

## Features

- High Efficiency (up to 91.5%)
- Constant Voltage Output
- Input Surge Protection: 4kV line-line, 6kV line-earth
- All-Around Protection: OCP, OVP, SCP, OTP
- Waterproof (IP67)
- SELV Output
- Suitable for Independent Use
- 5 Years Warranty



## Description

The EBV-150SxxxSV series is a 150W, constant-voltage IP67 LED driver that operates from 176-305 Vac input with excellent power factor. It is created for many lighting applications including architectural, decorative and signage. The high efficiency of the driver and compact metal case enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, over current, output over voltage, short circuit, and over temperature.

## Models

Output Voltage	Input Voltage Range(1)	Output Current Range	Max. Output Power(2)	Typical Efficiency (3)	Power Factor	Model Number(4)(5)
					220Vac	
12 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 10.0 A	120 W	85.5%	0.96	EBV-150S012SV
24 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 6.3 A	150 W	88.5%	0.96	EBV-150S024SV
36 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 4.2 A	150 W	91.5%	0.96	EBV-150S036SV
48 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 3.2 A	150 W	91.5%	0.96	EBV-150S048SV

**Notes:** (1) CCC certified input voltage range: 220/230/240 Vac; other certified input voltage range except CCC: 200-240 Vac or 190-250Vdc (except KS and BIS).

(2) Operating input voltage range: 90-305Vac, and 90-176Vac is for safety operation (see below “Derating” curve for details).

(3) Measured at 100% load and 220Vac input (see below “General Specifications” for details).

(4) SELV output.

(5) For BIS models add suffix -3000.

## Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	176 Vac	-	305 Vac	190 ~ 250 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz
Input AC Current	-	-	0.84 A	Measured at 100% load and 220Vac input.

## Input Specifications (Continued)

Parameter		Min.	Typ.	Max.	Notes
Inrush Current(I <sup>2</sup> t)		-	-	0.042 A <sup>2</sup> s	At 220Vac input, 25°C cold start, duration=27.6 μs, 10%I <sub>pk</sub> -10%I <sub>pk</sub> . See Inrush Current Waveform for the details.
PF		0.9	-	-	At 220-240Vac, 50-60Hz, 60%-100% load(90-150W)
THD		-	-	20%	At 220-240Vac, 50-60Hz, 60%-100% load(90-150W)
THD	EBV-150S024SV	-	-	12%	At 220-240Vac, 50-60Hz, 75%-100% load(112.5-150W)
	EBV-150S036SV	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% load(112.5-150W)
	EBV-150S048SV	-	-		

## Output Specifications

Parameter		Min.	Typ.	Max.	Notes
Output Voltage Tolerance		-5%Vo	-	5%Vo	At 100% load condition
Total Output Voltage Ripple (pk-avg)	EBV-150S012SV EBV-150S024SV	-	-	2.0 V	At 0% - 100% load condition. Measured by 20 MHz bandwidth oscilloscope and the output paralleled a 0.1 uF ceramic capacitor and a 47 uF electrolytic capacitor.
	EBV-150S036SV EBV-150S048SV	-	-	2.5 V	
Startup Overshoot/Undershoot		-	-	5%Vo	At 100% load condition
Line Regulation		-	-	±1%	Measured at 100% load
Load Regulation		-	-	±3%	
Turn-on Delay Time		-	-	0.75 s	Measured at 220Vac input, 100% load
Load Dynamic Response	Output Deviation	-	-	8%Vo	R/S: 1 A/μs Load: 25% ~ 100% load.
	Settling Time	-	-	10 ms	
Temperature Coefficient of Vo		-	0.03%/°C	-	Case temperature = 0°C~Tc max

**Note:** All specifications are typical at 25°C unless otherwise stated.

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220Vac input: EBV-150S012SV EBV-150S024SV EBV-150S036SV EBV-150S048SV	83.5% 86.5% 89.5% 89.5%	85.5% 88.5% 91.5% 91.5%	- - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
MTBF	-	355,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)

## General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Lifetime	-	83,000 Hours	-	Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc_s	-40 °C	-	+90 °C	
Operating Case Temperature for Warranty Tc_w	-40 °C	-	+75 °C	Case temperature for 5 years warranty. Humidity: 10% RH to 100% RH.
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5%RH to 100%RH
Dimensions Inches (L x W x H) Millimeters ((L x W x H)	5.71 x 2.66 x 1.56 145 x 67.5 x 39.7			With mounting ear 6.54 x 2.66 x 1.56 166 x 67.5 x 39.7
Net Weight	-	830 g	-	

**Note:** All specifications are typical at 25°C unless otherwise stated.

## Safety & EMC Compliance

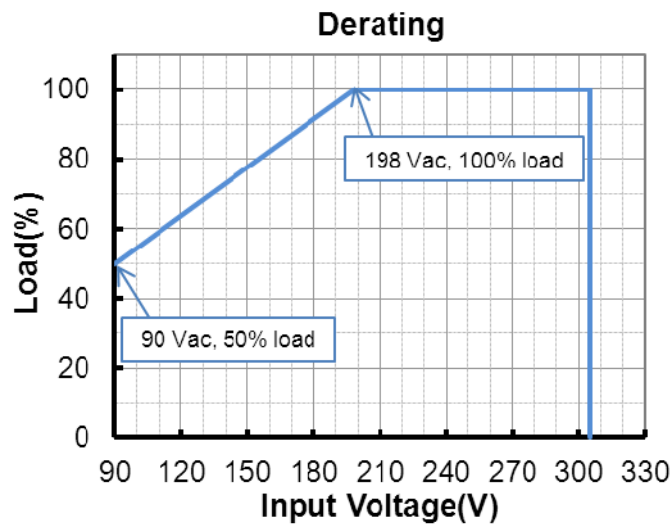
Safety Category	Standard
CE & ENEC	EN 61347-1, EN61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
BIS	IS 15885(PART2/SEC13)
KS	KS C 7655
EMI Standards	Notes
EN 55015/GB 17743 <sup>(1)</sup>	Conducted emission Test & Radiated emission Test
EN 61000-3-2/GB 17625.1	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 4 kV, line to earth 6 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips

## Safety & EMC Compliance (Continued)

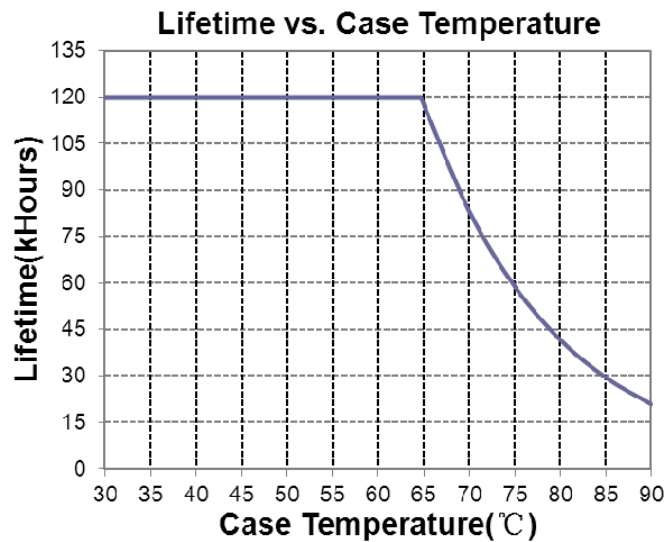
EMS Standards	Notes
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

**Note:** (1) 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.

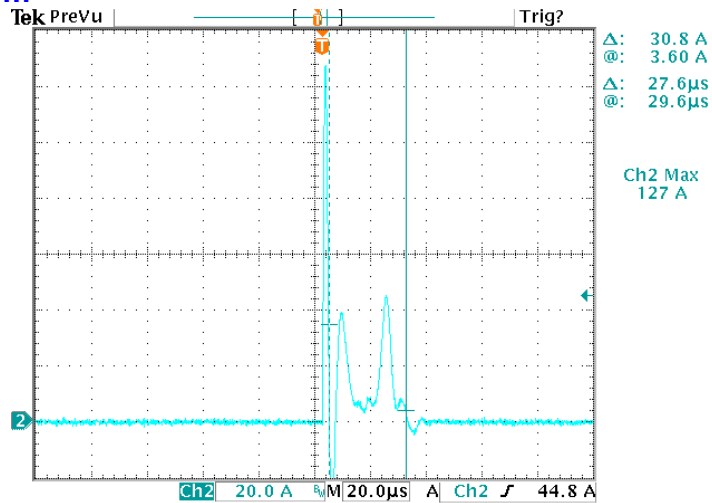
## Derating



## Lifetime vs. Case Temperature



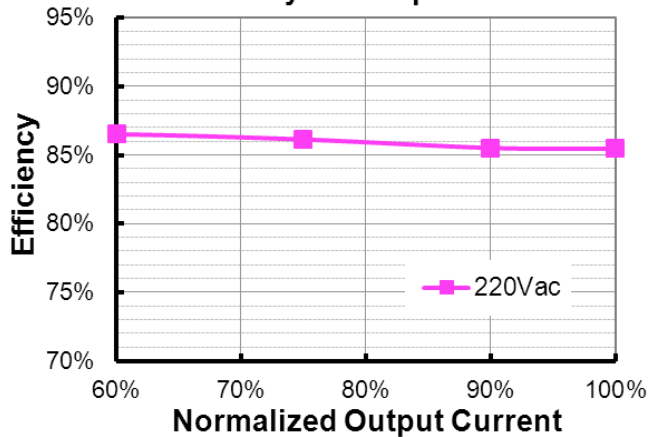
## Inrush Current Waveform



## Efficiency vs. Load

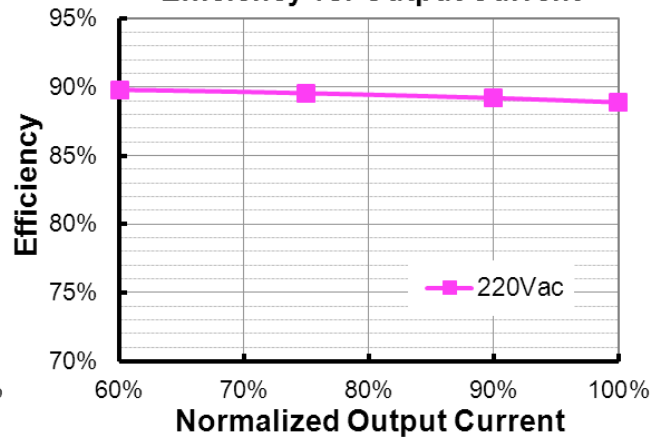
EBV-150S012SV

Efficiency vs. Output Current



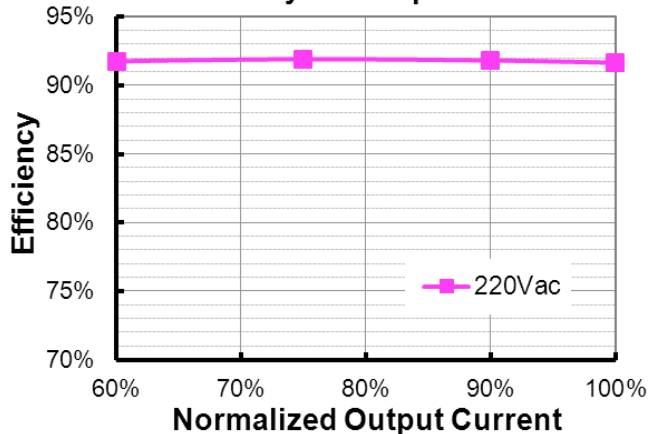
EBV-150S024SV

Efficiency vs. Output Current



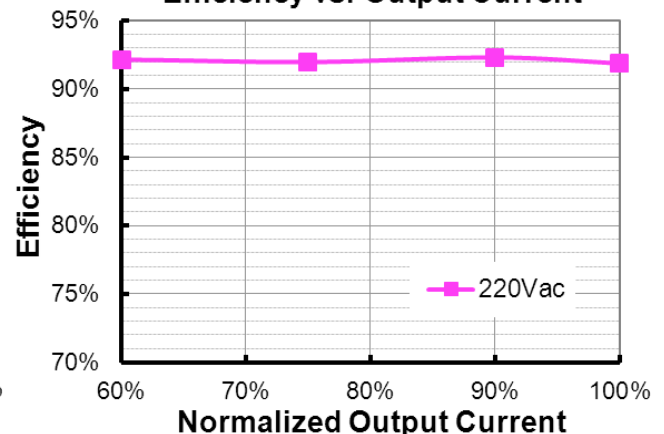
EBV-150S036SV

Efficiency vs. Output Current

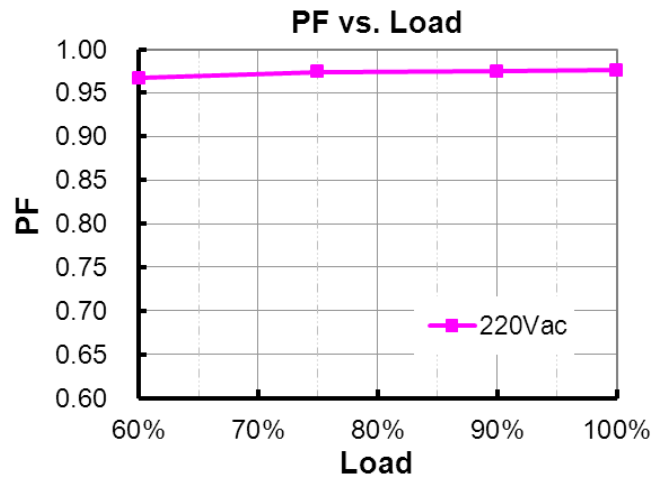


EBV-150S048SV

Efficiency vs. Output Current

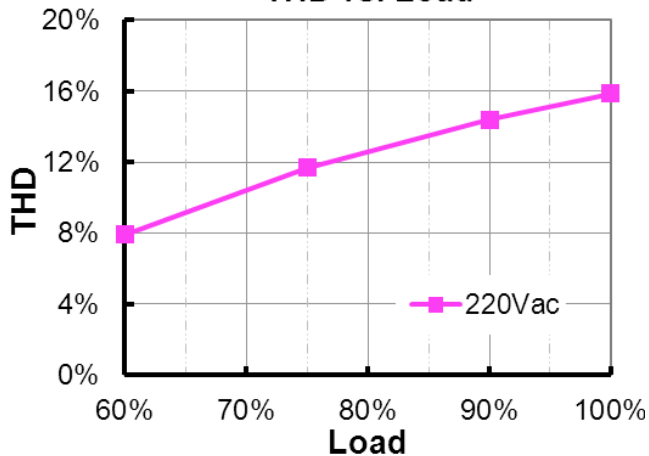


## Power Factor

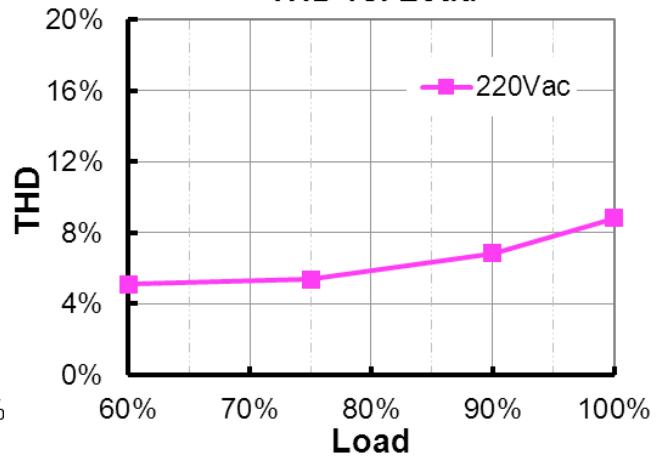


## Total Harmonic Distortion

EBV-150S012SV  
THD vs. Load



Others Models  
THD vs. Load

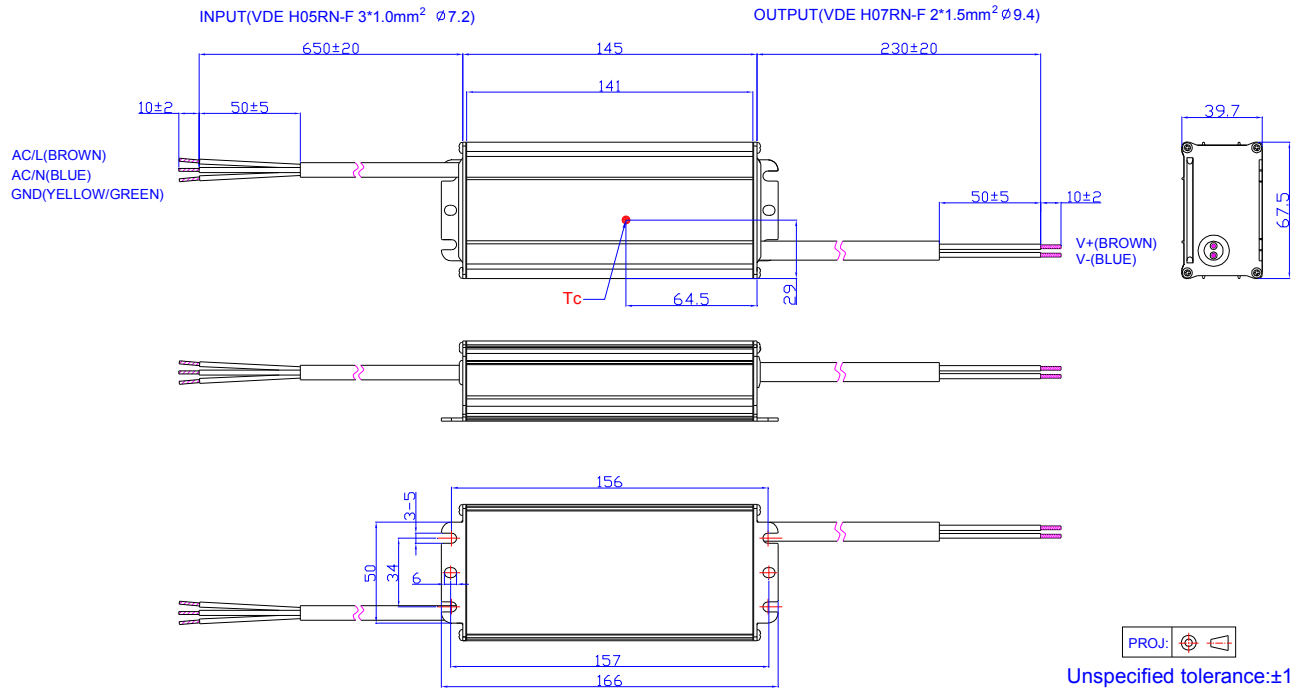


## Protection Functions

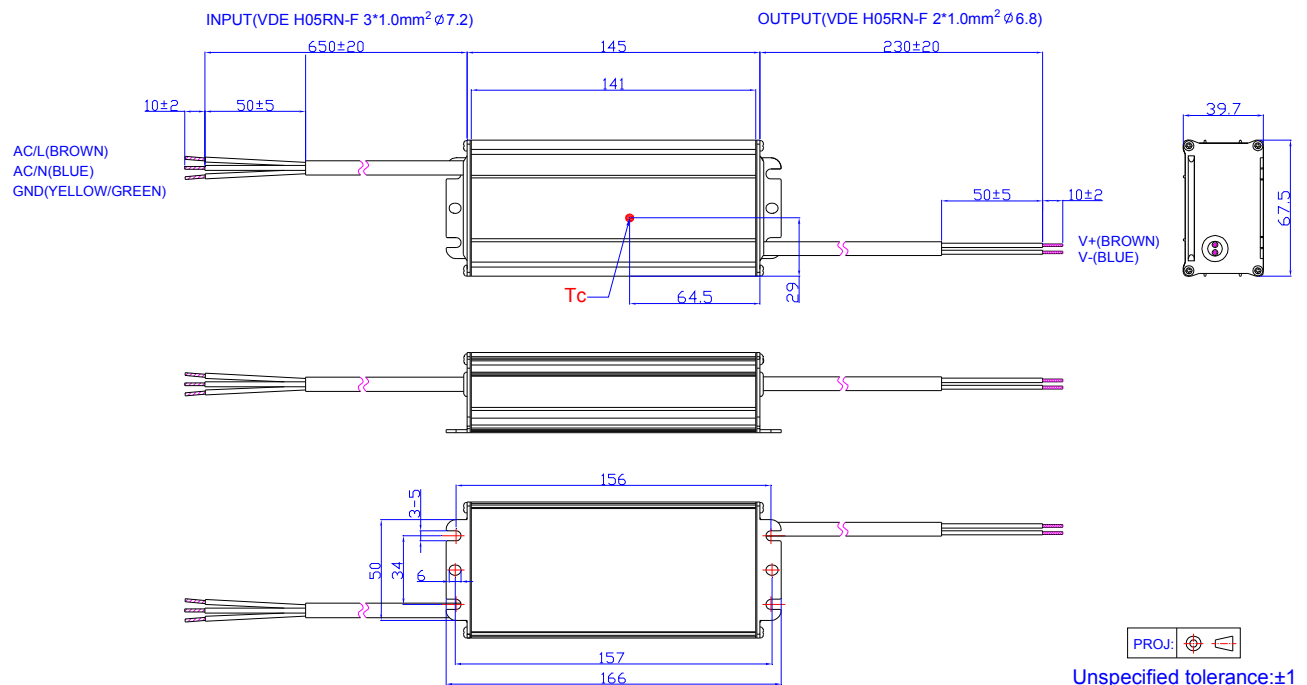
Parameter	Notes
Over Current Protection	Auto Recovery. The driver shall be self-recovery when the fault condition is removed.
Over Voltage Protection	Limits output voltage at no load and in case the normal voltage limit fails.
Short Circuit Protection	Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.
Over Temperature Protection	Auto Recovery. Returning to normal after over temperature is removed.

## Mechanical Outline

### EBV-150S012SV



### Others Models



## RoHS Compliance

Our products comply with the European Directive 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.

## Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2018-06-29	A	Datasheet Release	/	/
2018-10-25	B	CE certificate	/	Added
		CB certificate	/	Added
		BIS certificate	/	Added
		Models	EBV-150S012SV EBV-150S036SV	Added
		Note of Models	(1) Certified input Voltage range: 200-240Vac or 190-250Vdc (except CCC, KS and BIS).	(1) CCC certified input voltage range: 220/230/240 Vac; other certified input voltage range except CCC: 200-240 Vac or 190-250Vdc (except KS and BIS).
		Note of Models	(5) For BIS models add suffix -3000.	Added
		Input AC Current	1.05 A	0.84 A
		Inrush Current(I <sup>2</sup> t)	0.33 A <sup>2</sup> s	0.042 A <sup>2</sup> s
		THD<10%	EBV-150S036SV	Added
		Total Output Voltage Ripple (pk-avg)	EBV-150S012SV EBV-150S036SV	Added
		Efficiency at 220Vac input:	EBV-150S012SV EBV-150S036SV	Added
		MTBF	483,000Hours	355,000Hours
		Lifetime	86,000Hours	83,000Hours
		Safety & EMC Compliance	/	Updated
		Lifetime vs. Case Temperature curve	/	Updated
		Inrush Current Waveform	/	Updated
		Efficiency vs. Load curve	EBV-150S012SV EBV-150S036SV	Added
		Power Factor curve	/	Updated
		Total Harmonic Distortion curve	/	Updated
		Mechanical Outline	EBV-150S012SV	Added