please refer to the Sosen SS-PROG-LINK Programmer Manual.

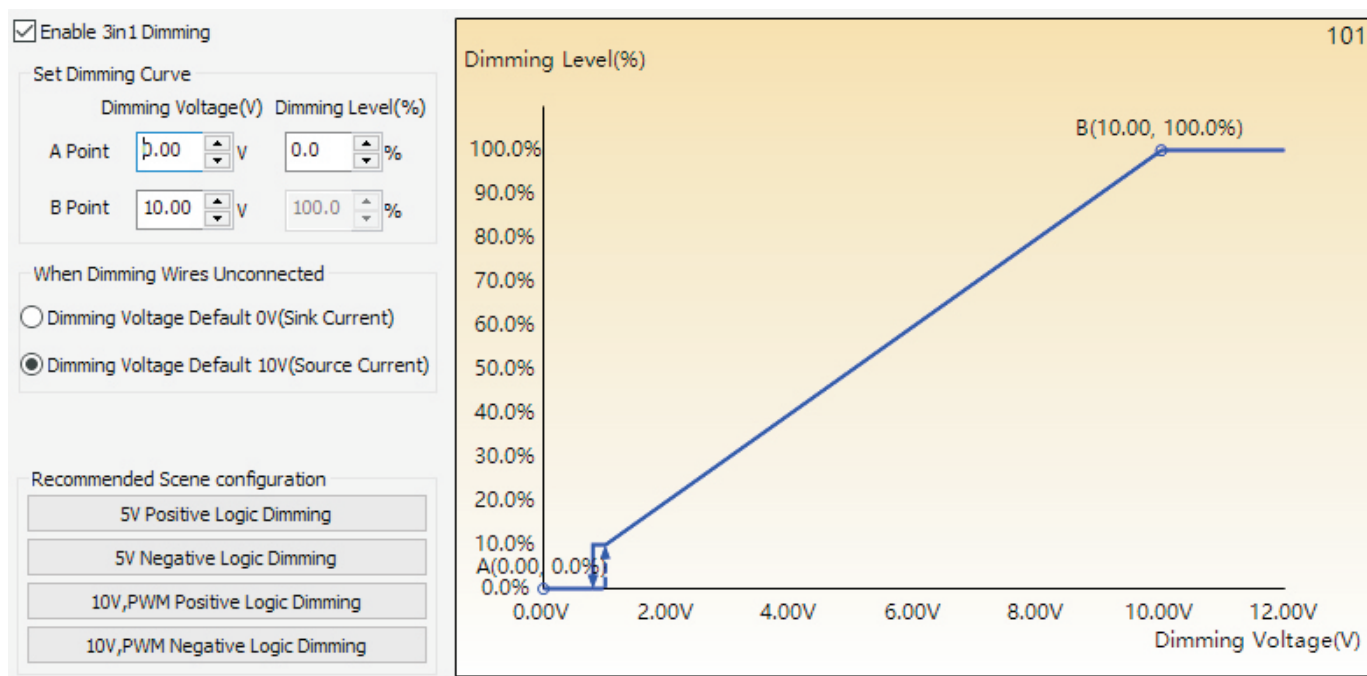
SS-60VH-E Series LED Driver

Parameter			Remark
Default setting	Positive logic dimming (0-10V)	Dimming voltage default 10V (source current)	
	Negative logic dimming (10-0V)	Dimming voltage default 0V (sink current)	
Dimming optional function	Positive logic dimming (0-10V)	Dimming voltage default 0V (sink current)	When the dimming wire is not connected, the LED driver output is the minimum (to be noted in the order)
		Resistance dimming not available	For parallel dimming applications with multiple LED drivers, it is recommended to use the sink current mode (to be noted in the order)

Note:

Select "Dimming voltage defaults to 10V (source current)" / "Dimming voltage defaults to 0V (sink current)", which needs to be set according to the dimmer used by the end user.

Settings Interface



SS-60VH-E Series LED Driver

Mechanical Characteristics

INPUT

ACL

ACN



AOC

LED DRIVER

V+

V-

DIM+

DIM-

VPP+

OUTPUT

Dimming

AC Input Cable(Exposed Length 450±10mm):

UL model: SJTW,3*18AWG,O.D: 7.8mm,Black:L,White:N,Green: 

Global model: SJOW,3*17AWG,O.D:8.0mm,Brown:L, Blue:N,Yellow/Green: 

DC Output Cable(Exposed Length 250±10mm):

UL model: SJTW,2*18AWG,O.D: 7.3mm,Red:V+, Black:V-

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

DIM Cable(Exposed Length 220±10mm):

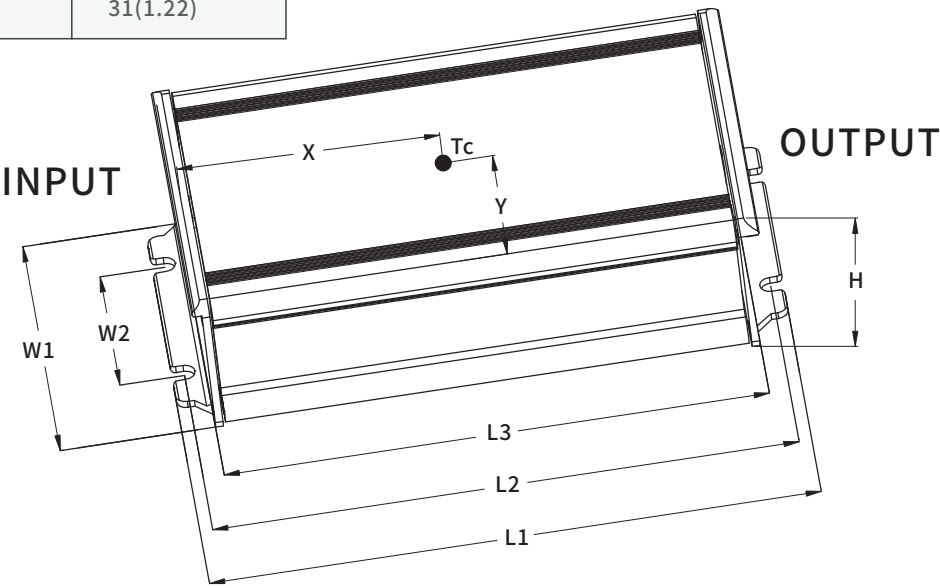
UL/EU model: STYLE 21996 3*22AWG,O.D: 4.9mm, Purple: DIM+, Pink: DIM-, Black/White: VPP+

Name Description	Standard Code	mm(In.)
Case Length	L3	105(4.13)
Case Width	W1	66(2.6)
Case Height	H	31.5(1.24)
Overall Length	L1	118(4.65)
Mounting Hole Length	L2	113(4.45)
Mounting Hole Width	W2	32(1.26)
TC Point Position	X	67(2.64)
TC Point Position	Y	31(1.22)

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



SS-60VH-E Series LED Driver



Assembly Tips

1. Dimming tinned connectors should be capped if not used to avoid dimming parts damage from external signals.

Package

- Outside carton dimension: $L \times W \times H = 495\text{mm} \times 385\text{mm} \times 162\text{mm}$;
- 28PCS/Carton;
- Net weight/PC: 0.485kg; Gross weight/Carton: 14.86kg;
- 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

[illegible]