

LDU20 Series



- Constant Current Output
- LED Drive Current up to 700 mA
- LED Strings from 2 V to 28 V
- PWM & Analog Dimming Control
- High Efficiency – up to 95%
- Open or Short Circuit LED Protection
- 3 Year Warranty

Specification

Input

- | | |
|---------------|--------------------|
| Input Voltage | • 7-30 VDC |
| Input Filter | • Capacitor |
| Input Surge | • 40 VDC for 0.5 s |

Output

- | | |
|------------------------------|---|
| Output Voltage | • See tables
(Vin must be at least 2 V greater than Vout) |
| Output Current | • See tables |
| Output Current Trim | • 25-100% |
| Output Current Accuracy | • ± 10 |
| Ripple & Noise | • 450 mV pk-pk max,
measured with 20 MHz bandwidth |
| Short Circuit Protection | • Current is limited to the rated output |
| Temperature Coefficient | • $\pm 0.05\%/\text{ }^{\circ}\text{C}$ max |
| Remote On/Off | • On = 0.3-1.25 V or open circuit
Off = ≤ 0.15 V (applied to control pin)
Quiescent input current is 25 μA max, |
| Remote On/Off Signal Current | • 1 mA max |

Dimming

- | | |
|---------------------------|---------------------|
| PWM | |
| Output Current Range | • 25% to 100% |
| Operating Frequency | • 1 kHz max |
| On Time | • 200 ns min |
| Off Time | • 200 ns min |
| Amplitude | • 1.25 V max |
| DC Voltage Control | |
| Output Current Range | • 25% to 100% |
| Control Input | • 0.3 to 1.25 V max |
| Variable Resistor | |
| Output Current Range | • 25% to 100% |

General

- | | |
|---------------------|---|
| Efficiency | • See tables |
| Switching Frequency | • 70-450 kHz variable |
| MTBF | • >1.6 MHrs to MIL-HDBK-217F at 25 $\text{ }^{\circ}\text{C}$,
GB |

Environmental

- | | |
|-----------------------|---|
| Operating Temperature | • -40 $\text{ }^{\circ}\text{C}$ to +70 $\text{ }^{\circ}\text{C}$ |
| Storage Temperature | • -40 $\text{ }^{\circ}\text{C}$ to +125 $\text{ }^{\circ}\text{C}$ |
| Humidity | • Up to 95%, non-condensing |
| Thermal Impedance | • 40 $\text{ }^{\circ}\text{C/W}$ |

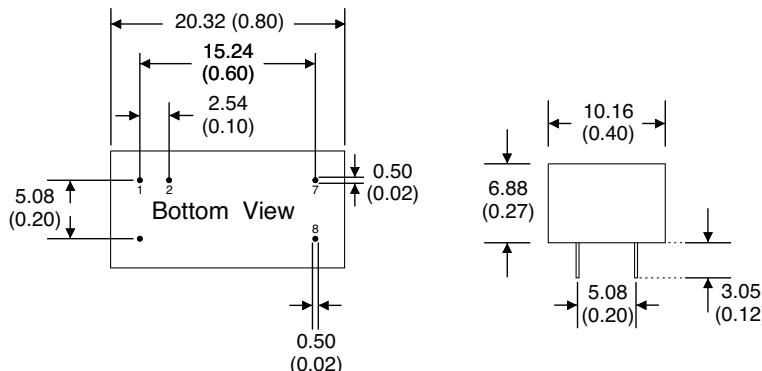
EMC

- | | |
|--------------------|---|
| Emissions | • EN55022 class B conducted & radiated
with external components - see
application notes |
| ESD Immunity | • EN61000-4-2, level 2 Perf Criteria A |
| Radiated Immunity | • EN61000-4-3, level 2 Perf Criteria A |
| EFT/Burst | • EN61000-4-4, level 2 Perf Criteria A |
| Surge | • EN61000-4-5, level 2 Perf Criteria A |
| Conducted Immunity | • EN61000-4-6, level 2 Perf Criteria A |

Models and Ratings

Output Power	Input Voltage Range	Output Voltage	Output Current	Efficiency	Model Number
14 W	7-30 V	2-28 V	500 mA	95%	LDU2030S500
17 W	7-30 V	2-28 V	600 mA	95%	LDU2030S600
20 W	7-30 V	2-28 V	700 mA	95%	LDU2030S700

Mechanical Details



Pin Connections		
1	-V Input	-DC supply
2	Control	PWM/ON/OFF or not used
7	-V Output	LED cathode connection
8	+V Output	LED anode connection
14	+V Input	+DC supply

Note: Do not connect pin 1 (-Vin) to pin 7 (-Vout)

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.006 lbs (2.6 g) approx.
3. Pin diameter: 0.02 ± 0.002 (0.5 ± 0.05)
4. Pin pitch tolerance: ± 0.014 (± 0.35)
5. Case tolerance: ± 0.02 (± 0.5)

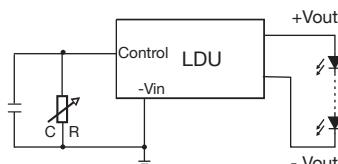
Application Notes

Output Current Adjustment by Variable Resistor

By connecting a variable resistor between Control and GND, simple dimming can be achieved. Capacitor C is optional for HF noise rejection, recommended value is $0.22 \mu\text{F}$.

The output current can be determined using the equation: $I_{\text{out}} = \frac{\text{Rated Max I} \times R}{(R + 200 \text{ k})}$

Where the value of R is between 0 and $2 \text{ M}\Omega$, the maximum adjustment range of output current is 25% to 90% (For $V_{\text{in}}-V_{\text{out}} < 20 \text{ VDC}$)

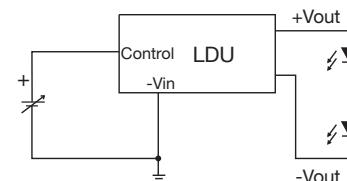


Shorting out the Control pin to GND will turn the output off.

Output Current Adjustment by DC Voltage

Control Voltage Range: 0.3 V to 1.25 VDC

The output current is given by: $I_{\text{out nom}} = \text{Rated Max I} \times \frac{\text{Control Voltage}}{1.25}$



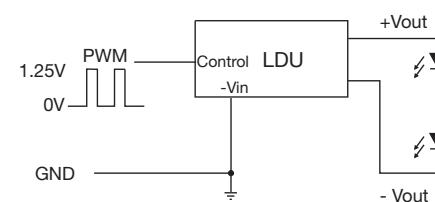
A Control Voltage lower than 0.15 V will turn the output off

Output Current Adjustment by PWM

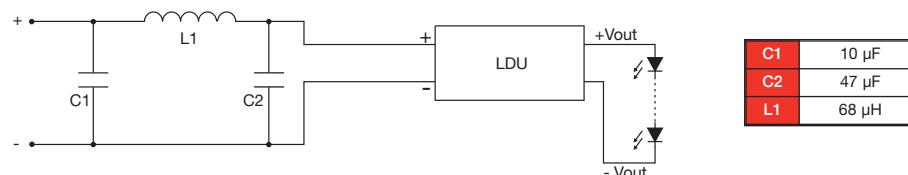
A Pulse Width Modulated (PWM) signal with duty cycle DPWM can be applied to the control pin.

The output current can be determined using the equation : $I_{\text{out}} = \text{Rated Max I} \times D_{\text{PWM}}$

$D_{\text{PWM}} = \text{PWM duty cycle}$



Input Filter to meet Class B Conducted Emissions



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