



## A. Features

**IP 20**

- High Efficiency (Up to 89%).
- Active Power Factor Correction (Typical 0.95).
- Isolation Class II
- All-Round Protection: OVP/SCP/OTP/OPP.
- Fully isolated plastic case with IP20 and damp location.
- Class 2 and SELV.



## B. Description

The **HEC-60LTN-XXQSAA** Series operate from a 90 ~ 305Vac input range. They are designed to be highly efficient and highly reliable. Features include over voltage protection, short circuit protection, and over temperature protection.

## C. Models

Output Current	Input Voltage Range Note 1	Output Voltage Range Note 4	Max. Output Power	Efficiency Note 2	Power Factor Note 2	Model Number
2500mA	90 ~ 305Vac	12V~24V	60 W	88%	0.94	HEC-60LTN-24QSAA
2150mA	90 ~ 305Vac	14V~28V	60 W	89%	0.94	HEC-60LTN-28QSAA
1600mA	90 ~ 305Vac	18V~36V	60 W	89%	0.95	HEC-60LTN-36QSAA
1400mA	90 ~ 305Vac	21V~42V	60 W	89%	0.95	HEC-60LTN-42QSAA
1250mA	90 ~ 305Vac	24V~48V	60 W	89%	0.95	HEC-60LTN-48QSAA
1100mA	90 ~ 305Vac	27V~54V	60 W	88%	0.95	HEC-60LTN-54QSAA

## D. Electronic Specifications

### - Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage (V)	90	-	305	
Input Frequency (Hz)	47	-	63	
Input AC Current (A)	-	-	0.8	Measured at full load and 100Vac input.
	-	-	0.4	Measured at full load and 277Vac input.
Leakage Current (mA)	-	-	0.7	At 277Vac 60Hz input.
Inrush Current (A)	-	-	40	At 220Vac input 25°C Cold Start. Duration=100μs, 10%Ipk-10%Ipk.
Inrush Current (I2t)	-	-	0.16 A2s	
Power Factor	0.9	-	-	At 277Vac input, full load.
THD (%)	-	20	25	





- Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current (mA)				
Io = 2500 mA	2375		2625	
Io = 2150 mA	2043		2258	
Io = 1600 mA	1520		1680	
Io = 1400 mA	1330		1470	
Io = 1250 mA	1188		1313	
Io = 1100 mA	1045		1155	
No Load Output Voltage (V)				
Io = 2500 mA			35	
Io = 2150 mA			35	
Io = 1600 mA	----	----	50	There will be no damage or hazardous conditions occurred with no loading.
Io = 1400 mA			63	
Io = 1250 mA			63	
Io = 1100 mA			63	
Output Ripple Voltage (V)	----	----	1% Vomax	
Output Voltage Overshoot (%)	-	-	110	At full load condition.
Line Regulation (%)	-	-	±3	
Load Regulation (%)	-	-	±5	
Turn-on Delay Time (s)	-	0.5	1.0	Measured at 220Vac input.





**- General Specifications**

Parameter	Min.	Typ.	Max.	Notes
Efficiency (%)				Measured at full load and 120Vac input.
Io = 2500 mA	-	-	87	
Io = 2150 mA	-	-	87	
Io = 1600 mA	-	-	88	
Io = 1400 mA	-	-	88	
Io = 1250 mA	-	-	88	
Io = 1100 mA	-	-	88	
Efficiency (%)				Measured at full load and 277Vac input.
Io = 2500 mA	-	-	88	
Io = 2150 mA	-	-	88	
Io = 1600 mA	-	-	89	
Io = 1400 mA	-	-	88	
Io = 1250 mA	-	-	88	
Io = 1100 mA	-	-	88	
MTBF (hours)	320,000	-	-	Measured at full load 50°C ambient temperature (MIL-HDBK-217F).
Life Time (hours)		100,000	-	Measured at rated input voltage with full load, Case temperature=60°C @ Tc point. See life time vs. Tc curve for the details.
Case Temperature (°C)	-	-	80	
Dimensions Millimeters(L × W × H)	201 × 62 × 30.5			
Net Weight (g)				

**- Protection Functions**

Parameter	Min.	Typ.	Max.	Notes
Over Voltage Protection			1.50 Vomax	In the event of an over-voltage condition, the LED Drives shall Shut down o/p voltage, re-power on to recover.
Over Temperature Protection	Shut down o/p voltage with re-power on to recovery.			
Short Circuit Protection	No damage shall occur when any output operating in a short circuit condition. The power supply shall be self-recovery when the fault condition is removed.			





**- Environmental Specifications**

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature (°C)	-40	-	+60	Humidity: 20% RH to 80% RH; See Derating Curve for more details.
Storage Temperature (°C)	-40	-	+80	Humidity: 10% RH to 90% RH.

**- Safety and EMC Compliance**

Safety Category	Standard
UL/CUL	UL8750, UL1310 Class 2, CSA C22.2 NO. 223-M91 Class 2.
CE	EN 61347-1, EN61347-2-13.
EMI Standards <small>Note 6</small>	Notes
EN 55015	Conducted emission Test & Radiated emission Test.
EN 61000-3-2	Harmonic current emissions.
EN 61000-3-3	Voltage fluctuations & flicker.
FCC Part 15	FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 4 ANSI C63.4-2003
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: Level 2, Criteria A.
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 1 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.
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment.

**Notes:**

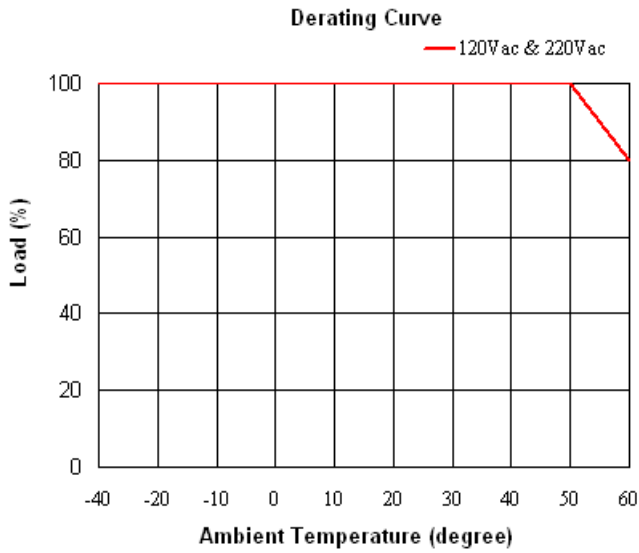
1. Normal input voltage range 100~277Vac.
2. Measured at input 220V with a full load.
3. All specifications are typical at 25 °C unless otherwise stated.
4. Constant current operation region is preferably 60%~100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.
5. Derating may be needed under low input voltages. Please check the static curve for more details.
6. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again



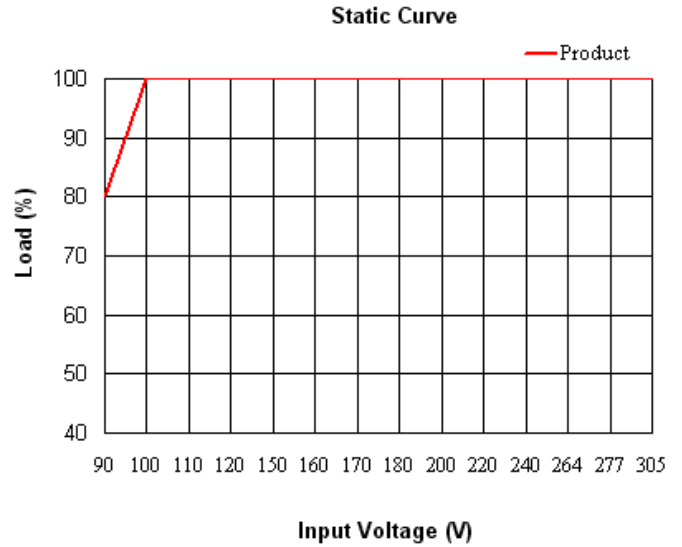


## E. Electronic Curve

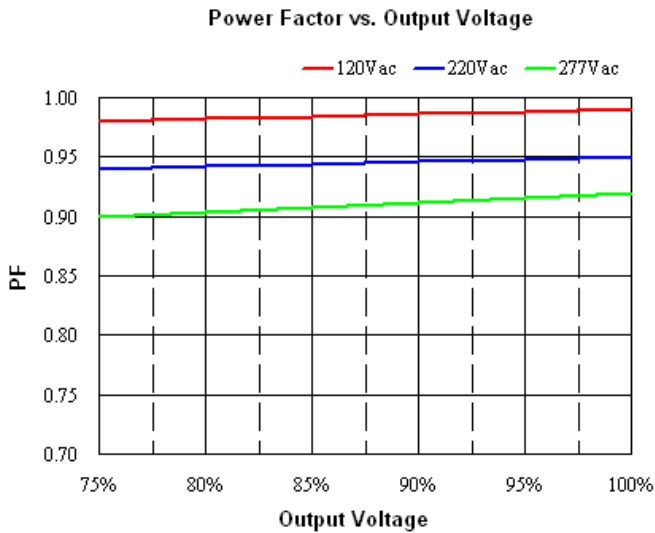
### - Derating Curve



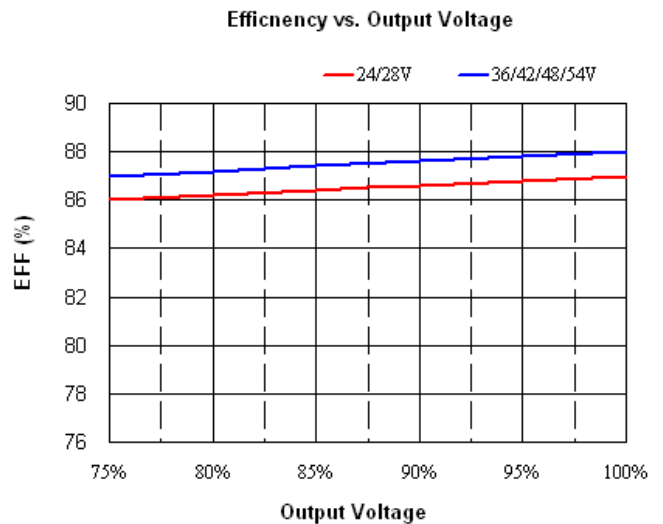
### - Static Curve



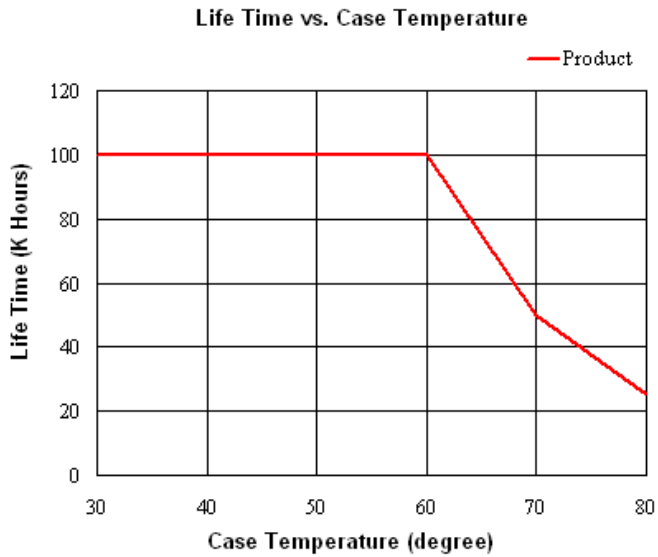
### - Power Factor Characteristics Curve



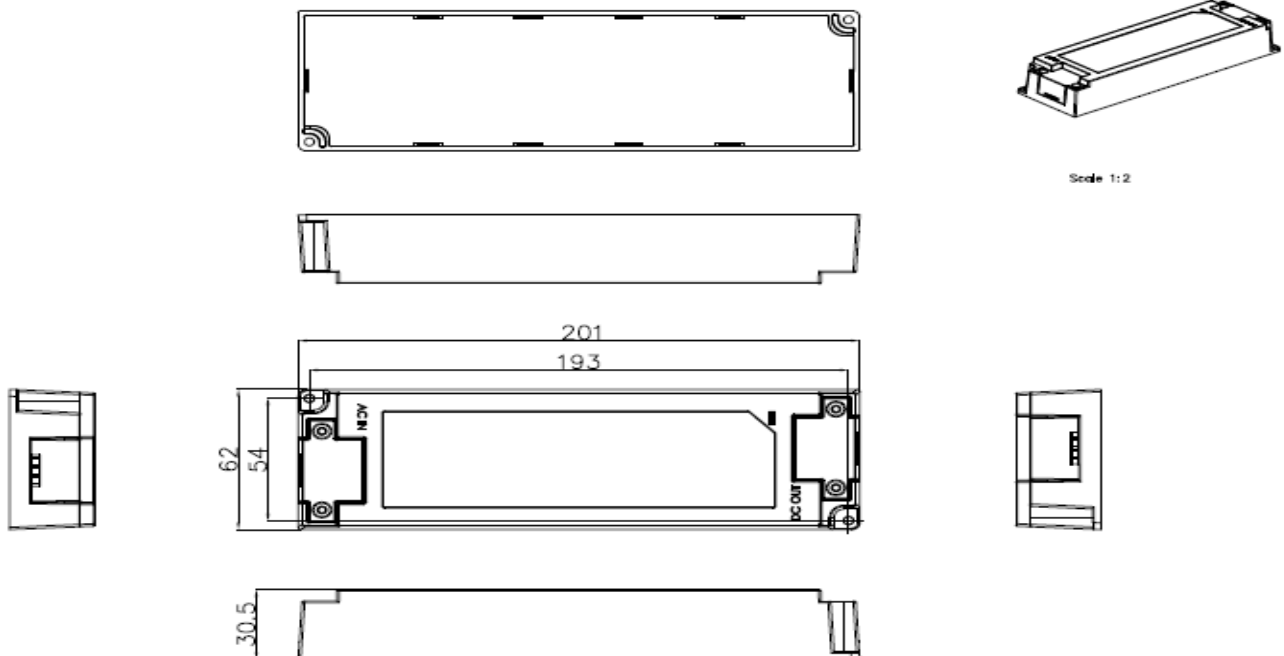
### - Efficiency Characteristics Curve



- Life Time vs. Case Temperature Curve



F. Mechanical Outline





High Quality  
Evolution  
Commitment



**HEC-60LTN-XXQSAA Rev A**

### G. RoHS Compliance Outline

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

### H. Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2013-11-01	A	Datasheets Release	/	/



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