Features

- High Efficiency (Up to 89%)
- Ultra High Voltage Input
- Active Power Factor Correction (Typical 0.95)
- All-Around Protection: OVP, SCP and Open Lamp Protection
- 0-10V Dimmable
- Waterproof (IP66) and UL Dry / Damp Location
- Class 2 Output

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

Notes: (1) UL, FCC certified input voltage range: 347-480Vac.
(2) Measured at full load and 480 Vac input.
(3) Non-Class 2 output (USR & CNR).
(4) Class 2 output (USR & CNR) for Dry & Damp Location.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	312 Vac	-	528 Vac	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL8750; 480Vac/ 60Hz

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
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.
Inrush Current(I^2t)	-	-	0.32 A^2s	At 480Vac input 25℃ Cold Start. Duration=120 μs, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.9	-	-	347-480Vac , 75% -100%load (30~40W)
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range	-5%Io	-	5%Io	
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
Output Current Overshoot / Undershoot	-	-	10%Io	
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	
Line Regulation	-	-	±1.5%	Measured at full load.
Load Regulation	-	-	±3.0%	Measured at full load.
Turn-on Delay Time	-	0.8 s	1.0 s	Measured at 347Vac input.
	-	0.5 s	0.8 s	Measured at 480Vac input.
Temperature Coefficient of Iomax	-	0.03%/°C	-	Case temperature = 0°C ~Tc max
12V Auxiliary Output Voltage	10.8 V	12 V	13.2 V	
12V Auxiliary Output Source Current	-	-	20 mA	

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

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 347 Vac input: 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 steady-state temperature in 25°C ambient.
Efficiency at 480 Vac input: 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 steady-state temperature in 25°C ambient.
Standby Power Dissipation	-	-	5 W	
MTBF	-	459,000 Hours	-	Measured at 480Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	87,000 Hours	-	Measured at 480Vac input, 80%Load and 60°C Case temperature. See lifetime vs. Tc curve for the details.
Operating Case Temperature for Safety Tc_s	-40 ℃	-	+90 ℃	
Operating Case Temperature for Warranty Tc_w	-40 ℃	-	+70 ℃	Humidity: 10% RH to 100% RH
Storage Temperature	-40 ℃	-	+85 ℃	Humidity: 5% RH to 100% RH
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.

Dimming Specifications

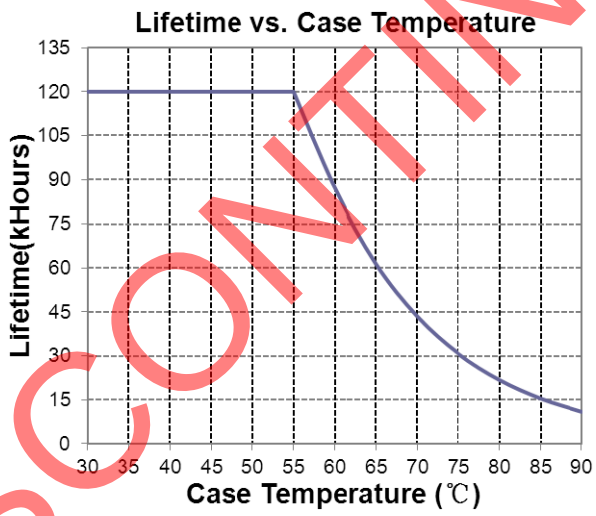
Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the 0~10V Input Pin	-20 V	-	20 V	
Source Current on 0~10V Input Pin	0 uA	200 uA	250 uA	
Dimming Output Range	10%Iomax	-	100%Iomax	
Recommended Dimming Input Range	0 V	-	10 V	

Safety & EMC Compliance

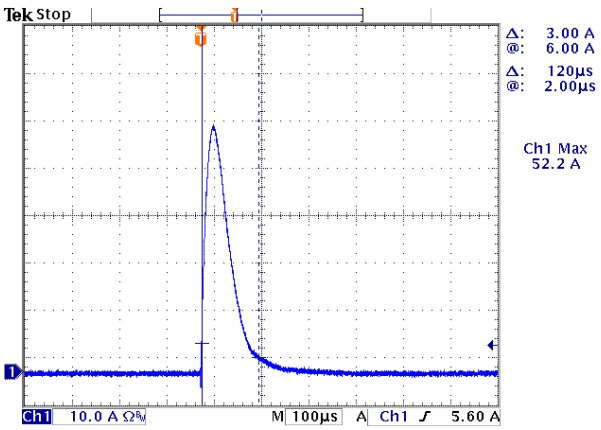
Safety Category	Standard
UL/CUL	UL8750,UL1310,CAN/CSA-C22.2 No. 250.13,CAN/CSA-C22.2 No. 223-M91
EMI Standards	**Notes**
FCC Part 15(1)	ANSI C63.4 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired operation.

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.

Lifetime vs. Case Temperature

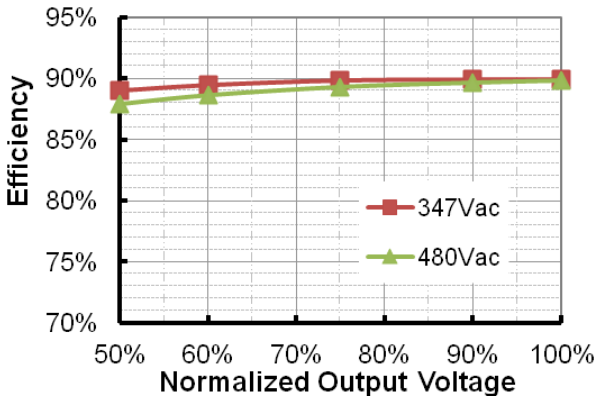


Inrush Current Waveform

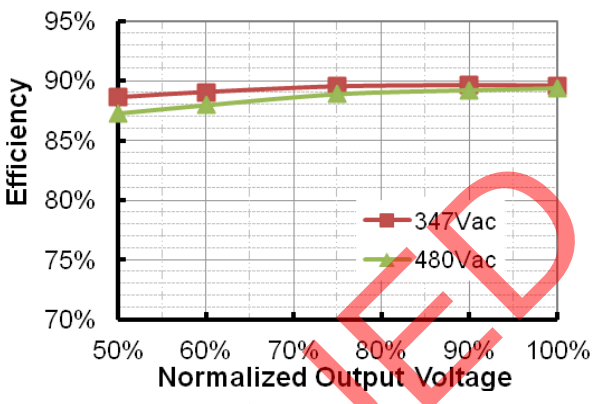


Efficiency vs. Load

LTC-040S035DSP(SSP)



LTC-040S053DSP(SSP)



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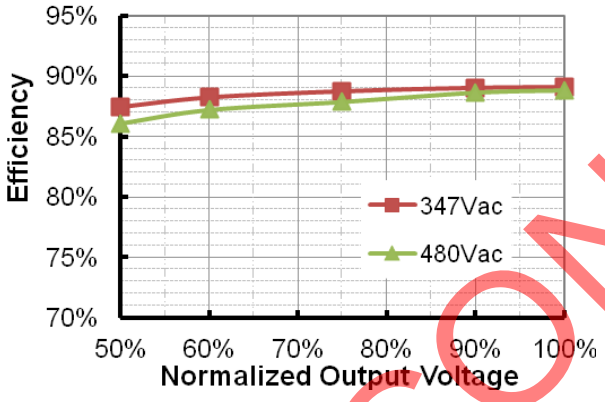
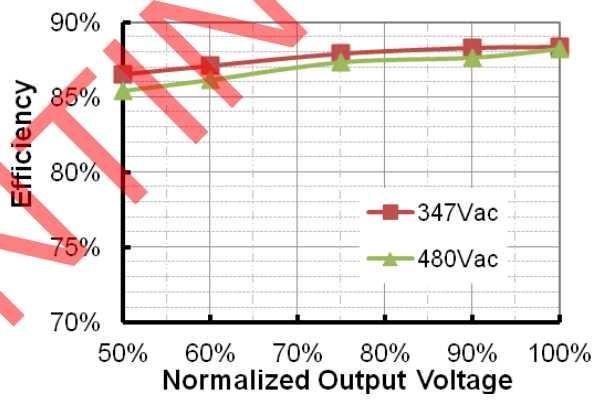
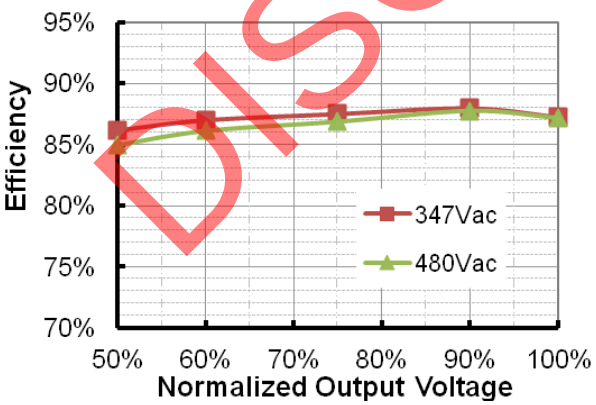


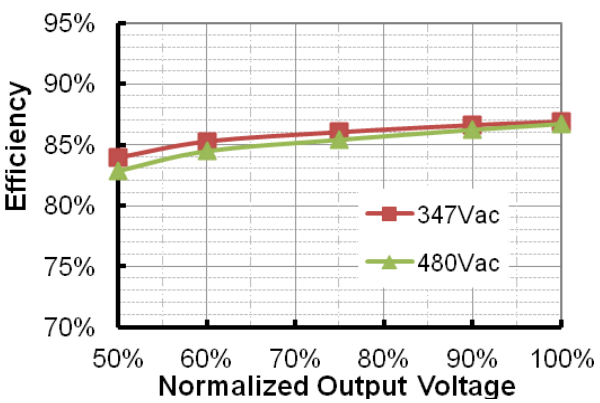
LTC-040S105DSP(SSP)



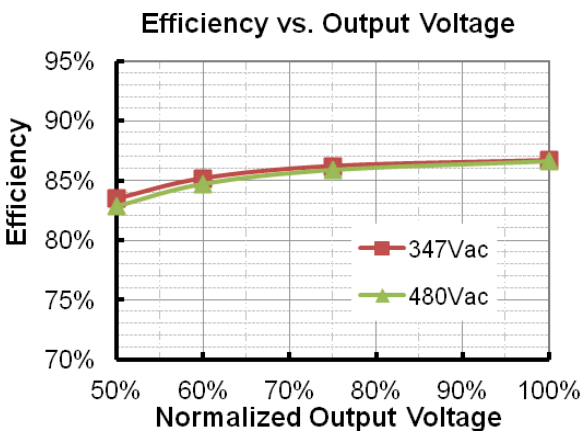
LTC-040S140DSP(SSP)



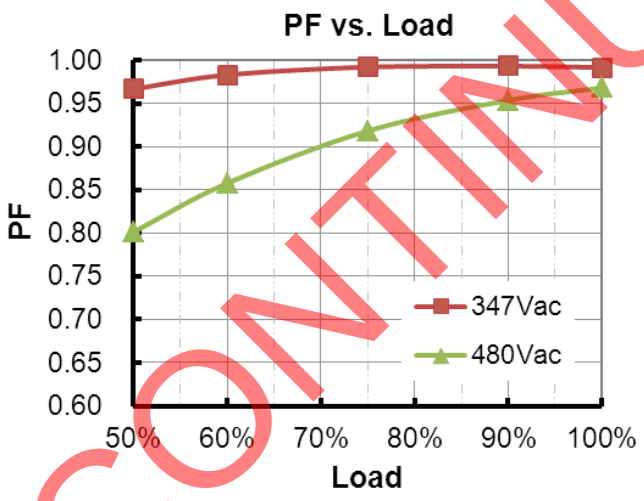
LTC-040S175DSP(SSP)



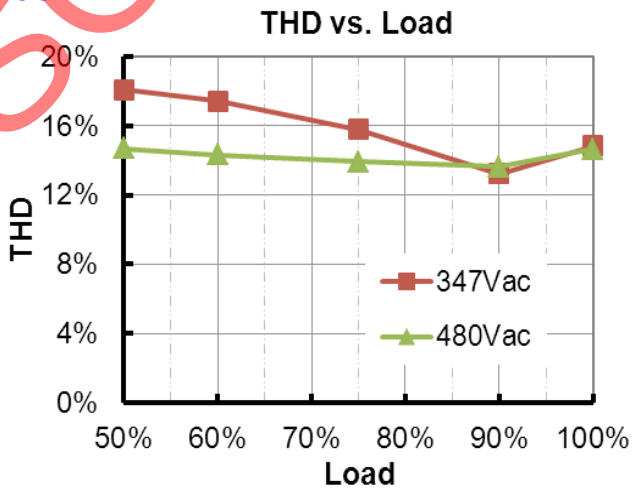
LTC-040S210DSP(SSP)



Power Factor



Total Harmonic Distortion



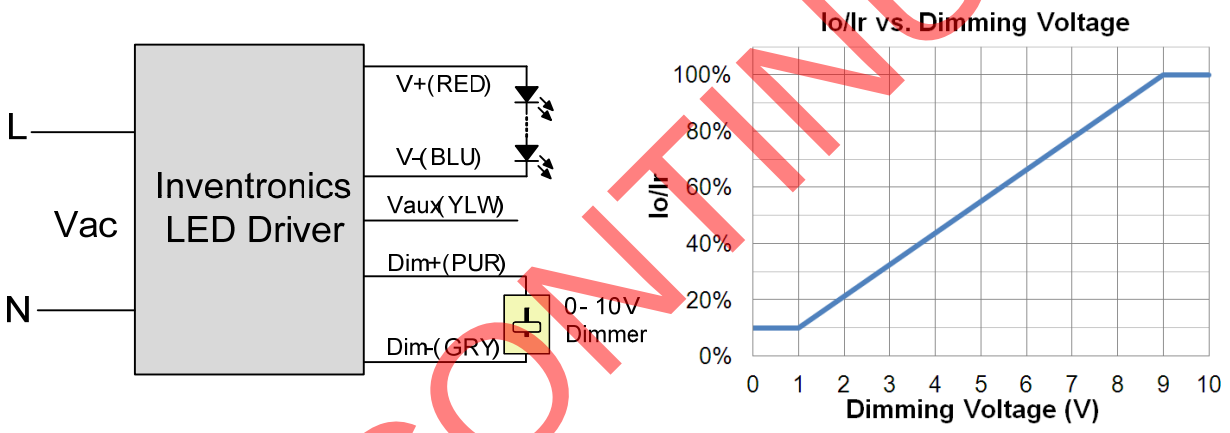
Protection Functions

Parameter	Notes
Over Voltage Protection	Limits output voltage at no load and in case the normal voltage limit fails.
Short Circuit Protection	Auto Recovery. 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	Auto Recovery. Returning to normal after over temperature is removed.

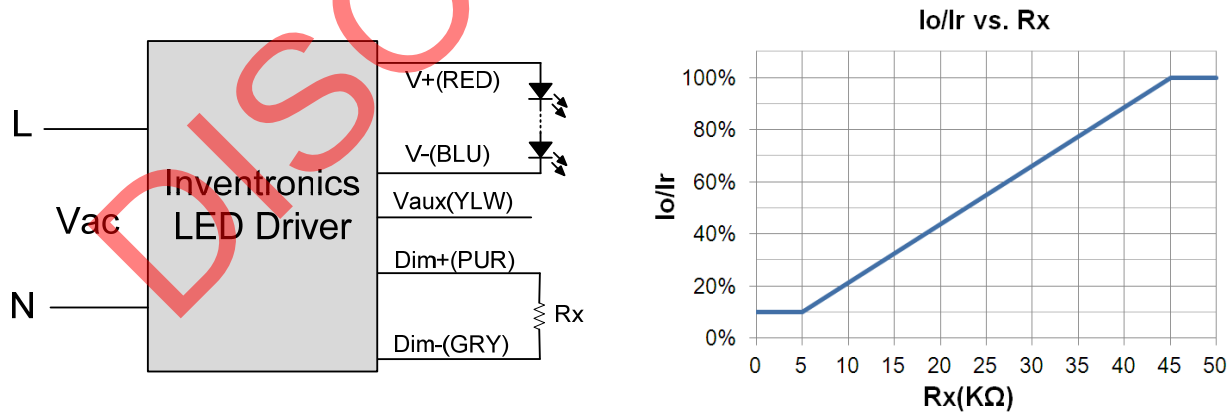
Dimming

- **0-10V Dimming**

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 Input



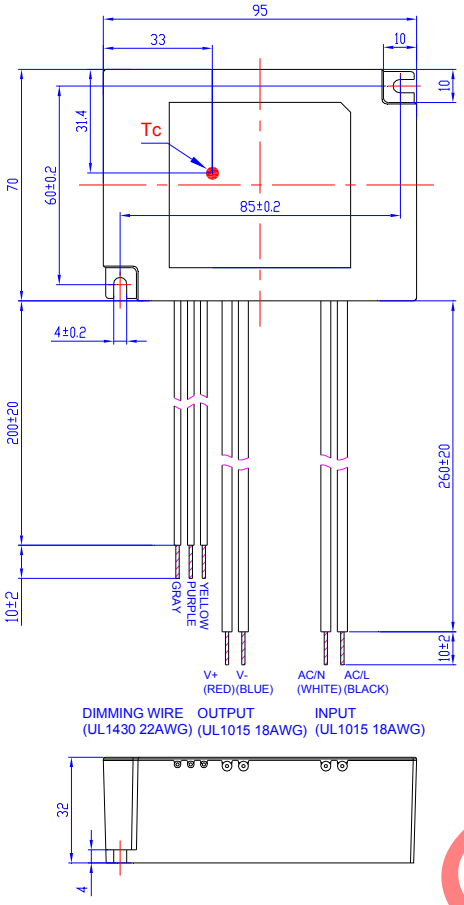
Implementation 2: External Resistor

Notes:

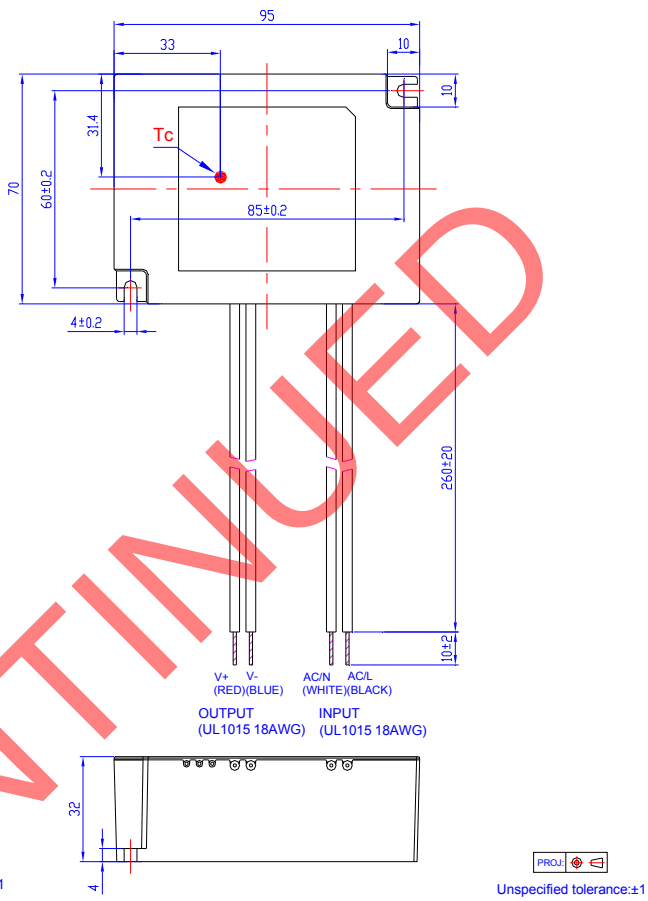
1. Io is actual output current and Ir is rated current without dimming control.
2. Do not connect the Dim- to the V-; otherwise, the LED driver cannot work normally.
3. If 0-10V dimming is not used, Dim + can be either open or connected to Vaux.

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	/	/
2015-08-19	B	Operating Case Temperature for Warranty Tc_w	/	Added
		Environmental Specifications	/	Deleted
		0-10V Dimming Implementation	/	Corrected
		Source Current on 0~10V Input Pin Max.	220 uA	250 uA
2017-07-13	C	Mechanical Outline-Tc	/	Added