LXMG221W-0350017-D0

17W 350mA Dimming LED Driver Module

PRODUCTION DATASHEET

DESCRIPTION

The LXMG221W-0350017-D0 is a fully enclosed compact solid-state LED lighting driver module. It operates from a universal AC input supply in the range of $100V_{AC}$ to $277V_{AC}$, 50/60Hz to drive a single LED string with active power factor correction. The LED string voltage can range from 20V to 48V at a constant current of 350mA.

Control terminal leads include a dimming input BRITE_A with a dedicated RETURN lead. The amplitude of the output LED string current will vary from 15% to 100% corresponding to a $1V_{DC}$ to $10V_{DC}$ signal on the BRITE_A input following the IEC 60929 Analog Control Specification Standard.

The BRITE_A terminal also provides a shutdown function, when pulled down below 1V, to meet ENERGY STAR® requirement to be less than 0.5W in standby mode.

To reduce audible noise the internal switching frequency remains above 30kHz. Safety features include open output circuit protection, whole string short circuit protection, and over temperature protection if the hot spot case temperature exceeds 85°C to 95°C. The operating ambient temperature range is -30°C to 60°C, and the compact enclosure is rated to IP66, and designed to meet UL8750 for SSL.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: http://www.microsemi.com

KEY FEATURES

- High Efficiency
- Active Power Factor Correction
- Universal AC Input 100~277V_{AC}
- Dimming Input Provides 15% to 100% Range, Plus Shutdown
- Fully Isolated Plastic Case (IP66)
- Small Compact Size
- High Reliability
- Full Protection: OVP,SCP, OTP, Maximum Power Limit
- Complies with UL8750
- RoHS Compliant

APPLICATIONS

- SSL Class 2 LED Driver Module
- LED Lighting

PRODUCT HIGHLIGHT

Photo is representative only, actual product may differ slightly

ORDER INFORMATION

Part Number	Input Voltage	Output Current
LXMG221W-0350017-D0	$100V_{AC}$ to $277V_{AC}$ 50/60 Hz	One 350mA Dimmable Current Source 20V to 48V Anode Voltage

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ABSOLUTE MAXIMUM RATINGS

Input Voltage (V_{IN}) ..... $90V_{AC}$ to $305V_{AC}$
Input Power 23W
Output LED String Current ..... 400mA (Internally Limited)
Output String Voltage ..... 56V (Internally Limited)
Output Power 19W
Input Signal Voltage (BRITE_A Input) ..... -0.3V to 11V
Ambient Operating Temperature, zero airflow ..... -30°C to 60°C
Hot Spot Case Temperature, zero airflow ..... 85°C
Storage Temperature Range ..... -40°C to 85°C

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of specified terminal.

RECOMMENDED OPERATING CONDITIONS (R.C.)

This module has been designed to operate over a wide range of input and output conditions. However, best efficiency and performance will be obtained if the module is operated under the condition listed in the 'R.C.' column. All specifications are typical at 25°C unless otherwise stated. Min. and Max. columns indicate values beyond which the inverter, although operational, might not function optimally.

Parameter	Symbol	Min	R.C.	Max	Units
Input Supply Voltage Range	V_{IN}	100		277	V_{AC}
Linear BRITE_A Control Input Voltage Range	V_{BRITE_A}	1		10	V
LED String Voltage	V_{LED}	20		48	V
OUT- Sink Current	$OUTx_{SINK}$		350		mA

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, the following specifications apply over the recommended operating conditions and ambient temperature of 25°C ; V_{IN} = $100V_{AC}$ to $277V_{AC}$; BRITE_A = 10kΩ to BRITE_RTN; Test load of 350mA and 48V

Parameter	Symbol	Test Conditions / Comment	Min	Typ	Max	Units
Input Voltage	V_{IN}	Line Frequency 47Hz to 63Hz	90		305	V_{AC}
Off Power	$P_{IN(MIN)}$	BRITE_A ≤ 0.5V (ENERGY STAR® Requirement)			0.5	W
Input AC Current	I_{120}	Measured at full load and $120V_{AC}$ Input		0.22		A
	I_{277}	Measured at full load and $277V_{AC}$ Input		0.11		A
Maximum Inrush Current	I_{INRUSH}	Measure at $277V_{AC}$, (Note 1, First 10µS)			60	A
		After 10µS			3	A
Power Factor		Maximum Output Power; $120V_{AC}$; 50/60Hz	0.9			
Total Harmonic Distortion	THD	Maximum Output Power; $120V_{AC}$; 50/60Hz			20	%
Peak Efficiency (Note 2)	η	V_{LED} = 48V	80	82		%
OUTPUTS						
Average Sink Current	I_{OUT}		332	350	368	mA
Ripple Current (pk-pk)	$I_{OUT-RIPPLE}$	Pk-pk Ripple Current/Average Current		20		%
Line Regulation	$I_{OUT-LINE}$	V_{IN} = Nominal ± 10%			1	%
Load Regulation	$I_{OUT-LOAD}$	VOUT+ = 40V to 48V			5	%

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ELECTRICAL CHARACTERISTICS

Unless otherwise specified, the following specifications apply over the recommended operating conditions and ambient temperature of 25°C ; V_{IN} = 100V_{AC} to 277V_{AC}; BRITE_A = 10kΩ to BRITE_RTN; Test load of 350mA and 48V

Parameter	Symbol	Test Conditions / Comment	Min	Typ	Max	Units
Turn-on Time	DELAY	Power ON to Full Bright Output Current, Vin = 120V_{AC}		2.7		s
		Power ON to Full Bright Output Current, Vin = 230V_{AC}		1.6		
Dimming						
BRITE_A Voltage for Full Bright	$V_{BRITE\_A\_MAX}$		9.5	10	10.5	V
Potentiometer Dimming on BRITE_A	POT		8	10	12	kΩ
BRITE_A Voltage for Full Dim	$V_{BRITE\_A\_MIN}$		0.85	0.90	1.00	V
Minimum Output Current	I_{MIN}	BRITE_A = 0.9V		15		% of Max
Shutdown Voltage Threshold	V_{BRITE_SD}		0.85	0.90	1.00	V
Protection						
Overvoltage Protection	V_{OV}	Maximum OUT+			56	V
Short Circuit Duration	Tsc	Time duration that OUT+ may be shorted to either or both OUT-			No Limit	s
Over Temperature Shutdown	T_{SD}	Over Case Temperature Protection Hot Spot	85		95	C

Safety & EMC Compliance

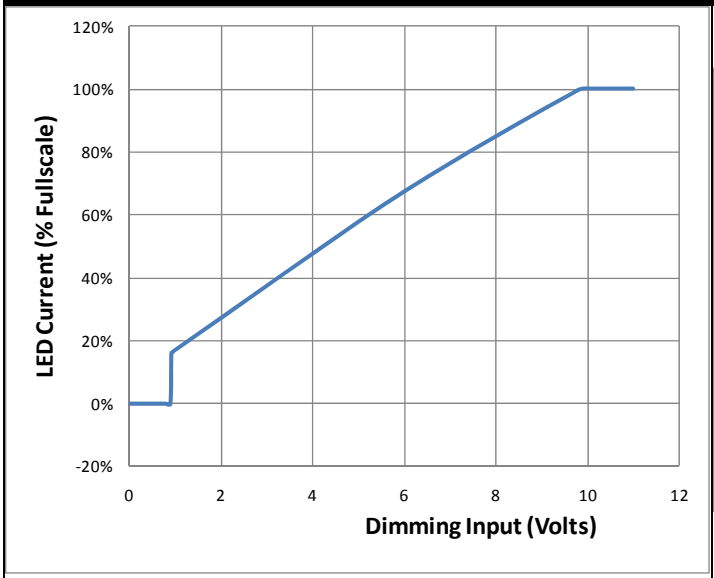
UL/CUL /CE/CCC (China) Safety	UL 8750 compliance to UL1310 Class 2
	Canada: CSA C22.2 No. 107.1
	EN 60598-1&2; 61347-1, EN61347-2-13
	GB7000.1, GB7000.10, GB17743, GB17625
FCC Title 47, Part 15, Class B	Conducted and Radiated Emission
EN 55015; CISPR22 Class B	Conducted emission (Mains and Dimming Terminals)
EN 61000-3-2 Class C	Power Factor and Harmonic current emissions
EN 61000-3-3	Voltage fluctuations and flicker
EN 61547	EMC

Standard	Test Items
EN61000-4-2	Electrostatic Discharge Immunity
EN61000-4-3	Radiated Susceptibility test
EN61000-4-4	Electrical Fast Transient
EN61000-4-5	Surge Immunity Test, AC Power Line, Line to Line 1kV
EN61000-4-6	Conducted Susceptibility Immunity test
EN61000-4-8	Power Frequency Magnetic Field Immunity
EN61000-4-11	Voltage Dips and interruption immunity

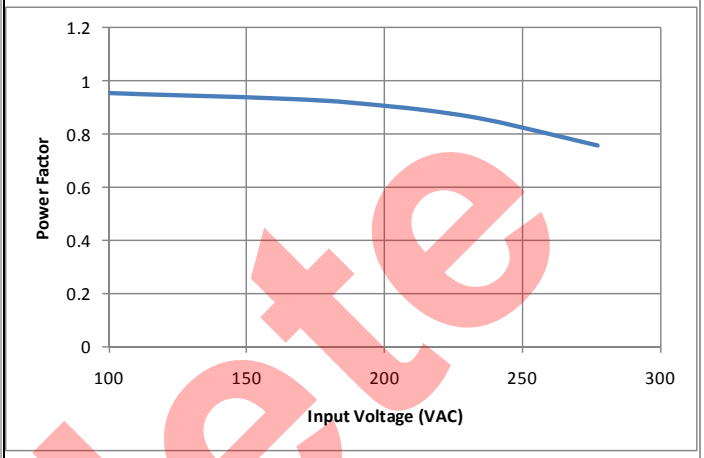
Life Expectancy	50,000 hours @ 100% duty at ambient temperature 60°C and max load
Environmental Standards	EU RoHS, REACH

Notes:
1) The peak inrush current recovers to below 3A after 10µs
2) Peak Efficiency is the efficiency at a given sweet spot over the range of input voltage and output current.

DIMMING PROFILE



TYPICAL POWER FACTOR



LEAD DESCRIPTION

Name	Pin #	Description
INPUT TERMINAL LEADS (18AWG) 16/30 Stranded		
BLACK	VIN Line Voltage	Main Input Power Supply Line 100 V_{AC} to 277V_{AC}
WHITE	VIN Neutral	Main Input Power Supply Neutral
CONTROL TERMINAL LEADS (22AWG) 7/30 Stranded		
PURPLE	BRITE_A	Analog Dimming Input
GRAY	BRITE_RTN	Dimming Return
OUTPUT TERMINAL LEADS (18 AWG)		
RED	OUT+	LED String Anode Voltage (High Side)
BLUE	OUT-	-LED Cathode Voltage (Low Side)

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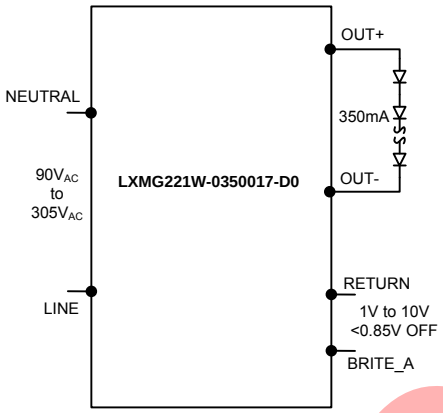
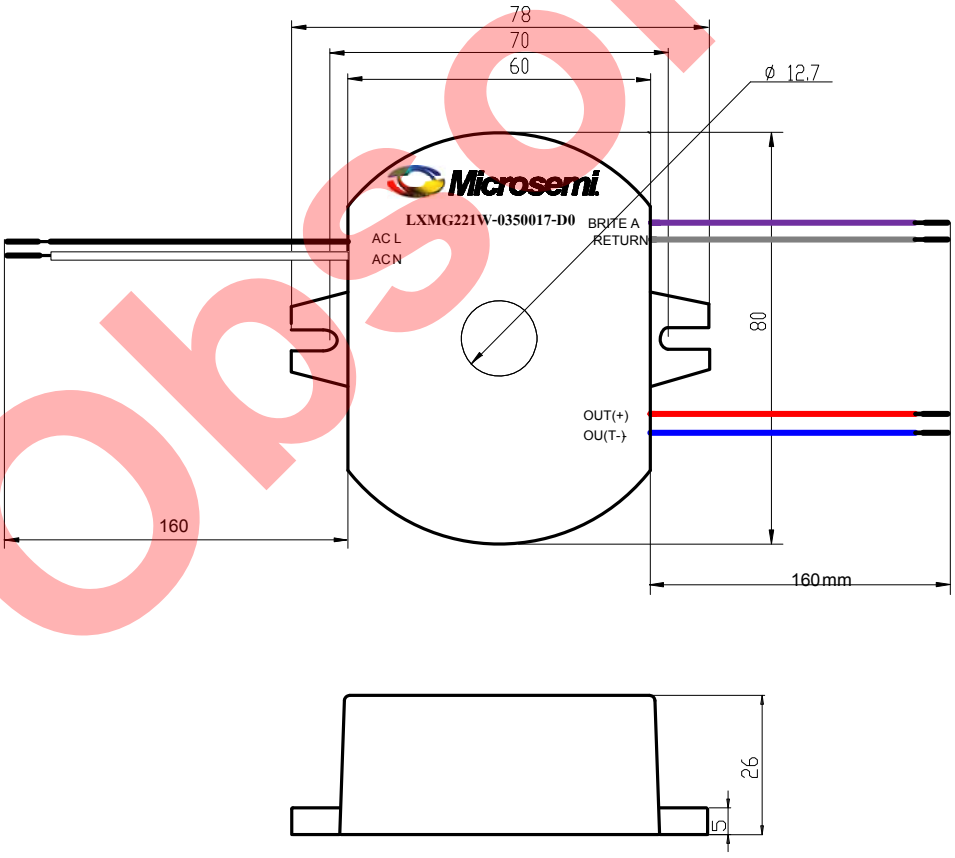
APPLICATION INFORMATION



MECHANICAL DRAWING



Wire length is 160mm ± 5mm, stripped 12mm ± 2mm UL1015 AWG#18 16/30 stranded 105°C Input & Output wires; AWG#22 7/30 stranded Control wires

Hole in center, mounting tab slot width 4mm

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NOTES

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