Features

- Leading Edge and Trailing Edge AC Dimmable
- Constant Current Output
- High Efficiency (Up to 85%)
- Active Power Factor Correction (Up to 85%)
- All-Around Protection: SCP and OLP

Description

The *LLC-024SxxxRSP* series operates 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	34~68 Vdc	24 W	85%	0.95	LLC-024S035RSP
500 mA	90 ~ 132 Vac	24~48 Vdc	24 W	85%	0.95	LLC-024S050RSP(2)
700 mA	90 ~ 132 Vac	17~34 Vdc	24 W	84%	0.95	LLC-024S070RSP(2)(3)
1050 mA	90 ~ 132 Vac	12~23 Vdc	24 W	83%	0.95	LLC-024S105RSP(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 Vac	-	132 Vac	
Input Frequency		60 Hz		
Leakage Current	-	-	0.5 mA	At 120Vac, 60Hz input.
Input AC Current	-	-	0.4 A	Measured at full load and 100 Vac input.
Inrush Current	-	-	1 A	At 120Vac input, 25℃ cold start, duration=200 us, 10%Ipk-10%Ipk.
Inrush Current(I^2t)	-	-	$6.7*10^{-5}$ A^2s	
Power Factor	0.90	-	-	At 120Vac, 75%load-100%load
THD	-	-	20%	

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
	-	-	±10%	Input voltage from 90Vac to 110Vac

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Load Regulation	-	-	±5%	
Turn-on Delay Time	-	0.6 s	1.0 s	Measured at 120Vac input.
Dimming Range	10%Io	-	100%Io	
Temperature coefficient	-	-	0.03%/°C	Case temperature = 0°C ~Tc max

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

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
No Load Voltage I_O = 350 mA I_O = 500 mA I_O = 700 mA I_O = 1050 mA	 - - - -	 - - - -	 90 V 58 V 42 V 35 V	
Short Circuit Protection	Auto recovery mode. The power supply shall return to normal operation after the fault condition is removed.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency I_O = 350 mA I_O = 500 mA I_O = 700 mA I_O = 1050 mA	 83% 83% 82% 81%	 85% 85% 84% 83%	 - - - -	Measured at full load and 120 Vac input with full conduction angle.
No Load Power Dissipation	-	-	3 W	
MTBF	-	460,000 Hours	-	Measured at 120Vac input, 80%load and 25℃ ambient temperature (MIL-HDBK-217F)
Life Time I_O = 350 mA I_O = 1050 mA	103,000 Hours 63,000 Hours			Measured at 120Vac input, 80%Load and 60°C case temperature; See life time vs. Tc curve for the details
Case Temperature	-	-	90℃	
Dimensions Inches (L × W × H) Millimeters (L × W × H)	4.73× 1.65 × 1.20 120 × 42 ×30.5			
Net Weight		235 g		

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

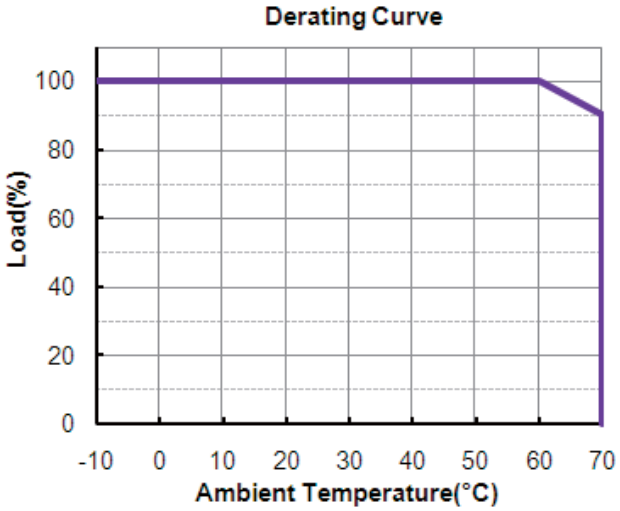
Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-10℃	-	+70 ℃	Humidity: 10% RH to 100% RH. See Derating Curve for more details
Storage Temperature	-20 ℃	-	+85 ℃	Humidity: 5% RH to 100% RH

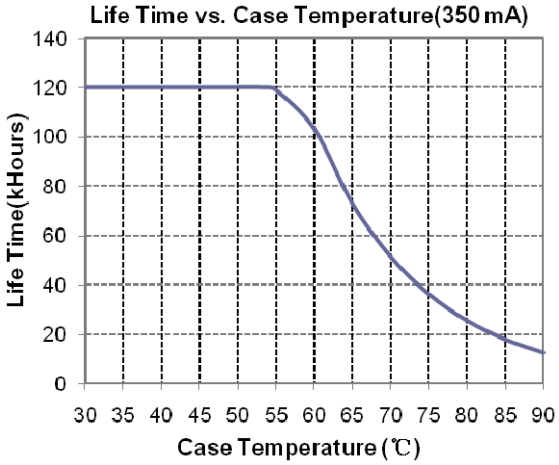
Safety & EMC Compliance

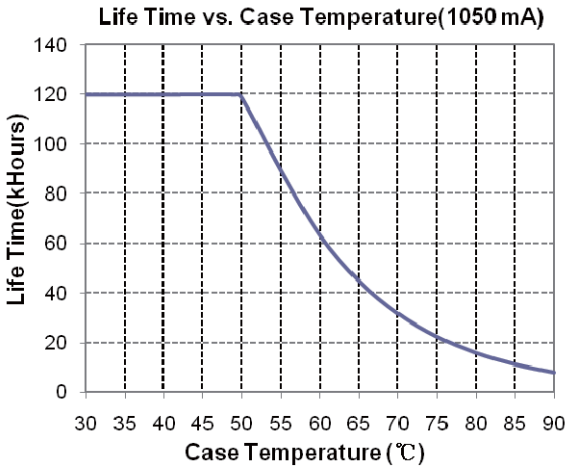
Safety Category	Standard
UL/CUL	UL8750, UL1310 Class 2, UL1012, CAN/CSA-C22.2 No. 223-M91 Class 2, CSA C22.2 No. 107.1-01
EMI Standards	**Notes**
FCC Part 15	ANSI C63.4:2009 Class B

Derating Curve

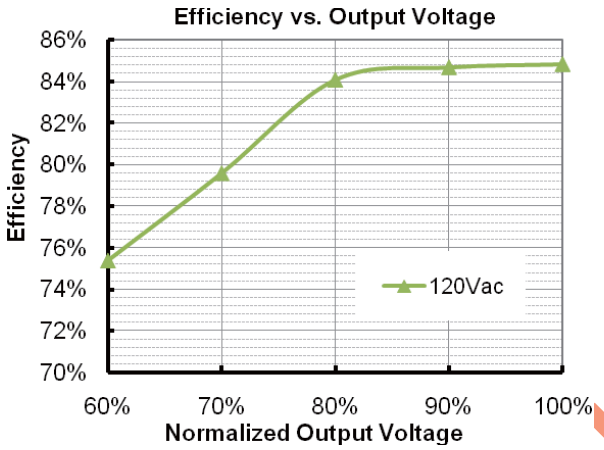


Life Time vs. Case Temperature Curve

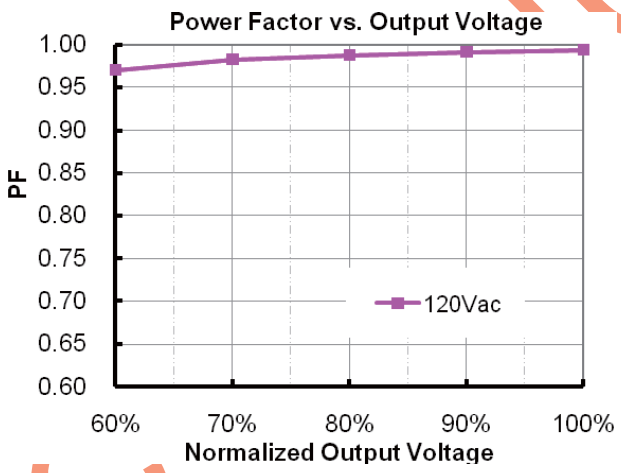




Efficiency vs. Load (350mA)



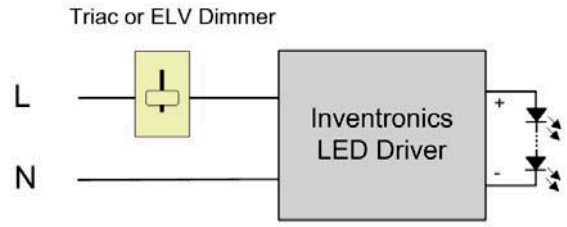
Power Factor Characteristics (350 mA)

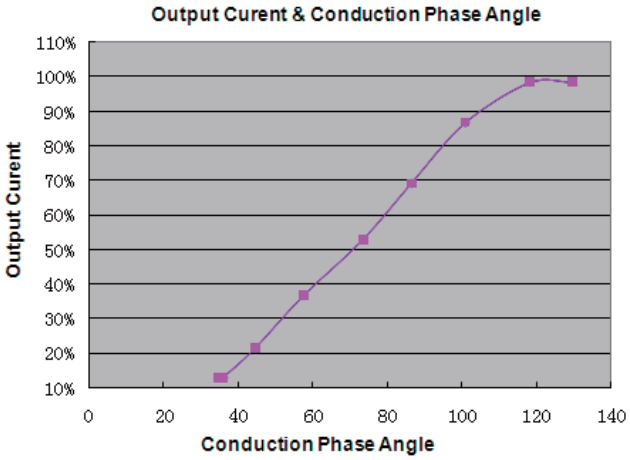


Dimmer Recommendation

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	MAESTRO MA-1000-WH	120Vac	600W	
LEVITON	011-IPI06-1LZ	120Vac	600W	

TRIAC Dimming Control

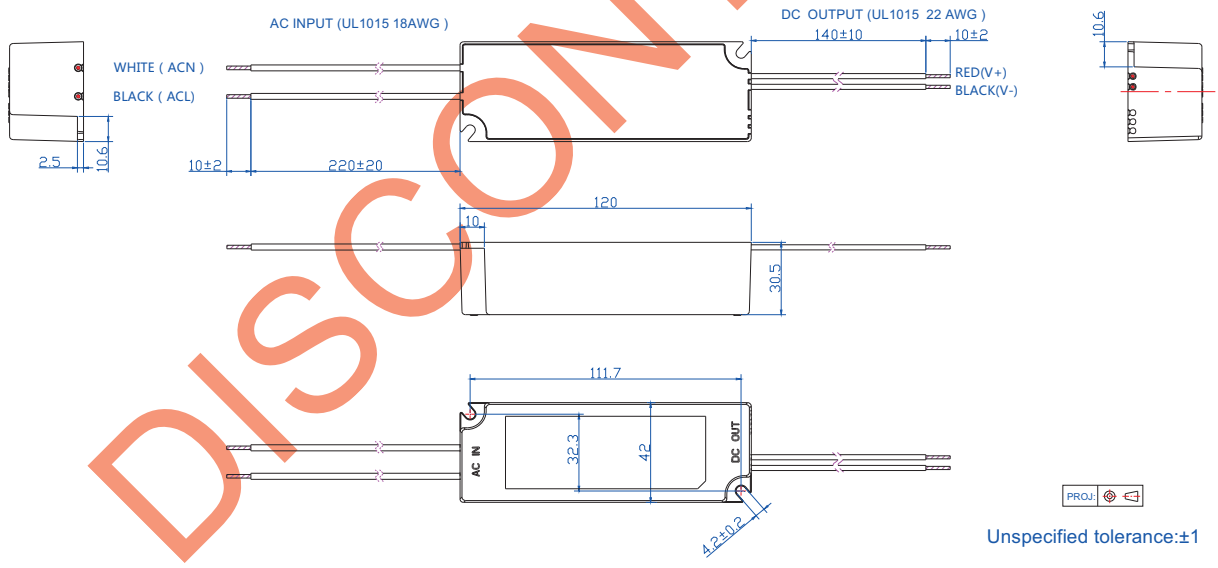




Implementation: Dimming with Triac or ELV Dimmer

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 2011/65/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
2012-10-11	A	Datasheets Released	/	/
2013-04-28	B	Net weight	180g	235g
2014-02-11	C	Product Picture	/	Updated
		Mechanical Outline --- Input and Output wires : 20mm reduced	/	Updated

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