

I-DRIVE 5, 30.2 WATT LED DRIVER

(42V, 8 Channels¹, 0 – 90mA per Channel)

GENERAL DESCRIPTION

The ACI-E042720-2748 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 8 parallel banks of series connected LEDs with a forward voltage drop up to 42V. This driver provides a complete integrated solution that is regulated over an input voltage range of +10V to +18V.

¹Please refer to Table 1 on page 3, for the maximum output current per channel, based on the number of channels connected.

Simple to connect and operate, this driver solution is capable of providing precise control to support dimming applications with a minimum of 3000:1.

This unit features enable and intensity control inputs.

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

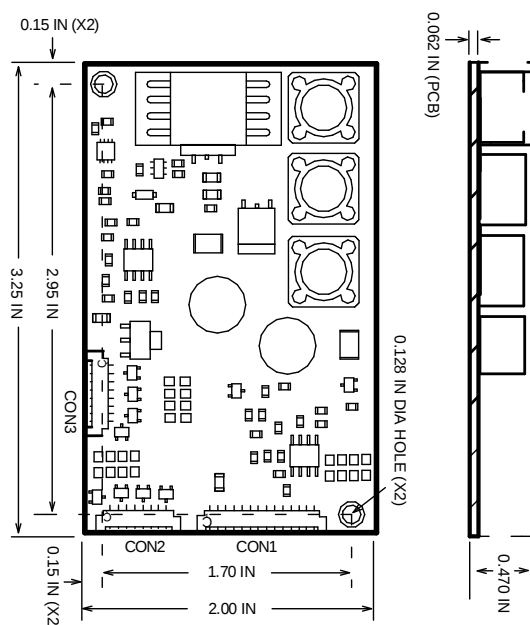
PCB thickness = 0.062 IN

Mounting Holes = 0.128 IN diameter (X2)

Input Power & Control Connector = CON1

LED Output Connectors = CON2 and CON3

RoHS Compliant



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 / PWMctrl
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 (CATHODE 1) Master*
6	- LED (CATHODE 2)
7	- LED (CATHODE 3)
8	- LED (CATHODE 4)

*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 (CATHODE 5)
6	- LED (CATHODE 6)
7	- LED (CATHODE 7)
8	- LED (CATHODE 8)

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)	41.6	W
Top	Operating Temperature (Still air ambient around Driver)	-30 to +70	°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	42	Vdc
Icctl	LED Intensity Control Voltage	0.25	4.75	Vdc
PWMcctl	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 = +12V, Vf = 42V, # of Channels = 8, Icctl = +4.75V, Enable = +5V unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
OCV	Open Circuit Voltage	No Load	52	58	64	Vdc
Iout	Output Current per Channel		85	90	95	mAdc
Iadj	Nominal Output Current Adjust Range	Icctl(Pin 10) <= 0.25V PWMcctl(Pin 10)= 0%	0			mAdc
		Icctl(Pin 10) >= 4.75V PWMcctl(Pin 10) = 100%			90	mAdc
PWMlo	PWM Low Signal Level (V _{IL})		0.25			Vdc
PWMhi	PWM High Signal Level (V _{IH})				4.75	Vdc
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)	4.75	5.0	5.25	Vdc
Iin	Input Current Draw			2.9		Adc
Iind	Input Current Draw (Disabled)	Enable (Pin 9) = 0V			0.06	Adc
Eff	Electrical Efficiency			87		%

Number of Channels Connected	1	2	3	4	5	6	7	8
Maximum Output Current per Channel (mA)	720	360	240	180	144	120	103	90

Table 1 - Maximum Output Current per Channel, based on the number of channels connected

Pin 5 of CON2 is the Master Channel and must always be used.

