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I-DRIVE 5, 12 WATT LED DRIVER (60V, 7 Channels, 0-28.6mA per Channel)

GENERAL DESCRIPTION

The ACI-3022B represents the 5th generation of I-Drive technology used for powering LED backlights.

Operating as a true constant current source and capable of driving up to 7 banks of series LEDs with a forward voltage drop up to 60V. This driver provides a complete integrated solution that is regulated over an input voltage range from +10V to +18V.

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, and LED uniformity is achieved using current sharing resistors.

MECHANICAL/ENVIRONMENTAL

Weight = 35.7 grams

Altitude = 35,000 ft max.

Humidity < 95% non-condensing

Size (L x W x H) = 3.25 IN x 2.00 IN x 0.47 IN

PCB thickness = 0.062 IN

Mounting Holes = 0.128 IN diameter (X2)

Input Power & Control Connector = CON1

LED Output Connectors = CON2 and CON3

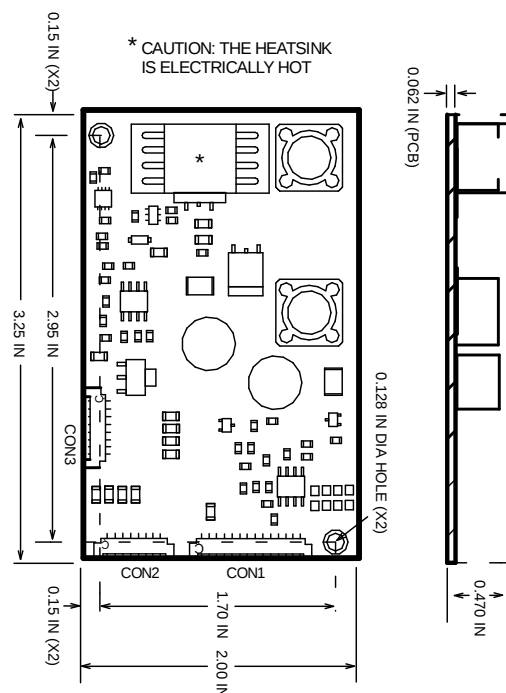
PCB Conformally Coated with Humiseal 1B73

RoHS Compliant

ACI-3022B

PRODUCT DATA SHEET

11/21/22



INPUT CONNECTOR

CON1

MOLEX 53261-1471

PIN# FUNCTION

1	+10 to +18V (PWR)
2	+10 to +18V (PWR)
3	+10 to +18V (PWR)
4	+10 to +18V (PWR)
5	GND (PWR)
6	GND (PWR)
7	GND (PWR)
8	GND (PWR)
9	ENABLE
10	ICNTL
11	TBD
12	TBD
13	+5VDC REF OUT
14	GND (SIGNAL)

OUTPUT CONNECTOR

CON2

MOLEX 53261-0871

PIN# FUNCTION

1	+ LED (ANODE)
2	+ LED (ANODE)
3	+ LED (ANODE)
4	+ LED (ANODE)
5	- LED (CATHODE1) *Master
6	- LED (CATHODE2)
7	- LED (CATHODE3)
8	- LED (CATHODE4)

*The Master channel must always be used.

OUTPUT CONNECTOR

CON3

MOLEX 53261-0871

PIN# FUNCTION

1	+ LED (ANODE)
2	+ LED (ANODE)
3	+ LED (ANODE)
4	+ LED (ANODE)
5	- LED (CATHODE5)
6	- LED (CATHODE6)
7	- LED (CATHODE7)
8	NC

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
Vin	Supply Voltage (Referenced to Ground)	-0.7 to 20	Vdc
Vip	Voltage applied to any Input Pin (Referenced to Ground)	-0.7 to 5.7	Vdc
Iop	Current sourced or sinked from any Output Control Pin	+/- 10	mAdc
Pin	Input Power (DC Input Voltage x DC Input Current)	16	W
Top	Operating Temperature (Still air ambient around Driver)	-30 to +85	°C
Tstg	Storage Temperature	-40 to +105	°C

*Maximum Ratings are those values beyond which damage to the driver may occur.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
Vin	Supply Voltage (Referenced to Ground)	10.0	18.0	Vdc
Vf	Series Connected Cumulative LED Forward-Drop Voltage	**Vin + 1	60	Vdc
Icctl	LED Intensity Control Voltage	0.63	4.7	Vdc

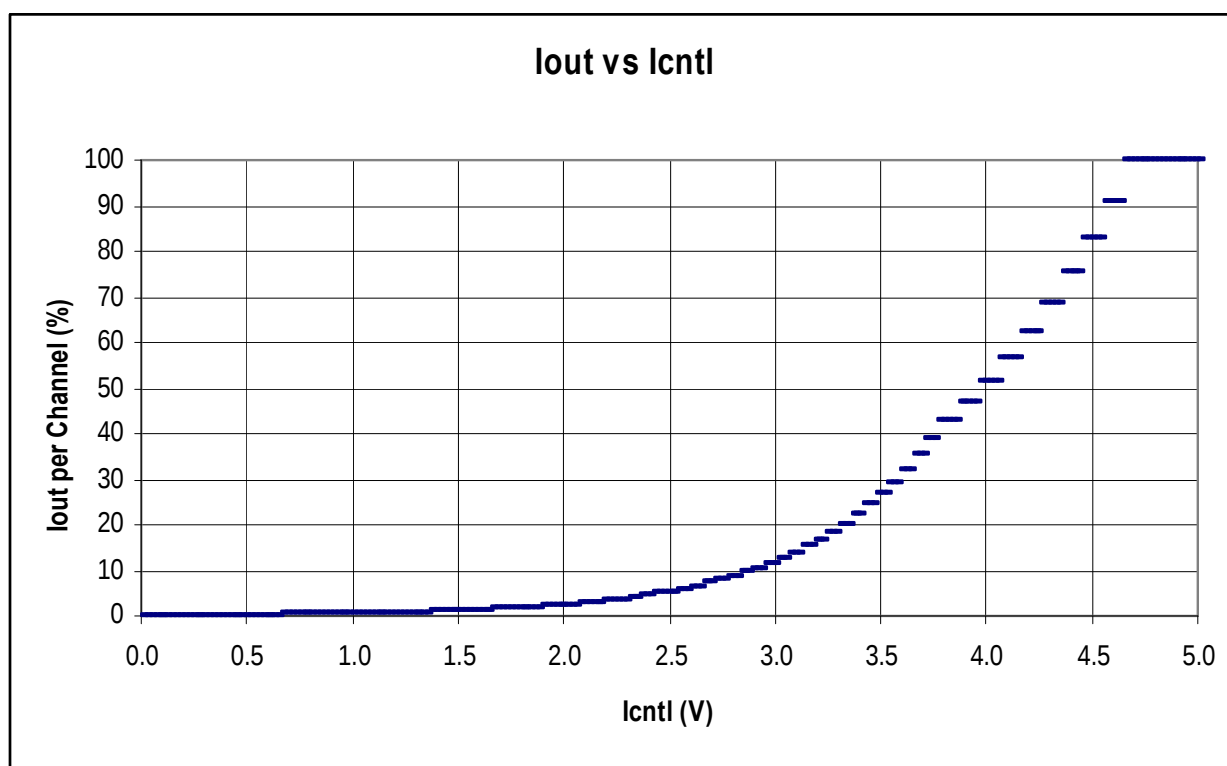
**Vin must be less than the minimum Forward-Drop Voltage (Vf).

ELECTRICAL CHARACTERISTICS

Vin = +12V, Vf = 60V per channel, # of channels = 7, Icctl = +4.7V, Enable = +5V, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
OCV	Open Circuit Voltage	No Load	65	72	79	Vdc
Iout	Output Current per Channel	Icctl = 4.7V	27.2	28.6	30	mAdc
		Icctl = 2.15V	0.79	0.83	0.87	mAdc
		Icctl = 0.63V	0.079	0.083	0.087	mAdc
Iadj	Nominal Output Current Adjust Range per Channel	Icctl(Pin 10) <= 0.63V	0.083			mAdc
		Icctl(Pin 10) >= 4.65V			28.6	mAdc
ENoff	Enable Control, Unit Off				0.5	Vdc
Enon	Enable Control, Unit ON		2.0			Vdc
+5Vref	+5V Output Reference Voltage	1K Ohm Load to Ground (Pin 13)	4.95	5.0	5.05	Vdc
Iin	Input Current Draw	Vin = 10.0V	1.31	1.38	1.45	Adc
		Vin = 12.0V	1.09	1.15	1.21	Adc
		Vin = 18.0V	0.73	0.77	0.81	Adc
Iind	Input Current Draw (Disabled)	Enable (Pin 9) = 0V			0.06	Adc
Eff	Electrical Efficiency			87		%

BRIGHTNESS CURVE





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ACI-3022A to ACI-3022B change detail

Electrical change

- R11 & R12 combo adjusted (R11 removed) to lower the in-rush current at startup.