Features

- High Efficiency (Up to 89%)
- Ultra High Voltage Input
- Active Power Factor Correction (Typical 0.95)
- All-Around Protection: OVP, SCP, OLP
- 0-10V Dimming
- Waterproof (IP66)
- Class 2

Description

The LTC-040SxxxDSP(SSP) series operates from a 312 ~ 528 Vac input range. They are designed to be highly efficient and highly reliable. Features include dimming control, over voltage protection, short circuit protection, over load protection, and over temperature protection.

Models

Output Current	Input Voltage Range	Output Voltage Range	Max. Output Power	Typical Efficiency (1)	Power Factor		Model Number (2, 3)
					347Vac	480Vac	
350 mA	312 ~ 528 Vac	57~114Vdc	40 W	89%	0.96	0.95	LTC-040S035DSP(SSP)(4)
530 mA	312 ~ 528 Vac	38~75 Vdc	40 W	89%	0.96	0.95	LTC-040S053DSP(SSP)(4)
700 mA	312 ~ 528 Vac	28~56Vdc	39 W	88%	0.96	0.95	LTC-040S070DSP(SSP)(5)
1050 mA	312 ~ 528 Vac	19~38Vdc	40 W	87%	0.96	0.95	LTC-040S105DSP(SSP)(5)
1400 mA	312 ~ 528 Vac	14~29 Vdc	40 W	86%	0.96	0.95	LTC-040S140DSP(SSP)(5)
1750 mA	312 ~ 528 Vac	11~23 Vdc	40 W	86%	0.96	0.95	LTC-040S175DSP(SSP)(5)
2100 mA	312 ~ 528 Vac	9~19 Vdc	40 W	86%	0.96	0.95	LTC-040S210DSP(SSP)(5)

Notes: (1) Measured at full load and 480 Vac input.
(2) The DSP suffix may be changed to SSP to omit the dimming function and remove the three wires associated with that function.
(3) A suffix –xxxx may be added to denote variations or modifications to the base product, where x can be any alphanumeric character or blank.
(4) Non-Class 2 output (USR & CNR).
(5) Class 2 output (USR & CNR) for Dry & Damp Location.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	312 Vac	-	528 V	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 mA	At 480Vac 60Hz input
Input AC Current	-	-	0.17 A	Measured at full load and 347 Vac input.
	-	-	0.13 A	Measured at full load and 480 Vac input.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Inrush Current	-	-	65 A	At 480Vac input 25℃ Cold Start. Duration=200 μs, 10%Ipk-10%Ipk.
Inrush Current(I^2t)	-	-	0.32 A^2s	
PF	0.9	-	-	347-480Vac 75% load -100% load
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range	-5% I_O	-	5% I_O	
No Load Output Voltage I_O = 350 mA I_O = 530 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 1750 mA I_O = 2100 mA	 - - - - - - -	 - - - - - - -	 132V 90V 60V 42V 35V 28V 23V	
Output Voltage Ripple I_O = 350 mA I_O = 530 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 1750 mA I_O = 2100 mA	 - - - - - - -	 - - - - - - -	 6 V 5 V 5 V 4 V 3 V 3 V 2 V	Load conditions, Measured by 20 MHz bandwidth oscilloscope and the output paralleled a 0.1 uF ceramic capacitor and a 10 uF electrolytic capacitor
Overshoot/Output Current	-	-	10% Io	
Line Regulation	-	-	±1.5%	
Load Regulation	-	-	±3.0%	
Turn-on Delay Time	-	0.8 s	1.0 s	Measured at 347Vac input.
	-	0.5 s	0.8 s	Measured at 480Vac input.
Output Overshoot / Undershoot	-	-	10%	When power on or off.
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
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.			
Over Temperature Protection	Decrease output current mode. When the case temperature reaches 105±10℃, the output current decreases to 50%Io until the case temperature reaches 70±10℃.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency I_O = 350 mA I_O = 530 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 1750 mA I_O = 2100 mA	 87% 87% 86% 85% 84% 84% 84%	 89% 89% 88% 87% 86% 86% 86%	 - - - - - - -	Measured at full load and 347 Vac input.
Efficiency I_O = 350 mA I_O = 530 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 1750 mA I_O = 2100 mA	 87% 87% 86% 85% 84% 84% 84%	 89% 89% 88% 87% 86% 86% 86%	 - - - - - - -	Measured at full load and 480 Vac input.
Standby Power Dissipation	-	-	5 W	
MTBF	-	459,000 Hours	-	Measured at 480Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Life Time	-	87,000 Hours	-	Measured at 480Vac 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)	 3.74 × 2.76 × 1.26 95 × 70 × 32			
Net Weight	-	350 g	-	

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

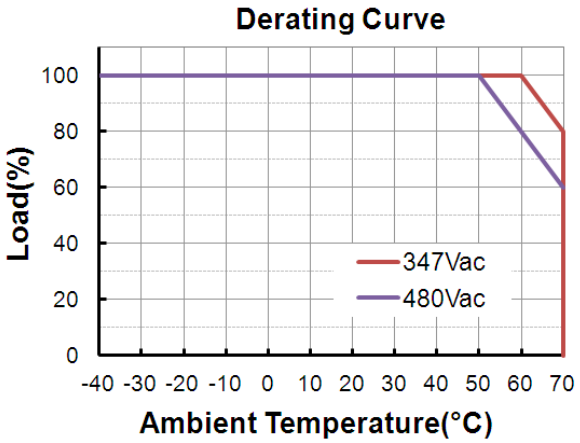
Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-40 ℃	-	+70 ℃	Humidity: 10% RH to 100% RH See Derating Curve for more details
Storage Temperature	-40 ℃	-	+85 ℃	Humidity: 5% RH to 100% RH

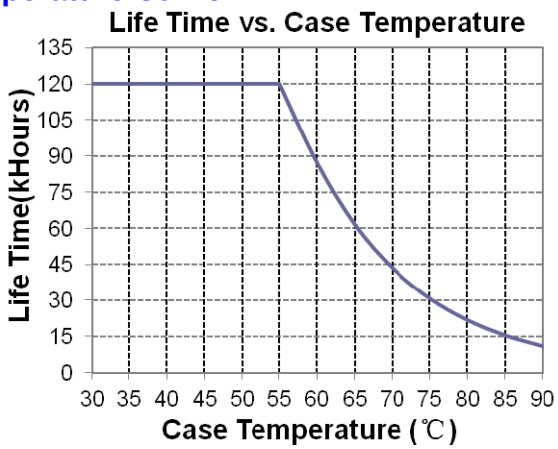
Safety & EMC Compliance

Safety Category	Standard
UL/CUL	UL8750,UL1310,CAN/CSA-C22.2 No. 250.13-12,CAN/CSA-C22.2 No. 223-M91
EMI Standards	**Notes**
FCC Part 15	ANSI C63.4:2009 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

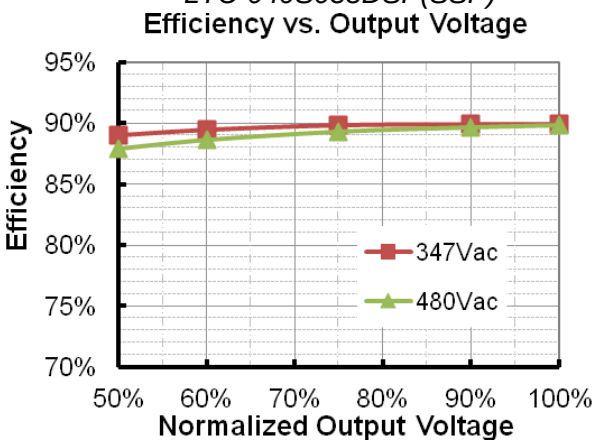


Life Time vs. Case Temperature Curve

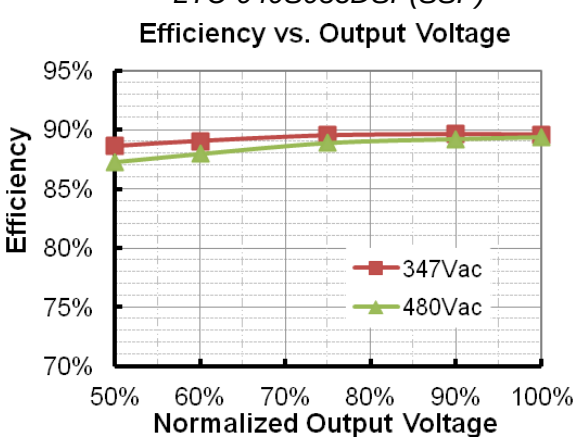


Efficiency vs. Load

LTC-040S035DSP(SSP)



LTC-040S053DSP(SSP)



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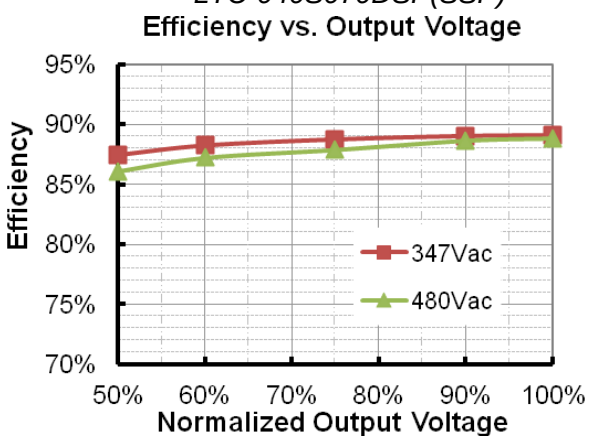
LTC-040S070DSP(SSP)



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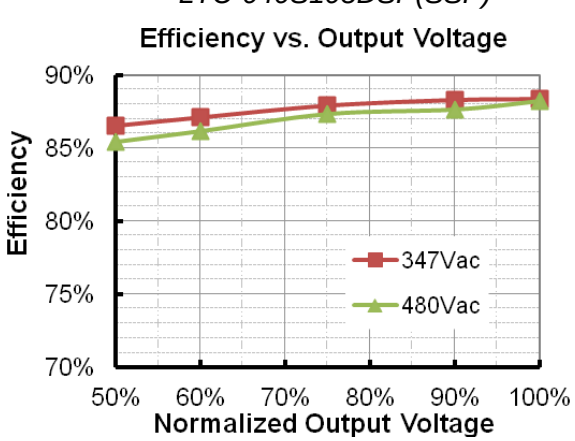

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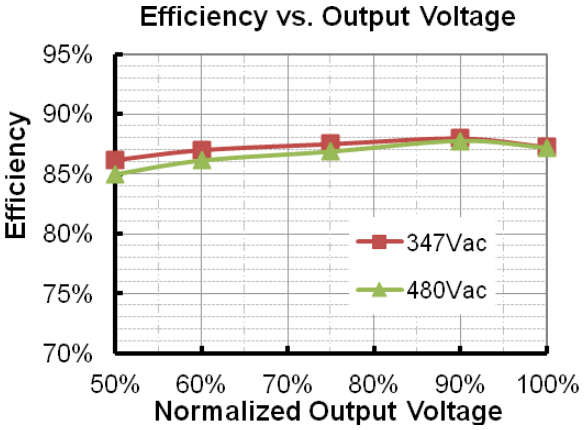

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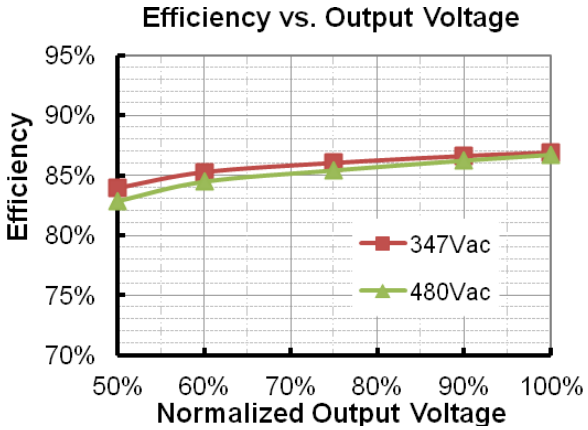

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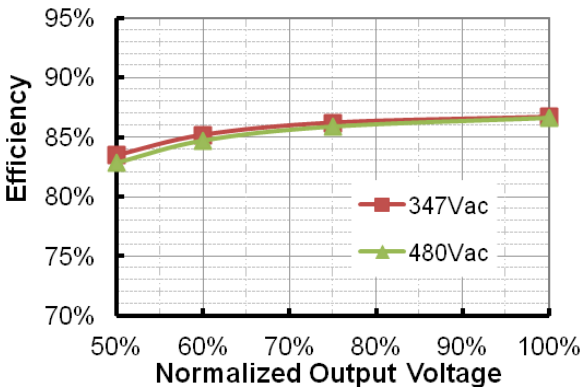

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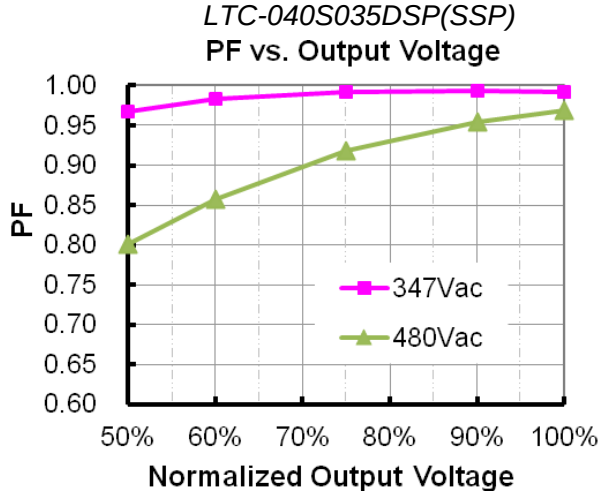
Power Factor Characteristics

LTC-040S035DSP(SSP)



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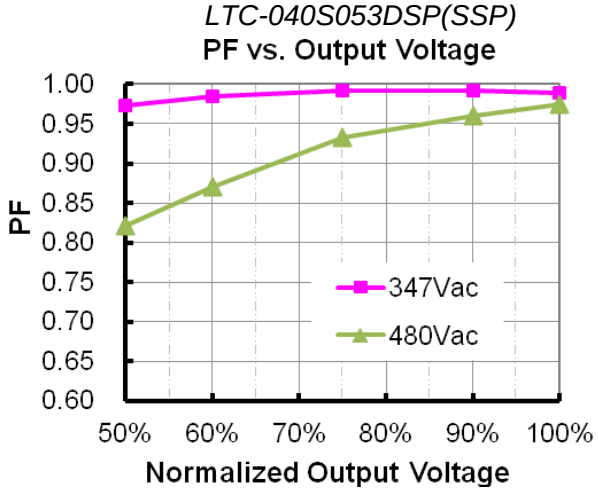

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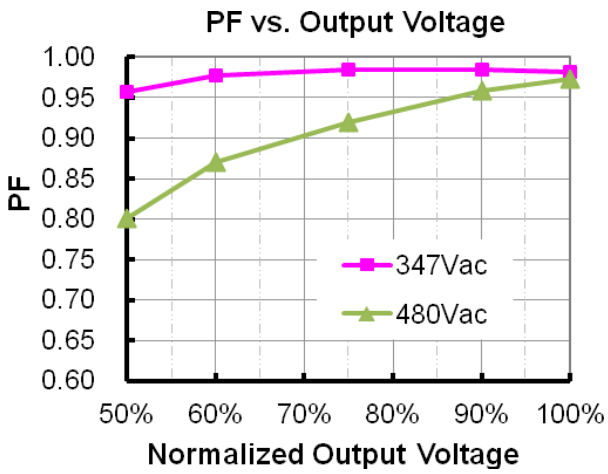

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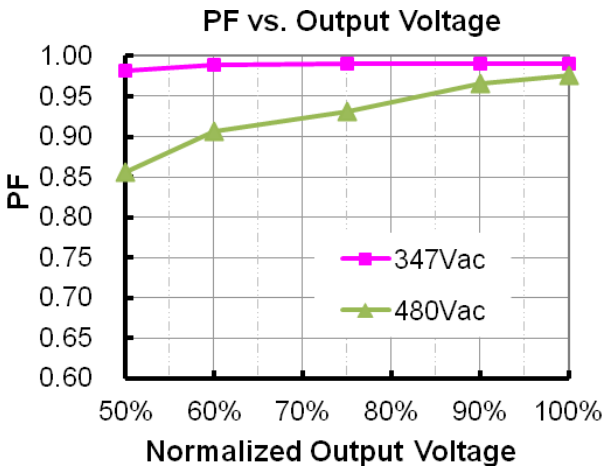

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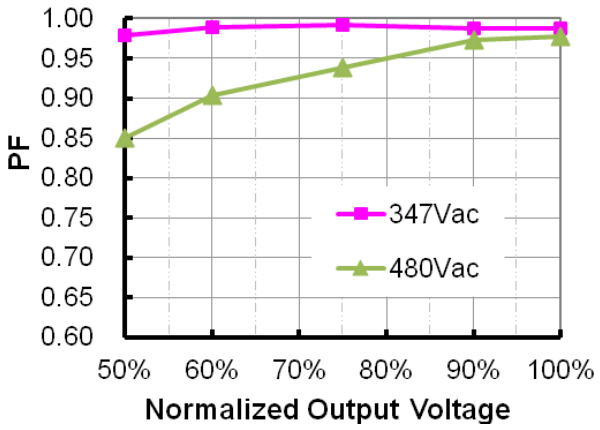

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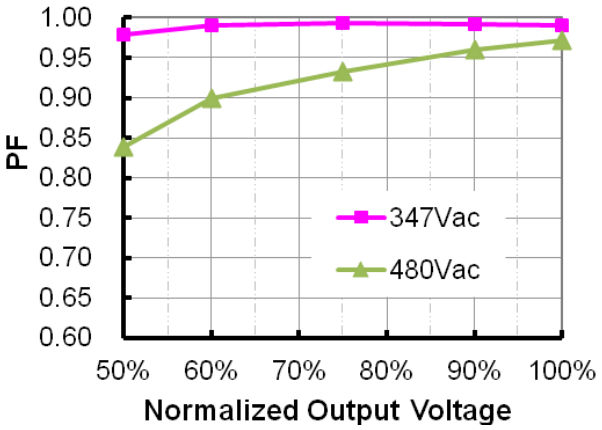

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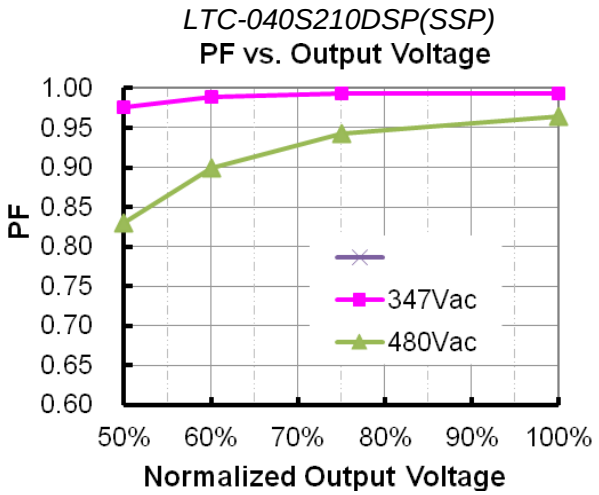
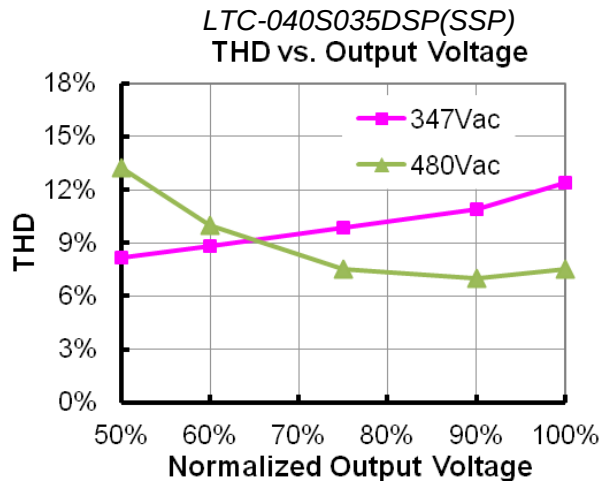
LTC-040S210DSP(SSP)



Total Harmonic Distortion

LTC-040S035DSP(SSP)



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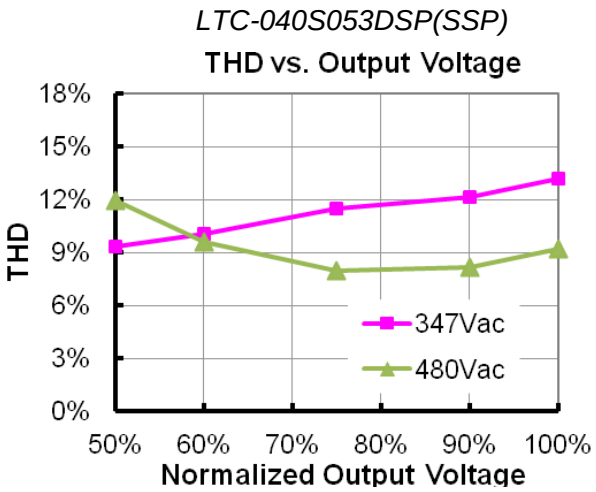

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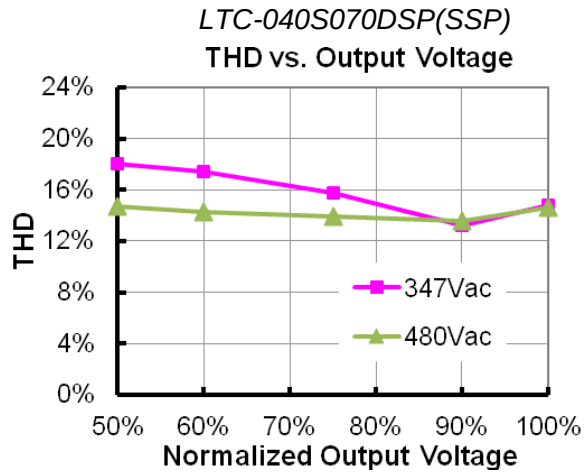

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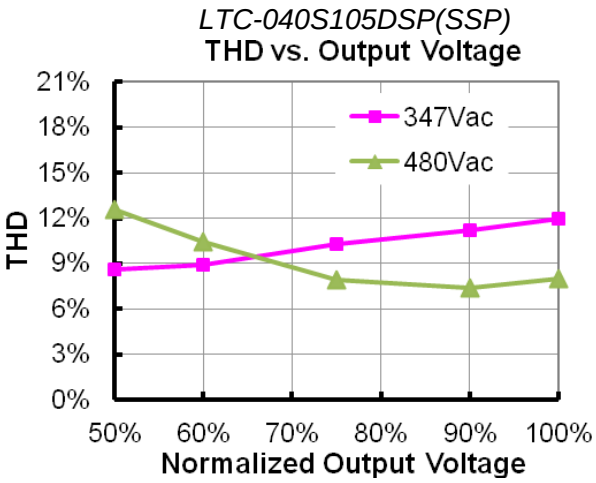

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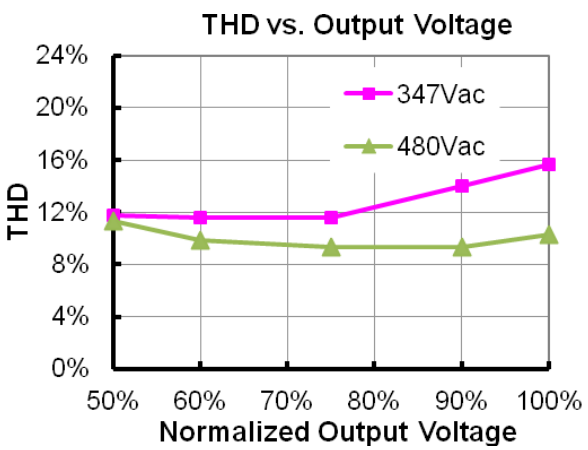
LTC-040S140DSP(SSP)



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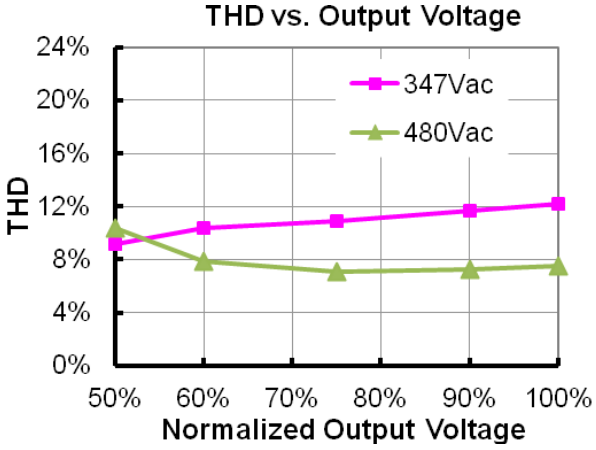
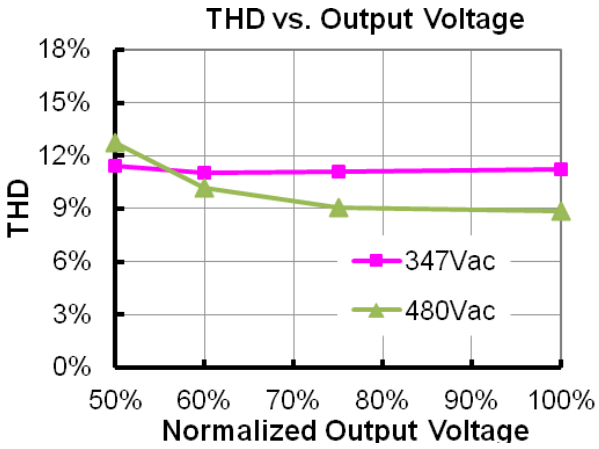


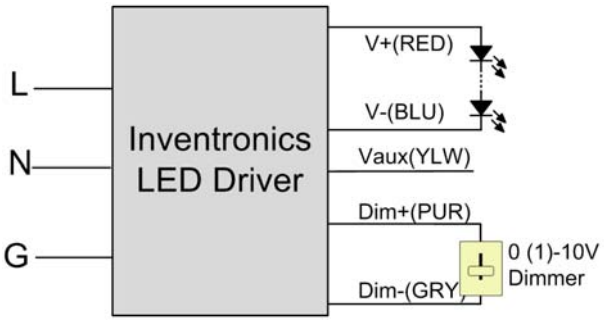
LTC-040S210DSP(SSP)

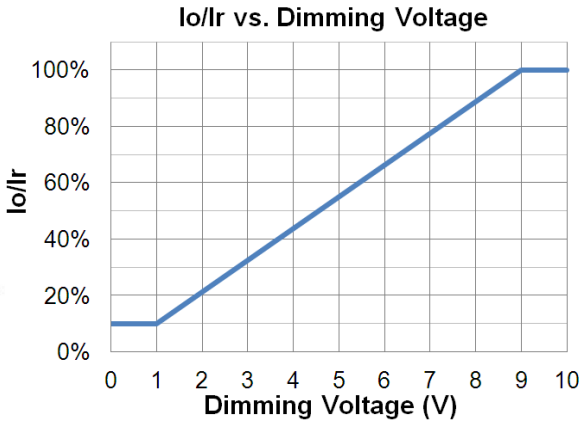


Dimming Control (On secondary side)

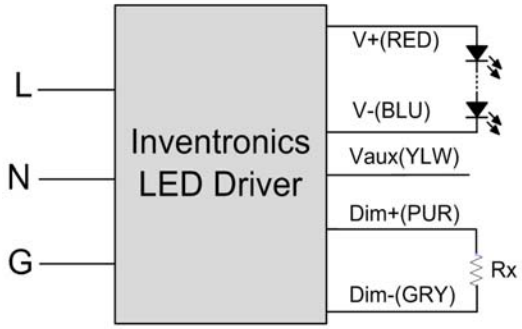
Parameter	Min.	Typ.	Max.	Notes
12V Output Voltage	10.8 V	12 V	13.2 V	
12V Output Source Current	-	-	20 mA	
Absolute Maximum Voltage on the 0~10V Input Pin	-20 V	-	20 V	
Source Current on 0~10V Input Pin	180 uA	200 uA	220 uA	

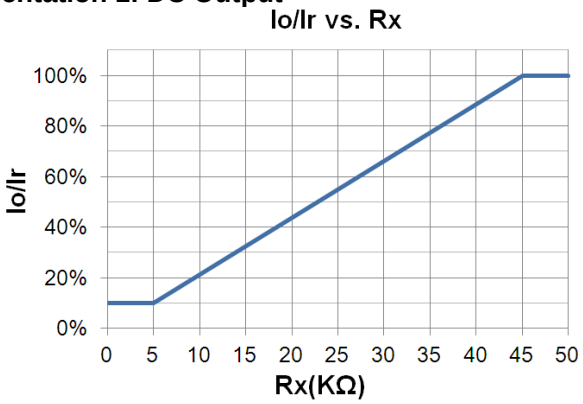
The dimmer control may be operated from either a dimmer or from an input signal of 0 – 10 Vdc. The recommended implementation is provided below.





Implementation 1: DC Output



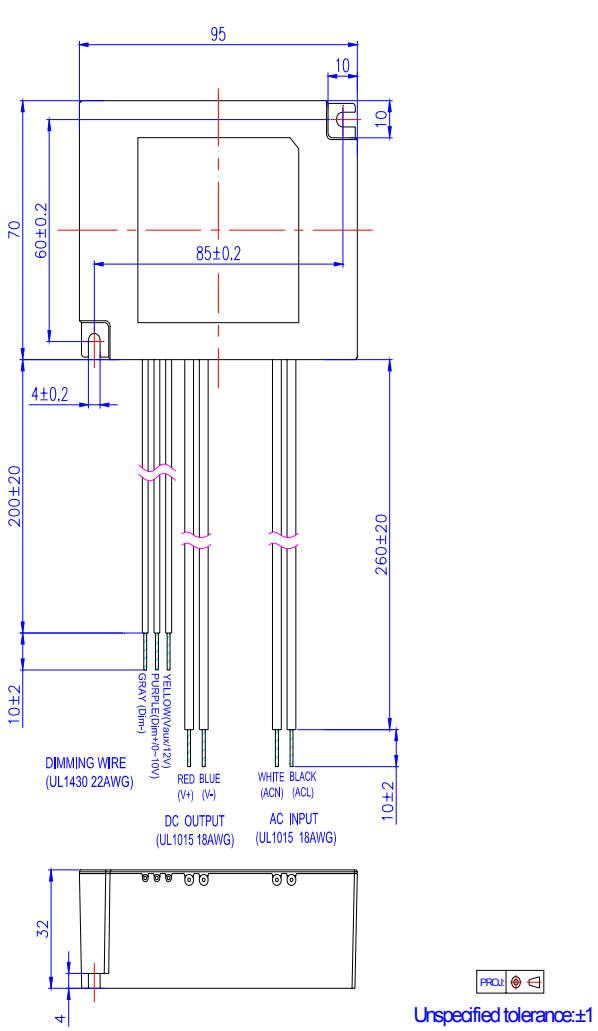


Implementation 2: External Resistor

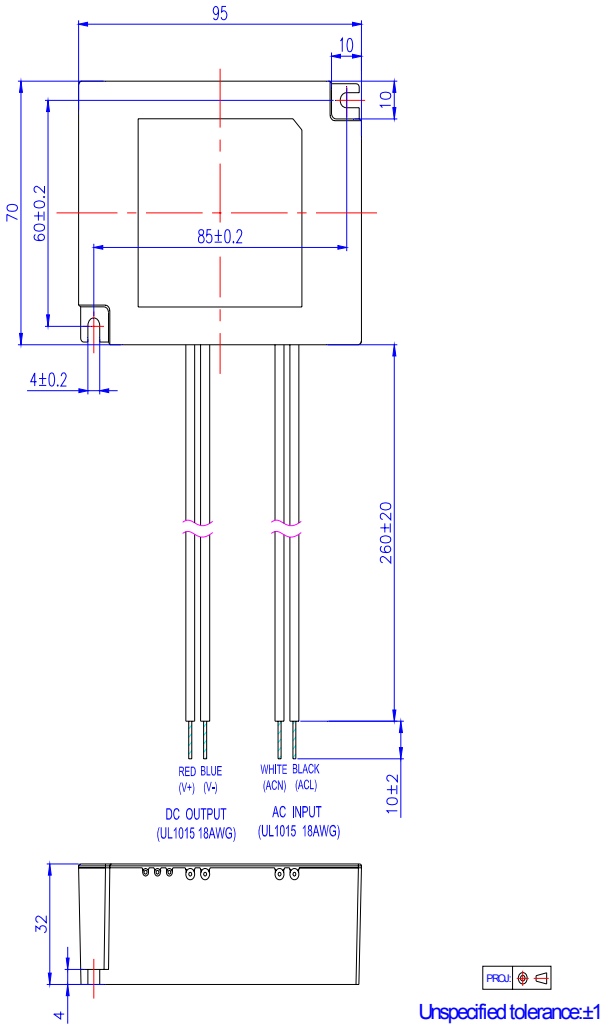
Notes:

1. Io is actual output current and Ir is rated current without dimming control.
2. Do not connect the Dim- to the V-; otherwise, the LED driver cannot work normally.
3. If 0-10V dimming is not used, Dim + can be either open or connected to Vaux.

Mechanical Outline



LTC-040SxxxDSP



LTC-040SxxxSSP

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
2013-10-12	A	Datasheets Release	/	/