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SFDZDB4220F

RoHS Compliant

Specifications and Applications Information

05/24/12

Smart Force LED Driver

The ERG **Smart Force Series** of LED Drivers are specifically designed for applications which require high efficiency, wide dimming and LCD brightness stability over a wide input voltage range. The SFDZDB4220F is designed to provide backlight power for the Optrex T55592D121J-LW-A-ABN display.

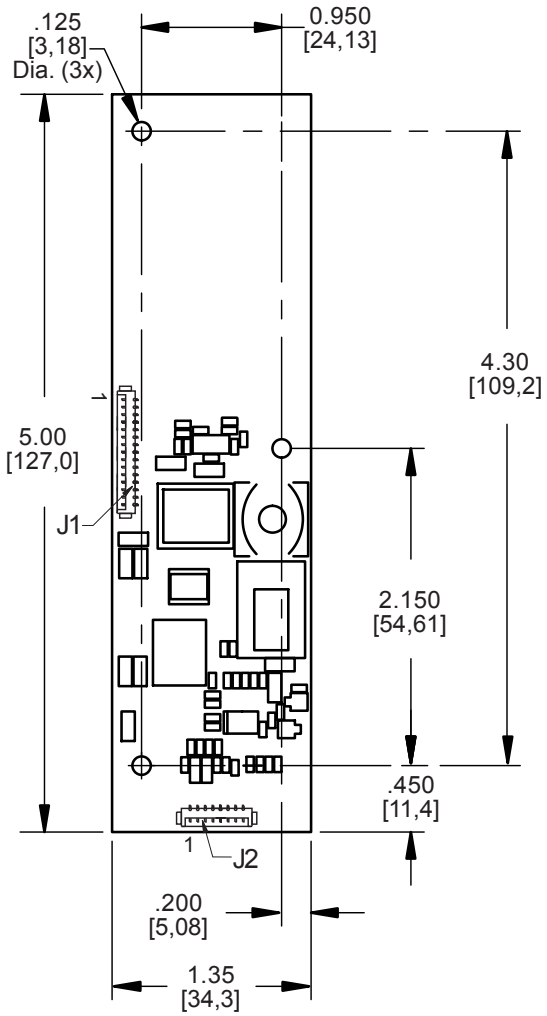
Designed, manufactured and supported within the USA, the SFDZD features:

- ✓ Constant LED current
- ✓ High efficiency
- ✓ On-board PWM dimming
- ✓ High dimming ratio
- ✓ Seperate enable and dimming function
- ✓ Open/short circuit protection
- ✓ Soft start
- ✓ One year warranty

Connectors	
Input Connector	**Output Connector ***
Molex 53261-1571	Molex 53261-0871
J1-1,2,3 Vin(+)	J2-1 Cathode 1
J1-4,5,6 Vin(+)	J2-2 Anode 1
J1-7,8,9 GND	J2-3 Cathode 2
J1-10,11,12 GND	J2-4 Anode 2
J1-13 Enable	J2-5 Cathode 3
J1-14 N/C	J2-6 Anode 3
J1-15 Control	J2-7 Cathode 4
	J2-8 Anode 4

* Requires harness:
ERG part number H13208152F recommended

Package Configuration



PCB components are shown for reference only. Actual product may differ from that shown.

Mass: 35 grams

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Absolute Maximum Ratings

Rating	Symbol	Value	Units
Input Voltage Range	V_{in}	-0.3 to +20	Vdc
Storage Temperature	T_{stg}	-40 to +85	°C
Control Voltage	$V_{Control}$	0 to 6.0	Vdc
Enable Input Voltage	V_{Enable}	0 to 6.0	Vdc

Operating Characteristics

Unless otherwise noted Vin = 12.00 Volts dc and Ta = 25°C.

Characteristic	Symbol	Min	Typ	Max	Units
Input Voltage	V_{in}	+10.8	+12.0	+18.0	Vdc
Component Surface Temperature (Note 1)	T_s	-20	-	+80	°C
Input Current (Note 2)	I_{in}	0.82	0.97	1.12	Adc
LED String Voltage	V_{LED}	20	-	30	Vdc
Efficiency (Note 2)	η	-	93	-	%
Output Current (per string)	I_{out}	100	105	110	mArms
Enable Pin					
Turn-on Threshold (Note 3)	V_{thon}	-	-	1.8	Vdc
Turn-off Threshold	V_{thoff}	0.6	-	-	Vdc
Enable Input Impedance (Note 4)	R_{Enable}	-	8.5	-	kOhms
Control Pin (Notes 5,6)					
Full-on Threshold	V_{fon}	-	1.0	-	Vdc
Minimum Pulse Width Threshold	V_{PWmin}	-	4.5	-	Vdc

Specifications subject to change without notice.

Note 1 Surface temperature must not exceed 80°C; thermal management actions may be required.
Note 2 Input Current and Efficiency are calculated with 25.9V LED strings.
Note 3 Enable pin is internally pulled up above the Turn-on Threshold.
Note 4 Enable pin input impedance is 8.5kΩ to 3V with a 12V input voltage.
Note 5 Internally pulled to GND.
Note 6 Control pin input impedance is 485 kohm.

Onboard PWM

Unless otherwise noted Vin = 12.00 Volts DC, T_a = 25 °C and unit has been running for 5 minutes.

Characteristic	Symbol	Min	Typ	Max	Units
Frequency	f_{pwm}	-	245	-	H_Z
Control Input Bias Current	I_{cbias}	-	-	10	uA

Application Information

The ERG SFDZDB4220F has been designed to be configured in multiple ways:

NO DIMMING

- OPERATION: The SFD driver can be configured to operate without dimming by floating the Control Pin (J1-15) and the Enable Pin (J1-13).
- Pins 1 through 6 of connector J1 must be connected to +Vin, between 10.8 and 18 Vdc. Pins 7 through 12 of connector J1 must be connected to GND.

ONBOARD PWM DIMMING

- OPERATION: Onboard PWM configuration as shown in Figure 1 allows the user to control display brightness by controlling the onboard PWM generator. The user is responsible to provide an analog control signal. A dimming ratio up to 255:1 is possible with this configuration.
- DIMMING: Dimming is accomplished by applying an analog voltage to the Control Pin (J1-15). Display brightness is modulated by controlling the Control Pin voltage as shown in Graph 1.
- ENABLE/DISABLE: The driver may be enabled or disabled (turned on and off) by applying a DC voltage to the Enable Pin(J1-13). Enable Pin on and off levels are specified in the Operating Characteristics section of the data sheet. The driver can also be enabled by floating the Enable Pin.
- Pins 1 through 6 of connector J1 must be connected to +Vin, between 10.8 and 18 Vdc. Pins 7 through 12 of connector J1 must be connected to GND. Pin 14 may be left floating or pulled up.

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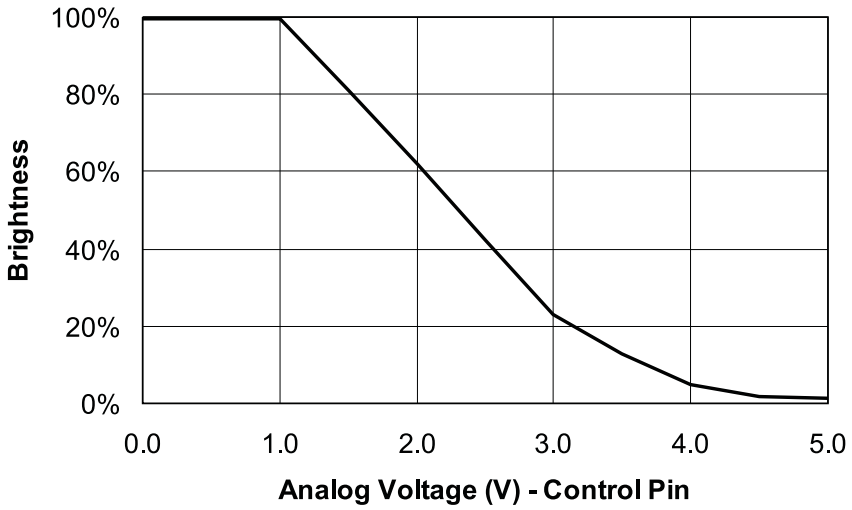
ONBOARD PWM DIMMING



Graph 1

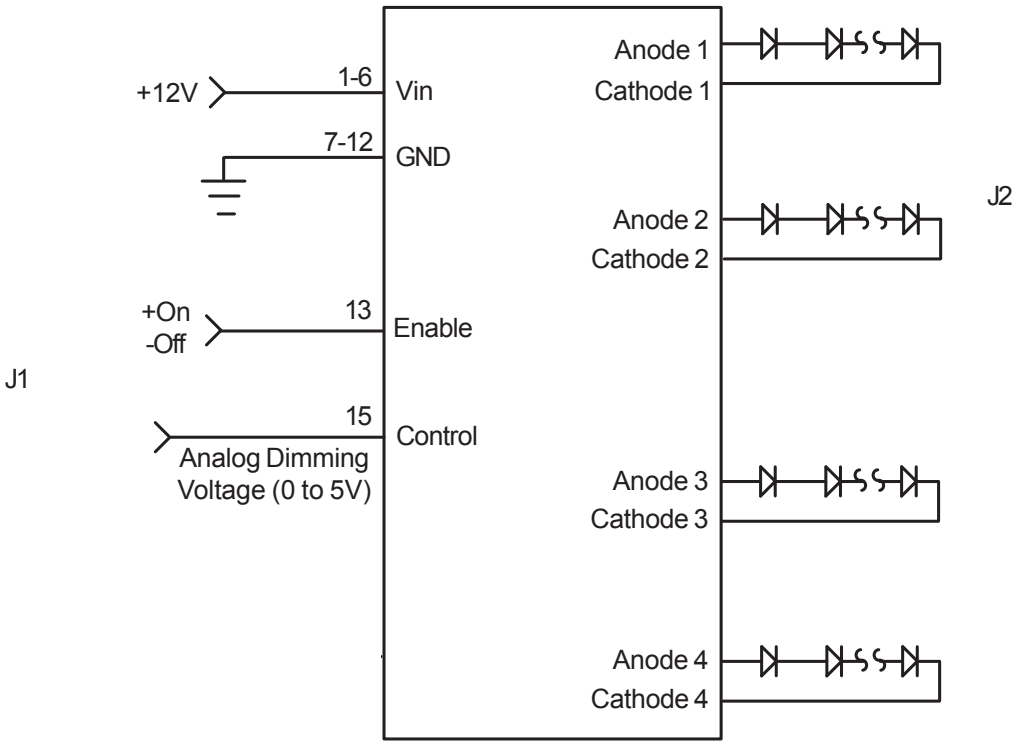


Figure 1