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Specifications and Applications Information

05/01/04

Preliminary

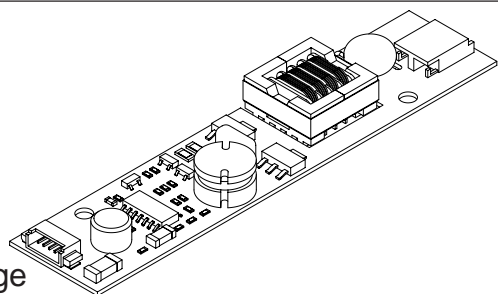
The ERG 8mD2846 (8mD Series) DC to AC inverter features onboard connectors and can be easily dimmed using an external analog control signal or external PWM generator.

Powered by a regulated +12 Volt DC source, the 8mD2846 is designed to power the Toshiba LTM06C310 display backlight.

Product Features

- ✓ Small Package Size, less than 9mm in height.
- ✓ High Dimming Ratio
- ✓ High Efficiency
- ✓ Made in U.S.A.

This unit complements our 8m Series of DC to AC Inverters



8mD Package

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

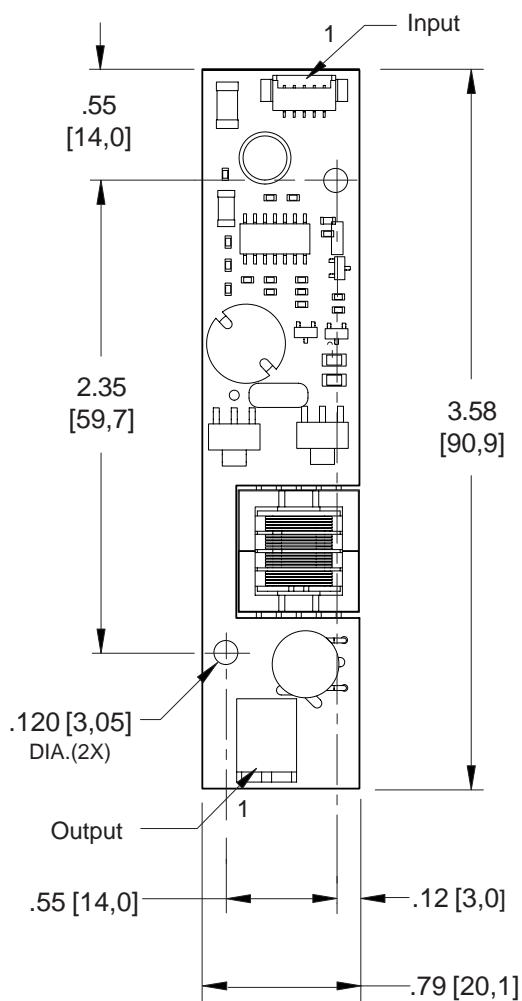
Connectors

| J1 | J2 |
|------------------|---------------------|
| Molex 53261-0590 | JST SM02B-BHSS-1-TB |

8mD2846

Single Tube
 DC to AC Inverter

Package Configuration



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

Mass: 15 grams

Pin Descriptions

| | |
|--------------|------------|
| J1-1 Vin | J2-1 ACout |
| J1-2 GND | J2-2 ACout |
| J1-3 Enable | |
| J1-4 Control | |
| J1-5 N/C | |



Absolute Maximum Ratings (Note 1)

| Rating | Symbol | Value | Units |
|-----------------------|--------------|---------------|-------|
| Input Voltage | V_{in} | -0.3 to +13.2 | Vdc |
| Enable | V_{Enable} | -0.3 to +13.2 | Vdc |
| Operating Temperature | T_a | -0 to +85 | °C |
| Storage Temperature | T_s | -40 to +85 | °C |

Recommended Operating Conditions

| Rating | Symbol | Value | Units |
|---|----------|---------------|-------|
| Input Voltage | V_{in} | +10.8 to 12.6 | Vdc |
| Operating Temperature <small>(Note 2)</small> | T_a | 0 to +50 | °C |

Electrical Characteristics

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

| Characteristic | Symbol | Min | Typ | Max | Units |
|--|---------------|------|-----|----------|---------------------|
| Input Current | I_{in} | - | .17 | .20 | A _{DC} |
| Input Ripple Current | I_{rip} | - | 20 | - | mA _{pk-pk} |
| Operating Frequency | F_o | 24 | 29 | 34 | KHz |
| Efficiency | η | - | 63 | - | % |
| Output Voltage | V_{start} | 1400 | - | - | V |
| Output Voltage <small>(Note 3)</small> | V_{out} | - | 440 | - | V |
| Output Current | I_{out} | - | 2.9 | - | mA _{rms} |
| Enable (pin J1-3) <small>(Note 4)</small> | | | | | |
| Turn-off Threshold | V_{thoff} | 0 | - | 1 | V |
| Turn-On Threshold | V_{thon} | 2.5 | - | V_{in} | V |
| Impedance to V_{in} | $R_{Disable}$ | 44.6 | 47 | 49.4 | kOhms |

(Note 1) Reliable and predictable operation of the device is not guaranteed with applied stresses at or beyond those listed in "Absolute Maximum Ratings". Operation at these limits may reduce device reliability and is therefore not recommended. Please refer to "Recommended Operating Conditions" for reliable operation of the device.

(Note 2) Reliable operation above 50°C is possible if airflow is provided.

(Note 3) When powering a load simulating the referenced display

(Note 4) The inverter is always enabled with an internal pullup resistor tied to the enable pin. A ground on the enable input will turn the inverter off.

Input voltage specification modified for clarity on 5/2004.



Onboard PWM

Unless otherwise noted $V_{in} = 12.00$ Volts DC , $T_a = 25$ °C and unit has been running for 5 minutes.

| Characteristic | Symbol | Min | Typ | Max | Units |
|----------------------------|-------------|-----|-----|-----|---------|
| Frequency | f_{pwm} | - | 160 | - | Hz |
| Control Input Bias Current | I_{cbias} | - | - | 10 | μA |

Pin Descriptions

Vin Input voltage to the inverter.

GND Inverter ground.

Control Analog voltage input to the onboard pulse width modulator. Increasing this voltage increases the off time of the onboard PWM resulting in decreased brightness. The inverter is full on when this voltage is near inverter ground.

Enable Inverter Enable. The inverter is always enabled with an internal pullup resistor tied to the enable pin. Pull this pin low to disable inverter operation. The onboard PWM is always utilized.

Application information

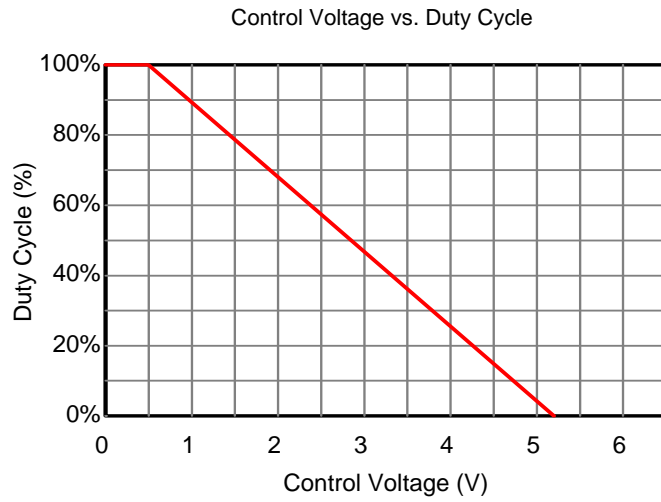
The 8mD series of inverters is designed to power one cold cathode fluorescent tube with four watts. An external analog control interfaces with an onboard pulse width modulator to provide dimming control. The 8mD inverter can reliably dim to less than 5% duty cycle.

External shutdown of the inverter is accomplished using the Enable pin. Pulling this pin low (below V_{thoff}) disables the inverter.

If analog voltage dimming is required, the analog voltage is applied to the Control pin. Figure 1 shows how to connect the inverter for onboard PWM operation. Graph 1 shows the relationship of PWM duty cycle to input control voltage.

If an external PWM is used, simply connect the Enable pin to the PWM source and connect the Control pin to inverter ground. If the onboard PWM is used, connect the analog voltage to the Control pin.

Coating All Surfaces except connectors are conformally coated with an Acrylic Resin (AR) coating.



Graph 1

Typical Application

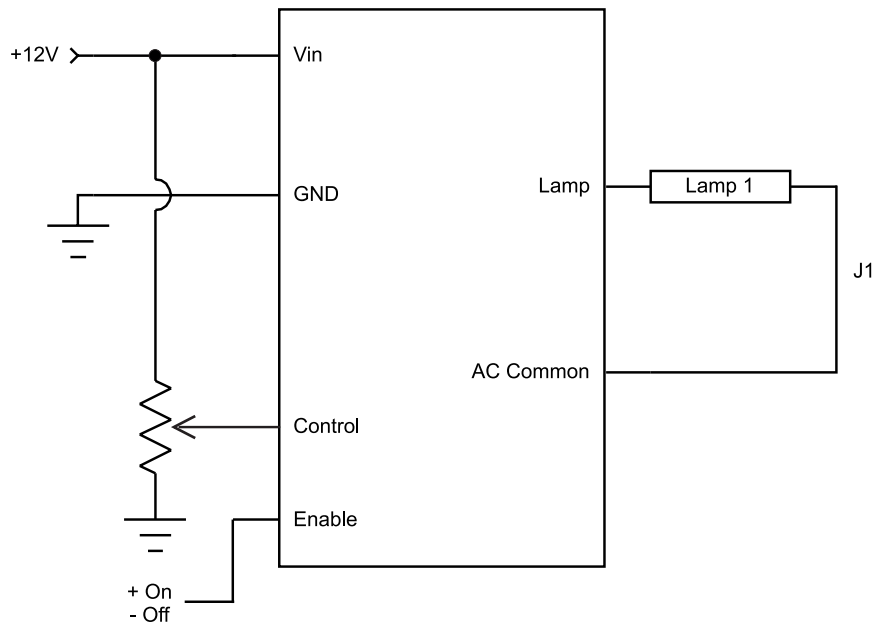


Figure 1



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