Applied Concepts
INNOVATION IN POWER CONVERSION TECHNOLOGY

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ACI-2961

PRODUCT DATA SHEET

11/02/20

I-DRIVE 8, 73 WATT LED DRIVER

(120V, 8 Channels, 0 – 76mA per Channel)

GENERAL DESCRIPTION

The ACI-2961 represents the 8th generation of I-Drive technology used for powering LED backlights.

The ACI-2961 operates as a true constant current source and is capable of driving up to 8 parallel banks of series connected LEDs with a forward voltage drop up to 120V. This driver provides a complete integrated solution that is regulated over an input voltage range from +21.6V to +26.4V.

Simple to connect and operate, this driver solution is capable of providing precise control to support wide dimming applications.

This unit features enable and intensity control inputs.

MECHANICAL/ENVIRONMENTAL

Weight = 84.5 grams

Altitude = 35,000 ft max.

Humidity < 95% non-condensing

Size (L x W x H) = 120mm x 100mm x 18.0mm

Size (L x W x H) = 4.72 IN x 3.94 IN x 0.710 IN

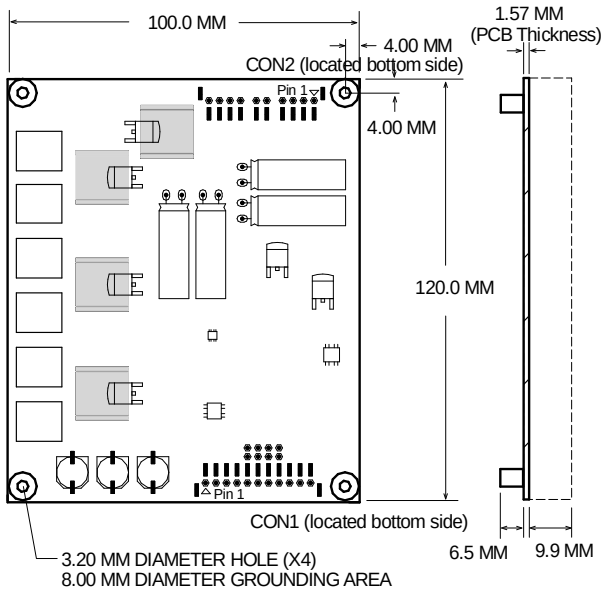
PCB thickness = 1.57 mm (0.062 IN)

Mounting Holes = 3.2 mm diameter (X4)

Input Power & Control Connector = CON1

LED Output Connector = CON2

RoHS Compliant



INPUT CONNECTOR
CON1
JST B11B-PH-K-S(LF)(SN)

PIN#	FUNCTION
1	+21.6V to +26.4V
2	+21.6V to +26.4V
3	+21.6V to +26.4V
4	+21.6V to +26.4V
5	GND (PWR)
6	GND (PWR)
7	GND (PWR)
8	GND (PWR)
9	PWMcntl
10	FAULT (Not Implemented)
11	ENABLE

OUTPUT CONNECTOR
CON2
JST B12B-PH-K-S(LF)(SN)

PIN#	FUNCTION
1	- LED (CATHODE 1) Master*
2	- LED (CATHODE 2)
3	- LED (CATHODE 3)
4	- LED (CATHODE 4)
5	NC
6	+ LED (ANODE)
7	+ LED (ANODE)
8	NC
9	- LED (CATHODE 5)
10	- LED (CATHODE 6)
11	- LED (CATHODE 7)
12	- LED (CATHODE 8)

*The Master Channel must always be used.

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MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
Vin	Supply Voltage (Referenced to Ground)	-0.7 to 30	Vdc
Vip1	Voltage applied to Enable (Pin 11) (Referenced to Ground)	-0.7 to 5.7	Vdc
Vip2	Voltage applied to PWMcntl (Pin 9) (Referenced to Ground)	-0.7 to +18	Vdc
Iop	Current sourced or sinked from any Output Control Pin	+/- 10	mAdc
Pin	Input Power (DC Input Voltage x DC Input Current)	94	W
Top[1]	Operating Temperature (Measured at top of inductor L3) (Reference Figure 1, page 3)	-30 to +100	°C
Tstg	Storage Temperature	-40 to +105	°C

*Maximum Ratings are those values beyond which damage to the driver may occur.
[1] Adequate thermal management of driver must be provided (Reference Figure 1, page 3).

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
Vin	Supply Voltage (Referenced to Ground)	21.6	26.4	Vdc
Vf	Series Connected Cumulative LED Forward-Drop Voltage	**Vin + 1	120	Vdc
PWMcntl	Intensity Control PWM Duty-Cycle Range (User Supplied Input)	0	100	%
PWMfreq	Intensity Control PWM Frequency Range (User Supplied Input)	100	1000	Hz

**Vin must be less than the minimum Forward-Drop Voltage (Vf).

ELECTRICAL CHARACTERISTICS

Vin = +24.0V, Vf = 120V, # of Channels = 8, PWMcntl = 100%, Enable = +5V, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
OCV	Open Circuit Voltage	No Load	133	140	147	Vdc
Iout	Output Current per Channel		72	76	80	mAdc
Iadj	Nominal Output Current Adjust	PWMcntl(Pin 9) = 0%	0			mAdc
	Range Per Channel	PWMcntl(Pin 9) = 100%			76	mAdc
PWMhi	PWM High Signal Level (V_{IH})		3.0		15	Vdc
PWMlo	PWM Low Signal Level (V_{IL})				0.8	Vdc
ENoff	Enable Control, Unit Off				0.8	Vdc
ENon	Enable Control, Unit ON		2.0			Vdc
$\overline{\text{Fault}}$	Fault Detect Output	No Fault Detected	Not implemented a this time.			Vdc
		Fault Detected, due to over temperature				Vdc
Iin	Input Current Draw			3.4		Adc
Iind	Input Current Draw (Disabled)	Enable (Pin 11) = 0V			0.06	Adc
Eff	Electrical Efficiency			90		%

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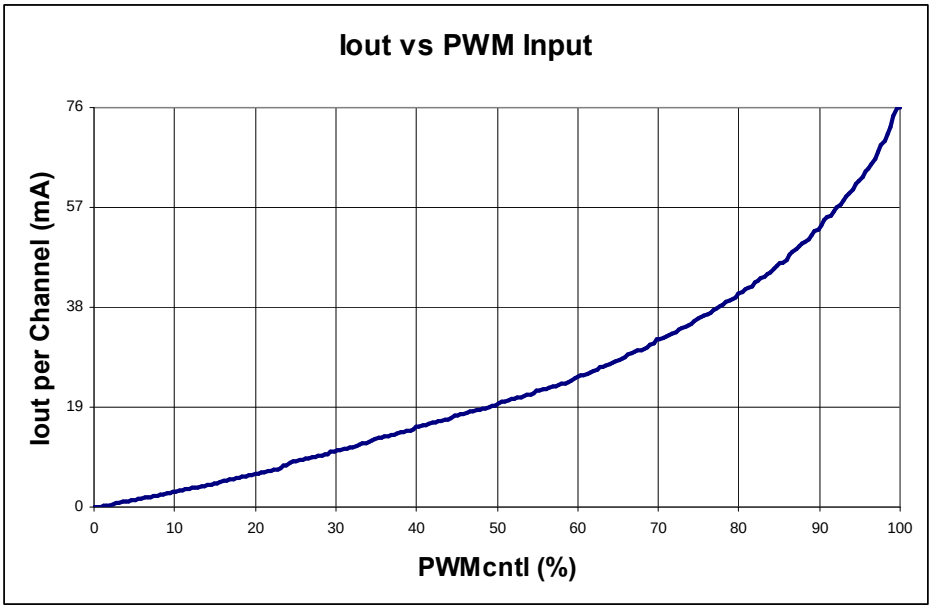

For thermal management, mount LED Driver upside down, as shown in Figure 1.
Sandwich thermally conductive material between top of inductors and aluminum chassis.
The objective is to pull heat away from the LED Driver, so that it does not exceed its maximum operating temperature (Top) specification.

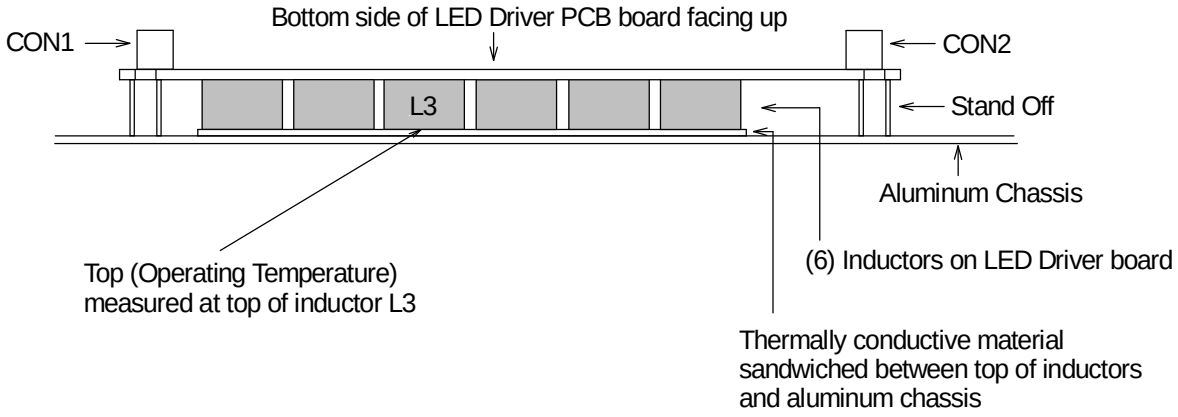

FIGURE 1. - Thermal Management (Side View)