

I-LITE, 8.0 WATT LED DRIVER

(Common-Cathode, One to Six Channels)

GENERAL DESCRIPTION

The ACI-A038040-1855 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 +12V source.

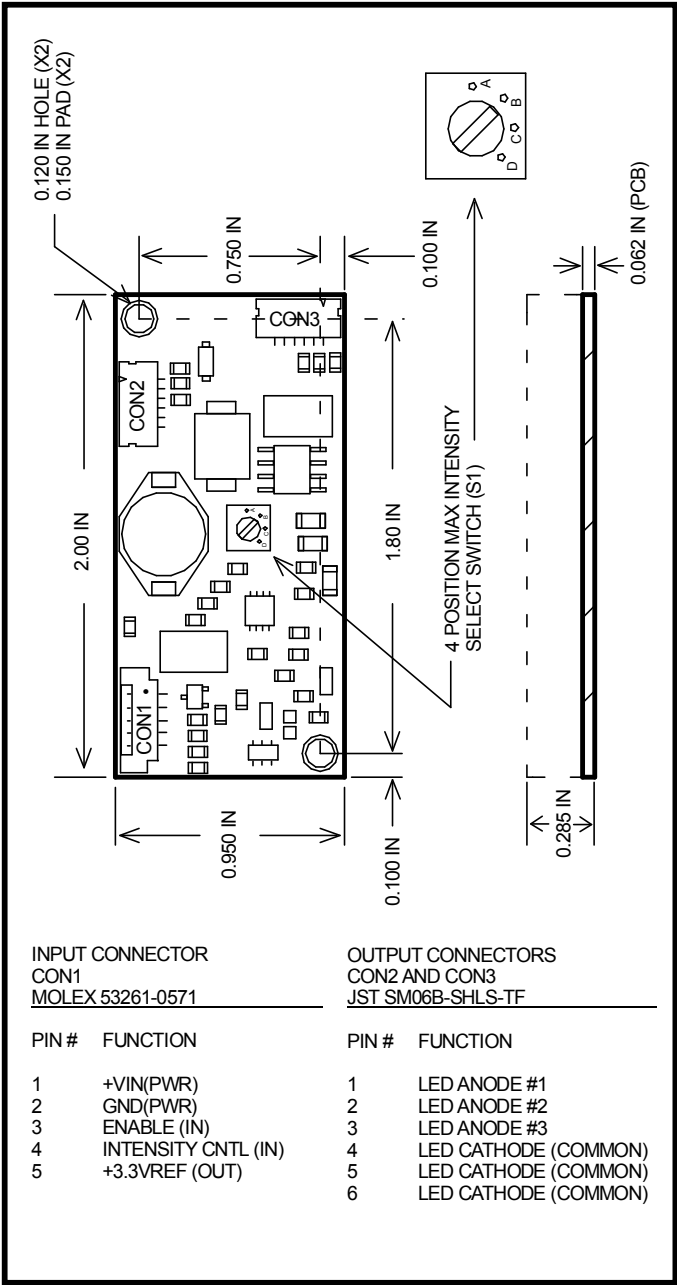
This unit features enable and intensity control inputs.

Additional Support Documentation:

1. I-LITE LED DRIVER APPLICATION NOTE
2. DRIVING OPTREX PANELS WITH ACI-A038040-1855

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



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 3.6 | Vdc |
| Iop | Current sourced or sinked from any Output Control Pin | +/- 10 | mAdc |
| Pin | Input Power (DC Input Voltage x DC Input Current) | 10.1 | 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 | 18.0 | Vdc |
| Vf | Series Connected Cumulative LED Forward-Drop Voltage | **Vin + 1 | 38 | Vdc |
| Icctl | LED Intensity Control Voltage | 0.25 | 3.0 | Vdc |

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

ELECTRICAL CHARACTERISTICS

Vin = +12V, Icctl = +3.0V, Enable = +3.0V, 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) | | | 0.4 | Vdc |
| ENon | Enable Control, Unit ON | Enable (Pin 3) | 1.8 | | | Vdc |
| +3.3Vref | +3.3V Output Reference Voltage | 1K Ohm Load to Ground (Pin 5) | 3.13 | 3.3 | 3.47 | Vdc |
| Iadj | Nominal output current adjust range | Icctl (Pin4) = +0.25V to 3.0V | 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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PRODUCT DATA SHEET

05/15/09

ELECTRICAL CHARACTERISTICS (for popular configurations)

Vin = +12V, Ictrl = +3.0V, Enable = +3.0V, unless otherwise specified

| Symbol | Parameter | Test Conditions | Min | Nom | Max | Unit |
|--------|----------------------------|---|------|------------|------|------|
| Iout | Output Current per channel | Number of LED Channels Driven = 2 Vf = 32.8V S1 = A | 114 | 120 | 126 | mAdc |
| Iin | Input Current Draw | | 0.69 | 0.73 | 0.77 | Adc |
| Iout | Output Current per channel | Number of LED Channels Driven = 2 Vf = 23.7V S1 = B | 85.5 | 90 | 94.5 | mAdc |
| Iin | Input Current Draw | | 0.38 | 0.40 | 0.42 | Adc |
| Iout | Output Current per channel | Number of LED Channels Driven = 2 Vf = 38V S1 = C | 66.5 | 70 | 73.5 | mAdc |
| Iin | Input Current Draw | | 0.47 | 0.49 | 0.52 | Adc |
| Iout | Output Current per channel | Number of LED Channels Driven = 3 Vf = 13.2V S1 = B | 57 | 60 | 63 | mAdc |
| Iin | Input Current Draw | | 0.21 | 0.22 | 0.23 | Adc |
| Iout | Output Current per channel | Number of LED Channels Driven = 4 Vf = 32V S1 = C | 33.3 | 35 | 36.8 | mAdc |
| Iin | Input Current Draw | | 0.39 | 0.42 | 0.44 | Adc |

Possible Configurations

| Switch Setting (S1) | Number of LED Channels Driven | | | | | | | | | | | |
|---------------------|---|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Iout/ch (mA) | Vf max (V) | Iout/ch (mA) | Vf max (V) | Iout/ch (mA) | Vf max (V) | Iout/ch (mA) | Vf max (V) | Iout/ch (mA) | Vf max (V) | Iout/ch (mA) | Vf max (V) |
| A | 240 | 33 | 120 | 33 | 80 | 33 | 60 | 33 | 48 | 33 | 40 | 33 |
| B | 180 | 38 | 90 | 38 | 60 | 38 | 45 | 38 | 36 | 38 | 30 | 38 |
| C | 140 | 38 | 70 | 38 | 46.7 | 38 | 35 | 38 | 28 | 38 | 23.3 | 38 |
| D | Switch Setting D has been reserved for future configurations. | | | | | | | | | | | |

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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