Applied Concepts
INNOVATION IN POWER CONVERSION TECHNOLOGY

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ACI-A038010-2004

PRODUCT DATA SHEET

10/24/11

I-LITE, 2.3 WATT LED DRIVER

(Common-Cathode, One to Six Channels)

GENERAL DESCRIPTION

The ACI-A038010-2004 is designed to drive up to 6 parallel channels of series connected LEDs.

The number of channels and current per channel are configurable per Table 1 on Page 3, by setting a four-position switch located on the driver, enabling the driver to support a wide range of displays.

Operating as a true constant current source, the driver provides a complete integrated solution that operates from a nominal +8 to +15 VDC source.

This unit features enable and intensity control inputs and is designed to work with the Digital View LCD Controller and Button Board (see page 4 for more information).

MECHANICAL/ENVIRONMENTAL

Weight = 7.2 grams

Altitude = 35,000 ft max.

Humidity < 95% non-condensing

Size (L x W x H) = 2.0 IN x 0.95 IN x 0.285 IN

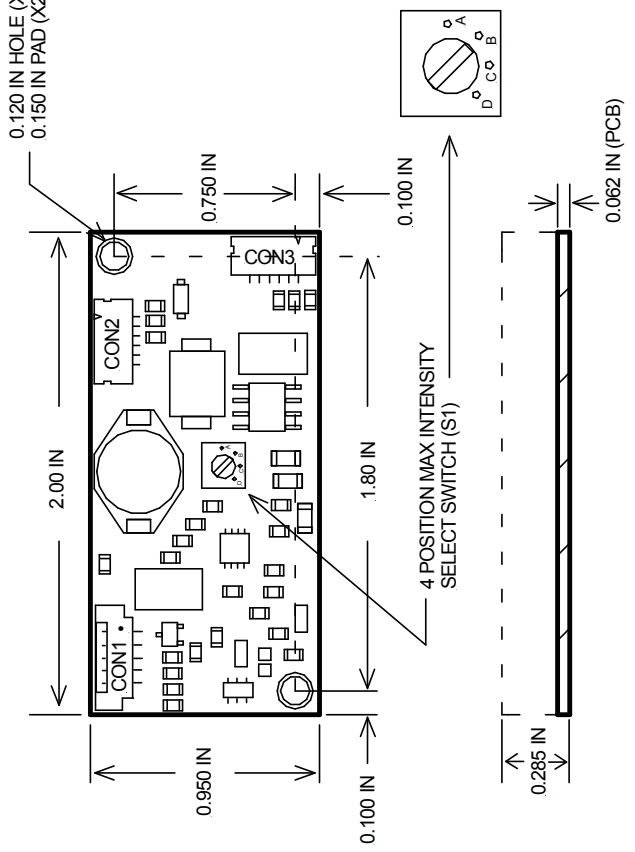
PCB thickness = 0.062 IN

Mounting Holes = 0.120 IN diameter (X2)

Input Power & Control Connector = CON1

LED Output Connectors = CON2 and CON3

RoHS Compliant



INPUT CONNECTOR CON1 MOLEX 53261-0571		OUTPUT CONNECTORS CON2 AND CON3 JST SM06B-SHLS-TF	
PIN #	FUNCTION	PIN #	FUNCTION
1	+VIN(PWR)	1	LED ANODE #1
2	GND(PWR)	2	LED ANODE #2
3	ENABLE (IN)	3	LED ANODE #3
4	INTENSITY CNTL (IN)	4	LED CATHODE (COMMON)
5	+5V REF (OUT)	5	LED CATHODE (COMMON)
		6	LED CATHODE (COMMON)

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MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
Vin	Supply Voltage (Referenced to Ground)	-0.3 to 19	Vdc
Vip	Voltage applied to any Input Pin (Referenced to Ground)	-0.3 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)	2.9	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 LED driver may occur.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
Vin	Supply Voltage (Referenced to Ground)	8.0	15.0	Vdc
Vf	Series Connected Cumulative LED Forward-Drop Voltage	**Vin + 1	38	Vdc
Icntl	LED Intensity Control Voltage	0.1	4.6	Vdc

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

ELECTRICAL CHARACTERISTICS

Vin = +12V, Icntl = +0.1V, Enable = +5V, unless otherwise specified

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
OCV	Open Circuit Voltage	No Load	45	50	55	Vdc
ENoff	Enable Control, Unit Off	Enable (Pin 3)			0.5	Vdc
ENon	Enable Control, Unit ON	Enable (Pin 3)	2.0			Vdc
+5Vref	+5V Output Reference Voltage	1K Ohm Load to Ground (Pin 5)	4.75	5.0	5.25	Vdc
Iadj	Nominal output current adjust range	Icntl (Pin4) = +4.6V to +0.1V	0		Note1	
Iind	Input Current Draw (Disabled)	Enable (Pin 3) = 0V		0.001	0.06	Adc
Eff	Electrical Efficiency			90		%

Note1: Maximum current per configuration selected (refer to Table 1 on Page 3)

Electrical Characteristics continued on Page 3.

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ELECTRICAL CHARACTERISTICS (for popular configurations)

Vin = +12V, Icntl = +0.1V, Enable = +5.0V, unless otherwise specified

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
Iout	Output Current per channel	Number of LED Channels Driven = 4 Vf = 24 S1 = A	14.3	**15**	15.8	mAdc
Iin	Input Current Draw		0.13	0.13	0.14	Adc
Iout	Output Current per channel	Number of LED Channels Driven = 2 Vf = 16 S1 = B	14.3	**15**	15.8	mAdc
Iin	Input Current Draw		0.042	0.044	0.047	Adc

Possible Configurations

Switch Setting (S1)		**Number of LED Channels Driven**					
		1	**2**	**3**	**4**	**5**	**6**
	Vf max (V)	Iout/ch (mA)	Iout/ch (mA)	Iout/ch (mA)	Iout/ch (mA)	Iout/ch (mA)	Iout/ch (mA)
A	38	60	30	20	**15**	12	10
B	38	30	**15**	10	7.5	6	5
C	38	40	**20**	13.3	10	8	6.7
D	28.7	80	40	26.7	**20**	16	13.3

TABLE1. – Output Current per Channel, based on Switch (S1) Setting and Number of Channels Driven

Caution: When selecting the number of channels to be driven and current per channel from one of the configurations in Table 1 above, you must ensure that the Forward-Drop Voltage (Vf) in your application does not exceed the Vf max value specified in Table 1.

The Nominal Input Current Draw, based on Vin, can be calculated from the following equation:

$$\text{Nominal Input Current Draw (A)} = \frac{\text{Iout per Channel (mA)} \times \text{Number of Channels} \times \text{Vf (V)} \times 0.0011}{\text{Vin (V)}}$$

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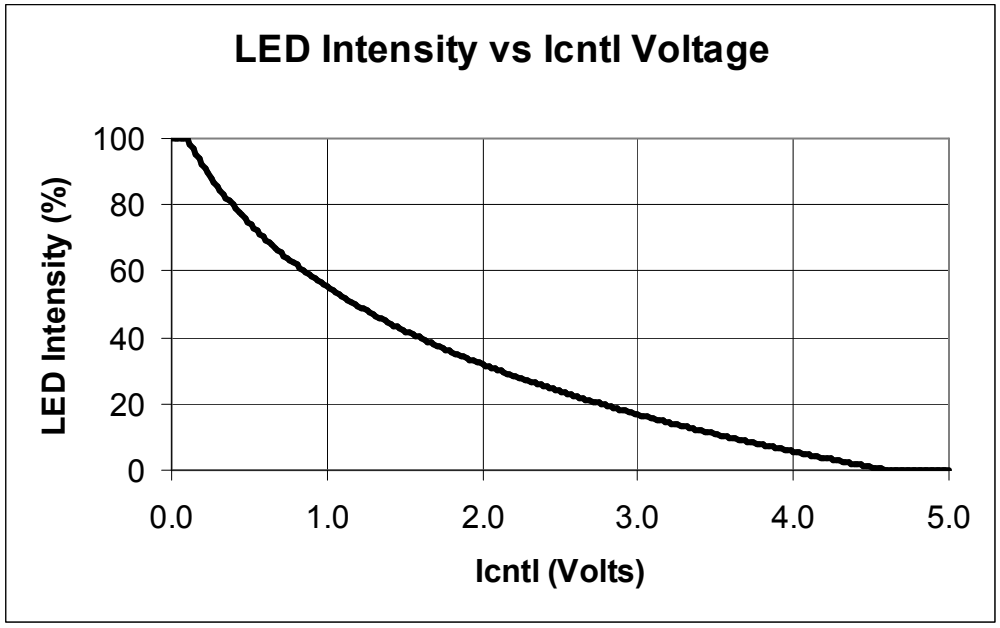

NOTE: The intensity response curve is designed to be compatible with the Digital View LCD Controller and Button Board.

Digital View LCD Controllers and Jumper Settings

LCD Controller	Jumper Settings
ALR-1400	(JB2 = 2-3) (JB3 = 1-2) (JP2 = 1-2)
ALR-1920	(JB2 = 2-3) (JB3 = 1-2) (JB5 = 1-2)
DVS-1600	(JB1 = 2-3) (JB2 = 2-3) (JB3 = 1-2) (JB5 = 1-2)
SP-1600	(JB2 = 2-3) (JB3 = 1-2) (JP3 = 1-2)
SVH-1920	(JB2 = 2-3) (JB3 = 1-2) (JP3 = 1-2)