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Specifications and Applications Information

05/04/12

The ERG *SmartBridge Series* is designed to “bridge the gap” in current LCD systems when transitioning from an OEM CCFL backlit LCD to an OEM LED LCD panel with a built-in driver taking into consideration the parameters of the existing power setup. The result is a complete plug-and-play setup transitioning the design towards the new LED backlit LCD.

The ERG SBD4212F is specifically designed to use the current system power levels (V_{in}), ground, enable and control signals (0-5V); outputting the required panel voltage, enable and adding a required Pulse Width Modulated (PWM) dimming signal to the OEM panel driver. The connection to the panel is completed by an integration harness.

Designed, manufactured and supported within the USA, the SBD4212F features:

- ✓ Less than 5 mm in height
- ✓ Wide input voltage range
- ✓ Provides up to 255:1 dimming range
- ✓ One year warranty
- ✓ Custom footprints are available

Connectors

Input Connector

Molex
53261-0871

J1-1 $V_{in}(+)$
J1-2 $V_{in}(+)$
J1-3 GND
J1-4 GND
J1-5 Enable
J1-6 Control
J1-7 N/C
J1-8 N/C

Output Connector

Molex
53261-0671

J2-1 $V_{in}(+)$
J2-2 $V_{in}(+)$
J2-3 GND
J2-4 GND
J2-5 Enable
J2-6 PWM Out

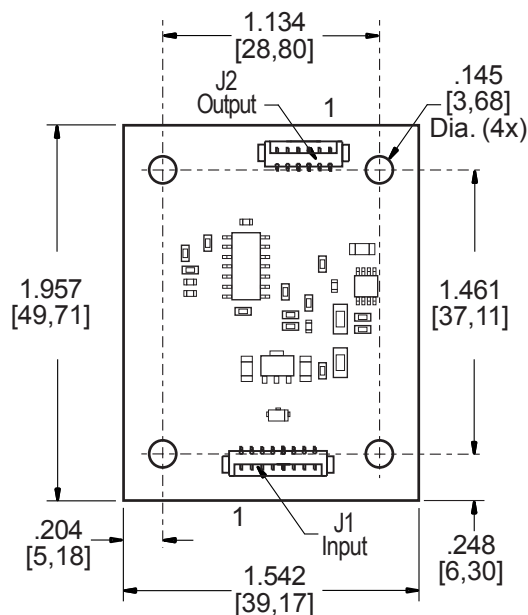
Recommended input harness:
H1308460F - flying lead input harness
or
H5106305 - DV to ERG input harness

SBD4212F



SmartBridge Series with Integrated PWM Dimming

Package Configuration



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

Mass: 6.4 grams typ.





Absolute Maximum Ratings

Rating	Symbol	Value	Units
Input Voltage Range	V_{in}	-0.3 to +20.0	Vdc
Storage Temperature	T_{stg}	-40 to +85	°C
Control Input Voltage	V_{PWM}	0 to +5.0	Vdc

Operating Characteristics

Unless otherwise noted $V_{in} = 12.00$ Volts dc and $T_a = 25^{\circ}\text{C}$.

Characteristic	Symbol	Min	Typ	Max	Units
Input Voltage	V_{in}	+8.0	+12.0	+18.0	Vdc
Component Surface Temperature	T_s	-40	-	+80	°C
Input Current (Note 1)	I_{in}	3.0	4.5	6.0	mAdc
Input Current Max (Note 2)	I_{in}	0	-	2	Adc
Control Pin (Notes 3,4)					
Full-on Threshold	V_{thon}	-	1	-	Vdc
Minimum Pulse Width Threshold	V_{PWmin}	-	4.5	-	Vdc
Minimum Pulse Width Period	T_{PWmin}	-	16	-	µsec
Input Impedance to GND	Z_{in}	-	10k	-	Ohms
Frequency	F_{PWM}	-	245	-	Hz
PWM Out					
Output ON Voltage	V_{on}	4.5	5.0	5.5	Vdc
Output OFF Voltage	V_{off}	0	0.3	0.8	Vdc
Output Current	I_{out}	-15	-	15	mAdc

Specifications subject to change without notice.

Note 1 I_{in} is SBD4212F current only.

Note 2 I_{in} Max is total current allowed by user to power user electronics.

Note 3 Control pin is internally pulled to ground.

Note 4 Control pin input impedance is 4.3kΩ.



Application Information

The ERG SBD4212F has been designed to be configured in multiple ways:

NO DIMMING

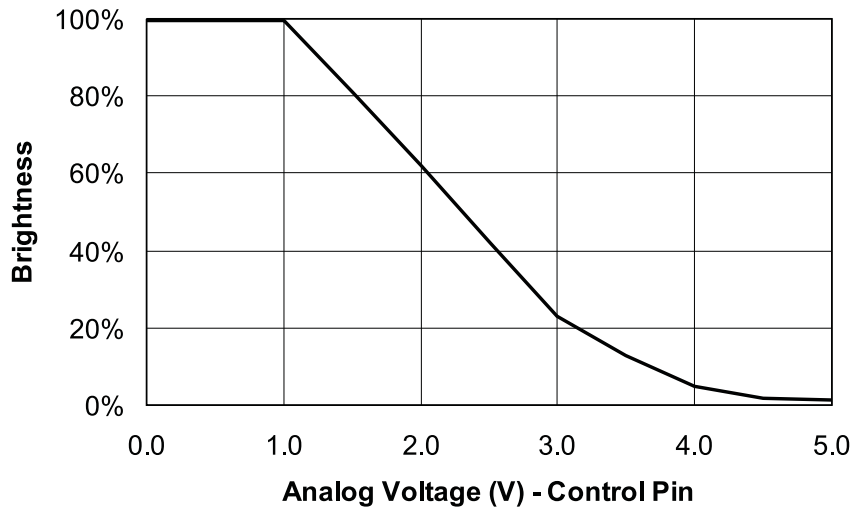
- OPERATION: The SBD4212F can be configured to operate without dimming by floating the Control (J1-6) pin.
- Pin 1,2 of connector J1 must be connected to +Vin, between 8 and 18 Vdc. Pins 3 and 4 of connector J1 must be connected to GND.

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 (J1-6). Display brightness is modulated by controlling the Control Pin voltage as shown in Graph 1.
- Pin 1,2 of connector J1 must be connected to +Vin, between 8 and 18 Vdc. Pins 3 and 4 of connector J1 must be connected to GND.



ONBOARD PWM DIMMING



Graph 1

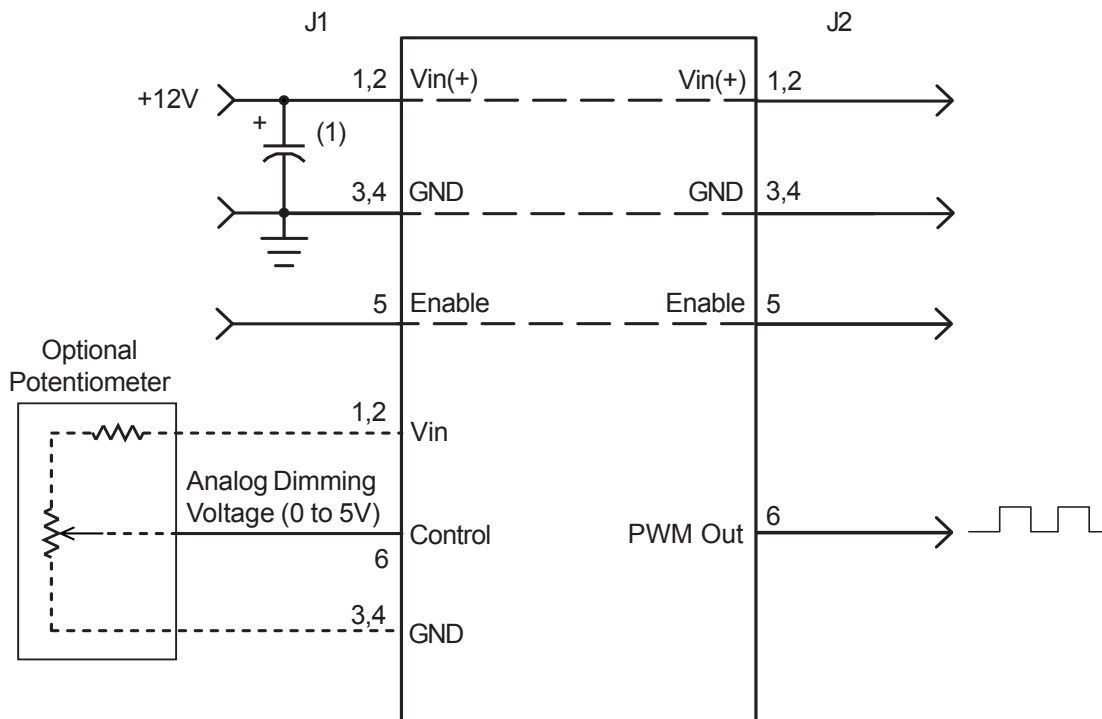


Figure 1

- (1) Low ESR type input by-pass capacitor (10 μ F - 220 μ F) may be required to reduce reflected ripple and to improve power supply response.



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