Features

- Leading Edge and Trailing Edge AC Dimmable
- Constant Current Output
- High Efficiency (Up to 86%)
- Active Power Factor Correction (Up to 0.99)
- All-Round Protection: OTP, SCP and OLP
- UL8750 Safety Standards Approved

Description

The *LLC-028SxxxRSP* series operate from a 90 ~ 132 Vac input range. They are designed to be highly efficient and reliable. Features include dimming control with leading edge and trailing edge, open lamp, short circuit and thermal protections.

Model List

Output Current	Input Voltage Range	Output Voltage Range	Max. Output Power	Efficiency (1)	Power Factor (1)	Model Number
350 mA	90 ~ 132 Vac	40-80 Vdc	28 W	86%	0.99	LLC-028S035RSP
500 mA	90 ~ 132 Vac	28-56 Vdc	28 W	85%	0.99	LLC-028S050RSP(2)
700 mA	90 ~ 132 Vac	20-40Vdc	28 W	84%	0.99	LLC-028S070RSP(2) (3)
1050 mA	90 ~ 132 Vac	13-26 Vdc	28 W	83%	0.99	LLC-028S105RSP(2) (3)

Notes: (1) Measured in 120 Vac input with full conduction angle at full load.
(2) UL Class 2 (US)
(3) cUL Class 2 (Canada)

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 V	-	132 V	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.5 mA	At 120Vac, 60Hz input.
Input AC Current	-	-	0.4 A	Measured at full load and 120 Vac input.
Inrush Current	-	-	15 A	At 120Vac input Ta=25℃ cold start, duration = 10us

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%	-	5%	Full load condition
Startup Overshoot Current	-	-	10%	Full load condition
Line Regulation	-	-	2%	Input voltage from 110Vac to 132Vac
	-	-	20%	Input voltage from 90Vac to 110Vac

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Load Regulation	-	-	5%	/
Turn-on Delay Time	-	0.6 s	1 s	Measured at 120Vac input.
Dimming Range	10%Io	-	100%Io	

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

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
No Load Voltage	Vomax	110% Vomax	120% Vomax	Vomax is the maximum operation output voltage
Over Temperature Protection	-	100℃	-	Case Temperature
Short Circuit Protection	Latch mode. The power supply shall return to normal operation only after the short is removed and the power is recycled.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency I_O = 350 mA I_O = 500 mA I_O = 700 mA I_O = 1050 mA	 85% 84% 83% 82%	 86% 85% 84% 83%	 - - - -	Measured at full load and 120 Vac input with full conduction angle.
Power Factor I_O = 350 mA I_O = 500 mA I_O = 700 mA I_O = 1050 mA	 0.98 0.98 0.98 0.98	 0.99 0.99 0.99 0.99	 - - - -	Measured at maximum output voltage and 120 Vac input with full conduction angle.
No Load Power Dissipation	-	-	3 W	
MTBF	200,000 Hours			Measured at 120Vac input, 80%load and 25℃ ambient temperature (MIL-HDBK-217F)
Life Time	50,000 Hours			Case temperature=60℃ @ Tc point. See the life vs. Tc curve for the details
Dimensions Inches (L × W × H) Millimeters (L × W × H)	 3.74 × 2.76 × 1.26 95 × 70 × 32			
Net Weight		210 g		

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

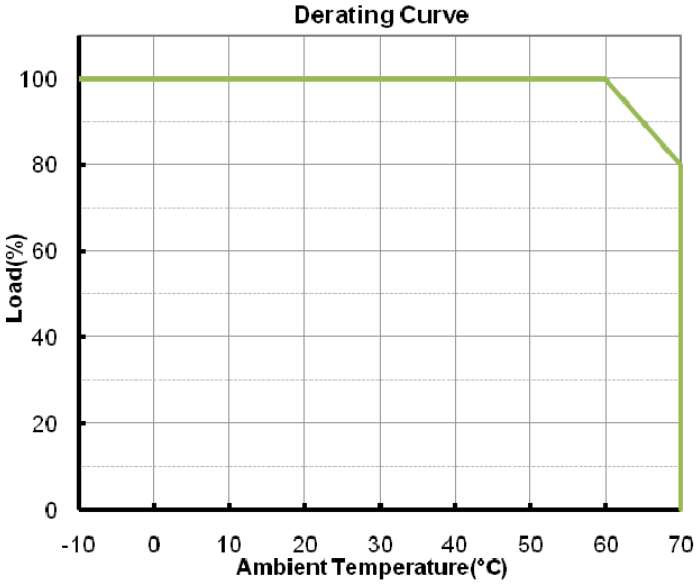
Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-10℃	-	+70 ℃	Humidity: 10% RH to 90% RH.
Storage Temperature	-20 ℃	-	+85 ℃	Humidity: 5% RH to 90% RH

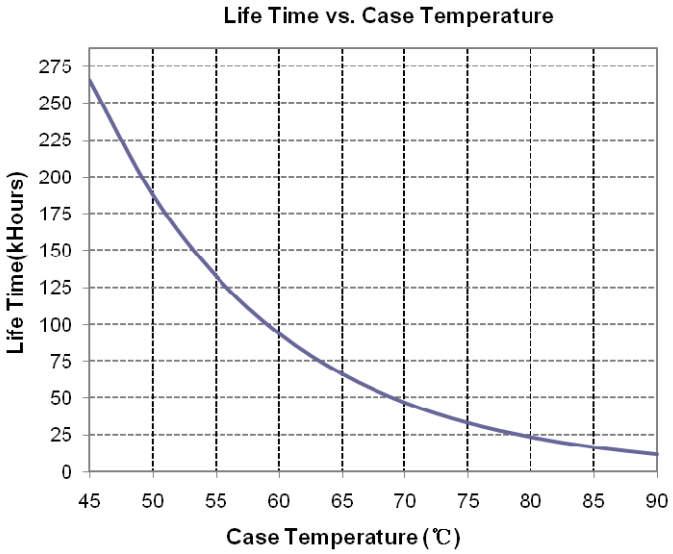
Safety & EMC Compliance

Safety Category	Standard
UL	UL8750, UL1310, UL1012, CAN/CSA-C22.2 No. 223-M91, CSA C22.2 No. 107.1-01
EMI Standards	**Notes**
FCC Part 15	Class B This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

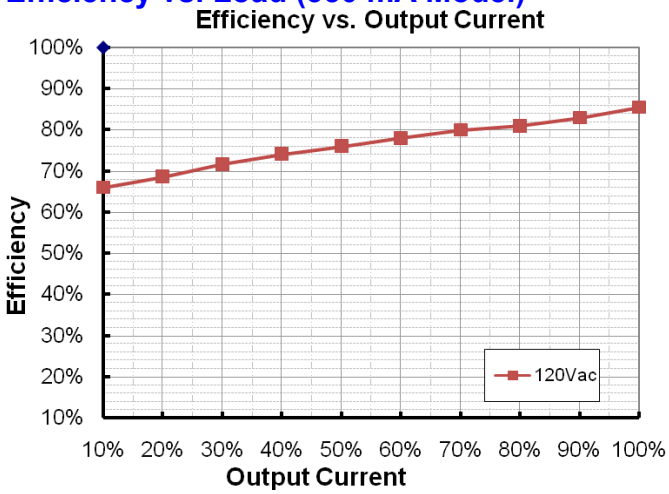
Derating Curve

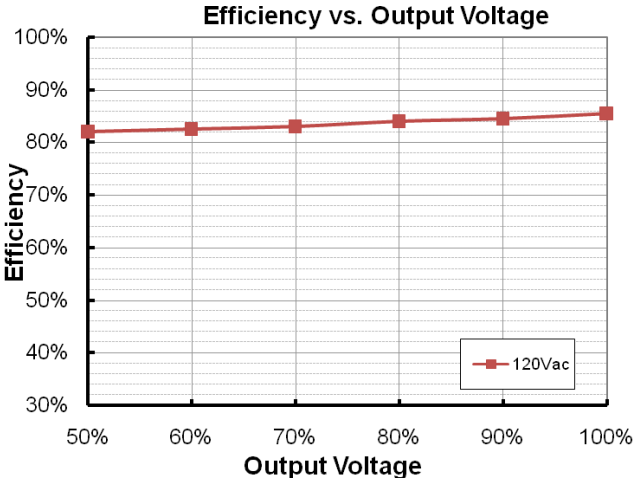


Life vs. Case Temperature Curve

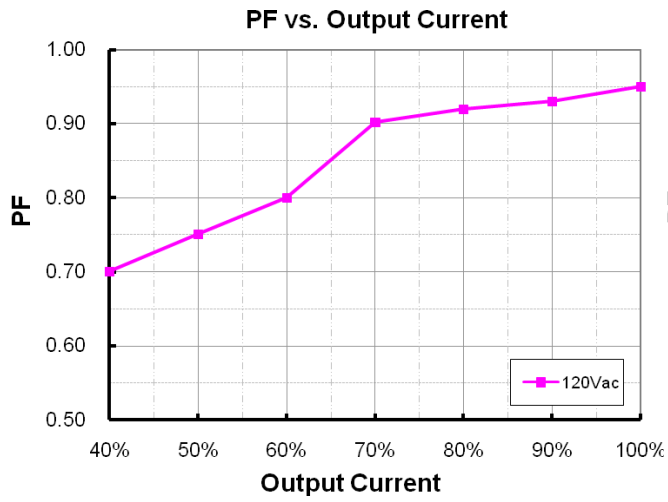


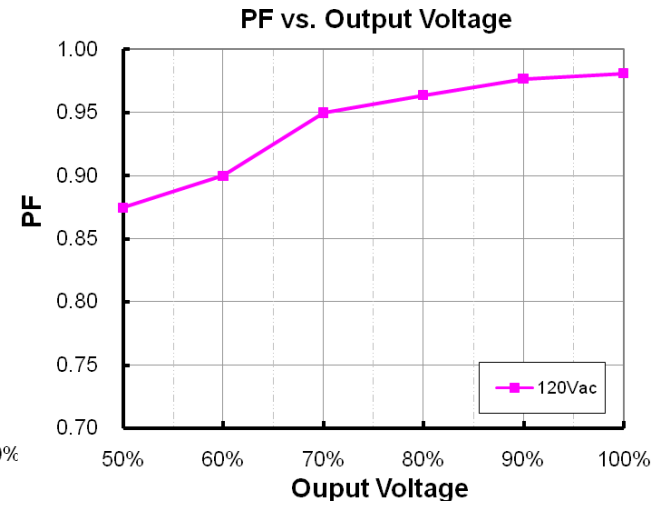
Efficiency vs. Load (350 mA Model)





Power Factor Characteristic

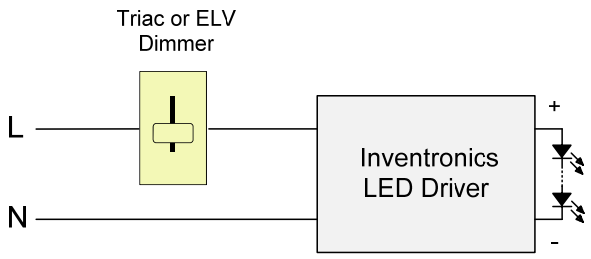


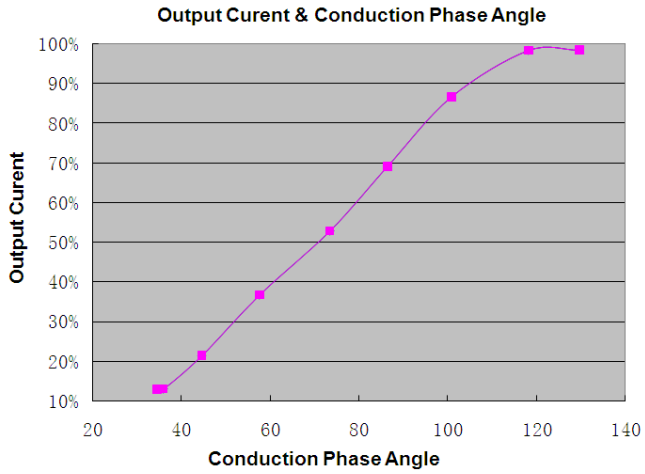


Dimmer Recommendation

Manufacturer	Type	Applicable Voltage	Power Rating	Notes
LUTRON	SKYLARK CTCL-153PDH	120Vac	600W	
LUTRON	DIVA DVF-103P	120Vac	600W	
LUTRON	SKYLARK S-600P-WH	120Vac	600W	
LUTRON	SKYLARK CT-600PR-WH	120Vac	600W	
LUTRON	SKYLARK LX-103PL-WH	120Vac	1000W	
LUTRON	MAESTRO MA-1000-WH	120Vac	600W	
LEVITON	011-IPI06-1LZ	120Vac	600W	
LEVITON	011-IPI10-1LZ	120Vac	1000W	

TRIAC Dimming Control



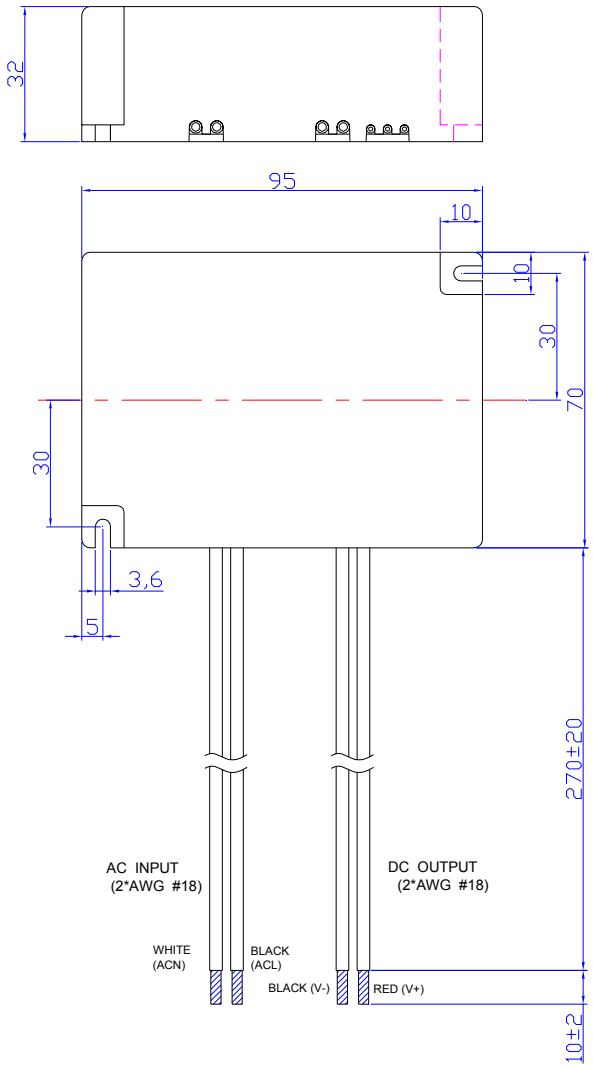


Implementation: Dimming with Triac or ELV Dimmer

TRIAC Dimming Control (Continued)

Parameter	Min.	Typ.	Max.	Notes
Dimming Range	10%Io	-	100%Io	Measured at 120 Vac input.
Conduction Angle	30°	-	180°	Measured at 120 Vac input.

Mechanical Outline



RoHS Compliance

Our products comply with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2011-12-12	A	Datasheets Release	/	/
2012-01-27	B	PF & Efficiency Curve	/	Added