

I-DRIVE 3, 5.6 WATT LED DRIVER

Dual Mode, 14V, (0-400mA Day), 14V, (0-180mA NVIS)

GENERAL DESCRIPTION

The ACI-2996 provides a single board LED Driver solution for the powering of a LED backlight consisting of two types of LEDs, High Bright "Day" LEDs, and IR filtered "NVIS" LEDs.

This driver operates as a Dual Mode constant current LED Driver. In "Day" mode, the driver supplies power out of the Day channel, and in the "NVIS" mode, out of the NVIS channel. Mode selection is accomplished via a signal provided by the user on pin 9 of CON1.

The driver is capable of driving series connected LEDs with a forward drop of up to 14V, and operates over an input voltage range of +4.75V to +5.25V.

This driver features an enable and intensity control input with logarithmic output brightness response.

MECHANICAL/ENVIRONMENTAL

Weight = 20.5 grams

Altitude = 35,000 ft max.

Humidity < 95% non-condensing

Size (L x W x H) = 2.35 IN x 1.43 IN x 0.385 IN

PCB thickness = 0.062 IN

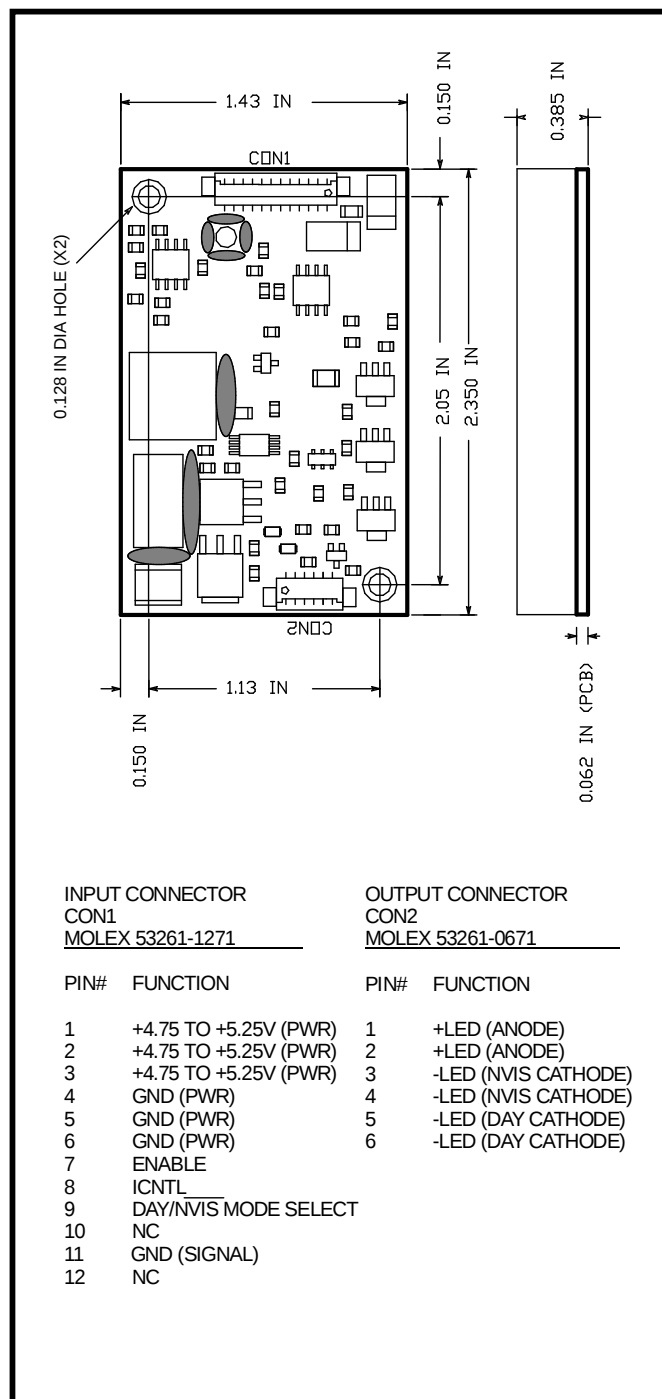
Mounting Holes = 0.137 IN diameter (X2)

Input Power & Control Connector = CON1

LED Output Connector = CON2

Specified Components secured with 3M DP-190 Epoxy

RoHS Compliant



MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
Vin	Supply Voltage (Referenced to Ground)	-0.7 to 6.5	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)	7.8	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)	4.75	5.25	Vdc
Vf	Series Connected Cumulative LED Forward-Drop Voltage (Day or NVIS)	Vin+1	14	Vdc
Icctl	LED Intensity Control Voltage	0.1	4.6	Vdc

ELECTRICAL CHARACTERISTICS (Part 1 of 2)

Vin = +5V, Icctl = +4.6V, Enable = +5V, unless otherwise specified.

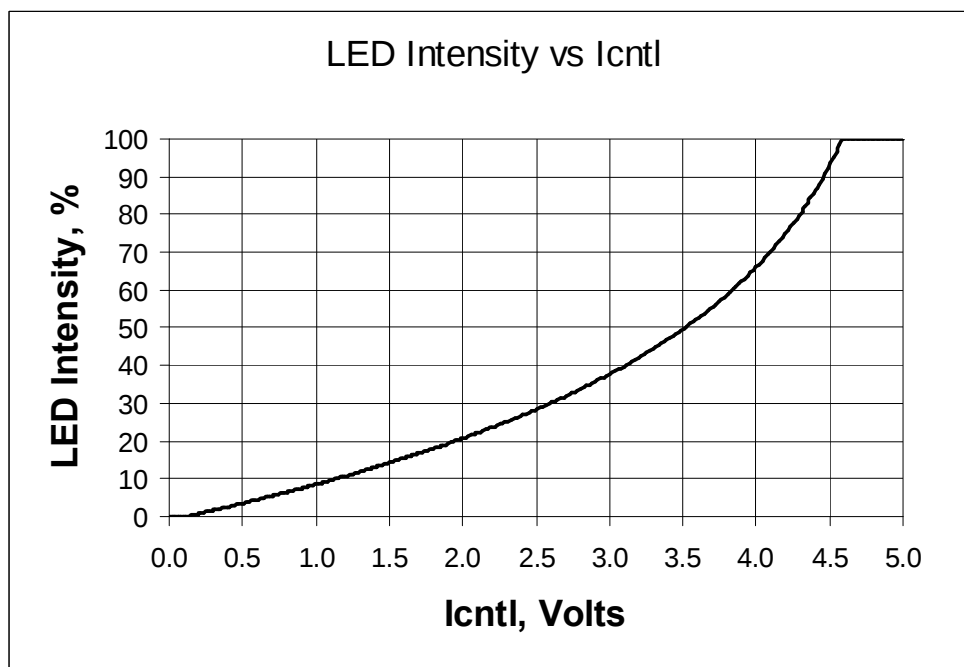
Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
OCV	Open Circuit Voltage	No Load	17	18	19	Vdc
ENoff	Enable Control, Unit Off	Pin 7 <= 0.5V			0.5	Vdc
ENon	Enable Control, Unit ON	Pin 7 >= 2.0V	2.0			Vdc
Ms	Mode Select, Day Mode	Pin 9 >= 2.0V	2.0			Vdc
Ms	Mode Select, NVIS Mode	Pin 9 <= 0.5V			0.5	Vdc
Iind	Input Current Draw (Disabled)	Enable (Pin 7) = 0V			0.06	mA
Eff	Electrical Efficiency		83			%
Day Mode, Ms = 5V						
Iout	Output Current		380	400	420	mA
Iadj	Nominal Output Current Adjustment Range	Icctl(Pin 8) = +0.1V to +4.6V	0		400	mA
Iin	Input Current Draw	Vf = 14V		1.35		Adc

Electricals continued on page 3.

ELECTRICAL CHARACTERISTICS (Part 2 of 2)

Vin = +5V, Icntl = +4.6V, Enable = +5V unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
NVIS Mode, Ms = 0V						
Iout	Output Current		171	180	189	mA
Iadj	Nominal Output Current Adjustment Range	Icntl(Pin 8) = +0.1V to +4.6V	0		180	mA
Iin	Input Current Draw	Vf = 14V		0.61		Adc





TIMING DIAGRAM – Example of Switching from NVIS to Day Mode

When user wants to switch modes, do the following:

1. Change to the desired mode, via Pin 11 on CON1 (This is shown to occur at T0).
2. Update Icntl setting, Pin 10 on CON1, within 200ms of mode change.
3. 200ms after mode change, the output channel will switch, and the new Icntl setting will appear (this is shown to occur at T1).