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MS263047

Specifications and Applications Information

04/23/04

Preliminary

Six Tube
DC to AC Inverter

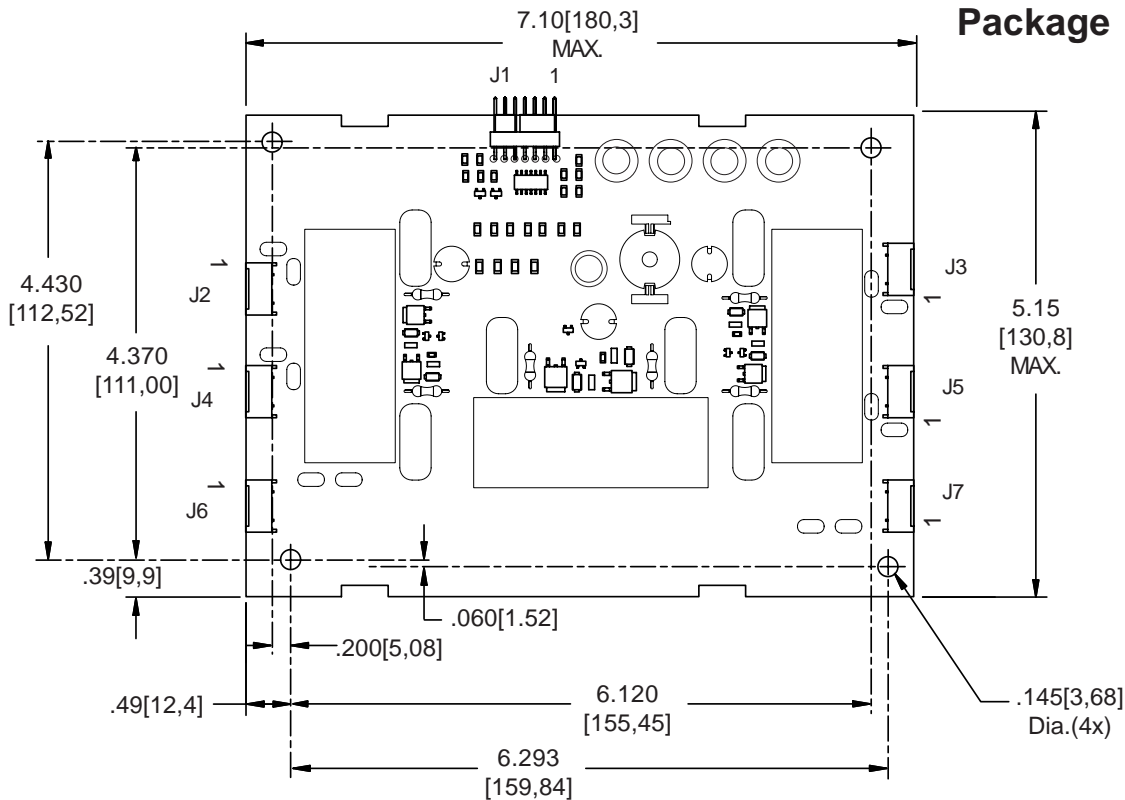
Product Features

- ✓ Encapsulated high voltage transformers.
- ✓ High Efficiency
- ✓ Made in U.S.A.
- ✓ Excellent dimming range.

The ERG MS263047 DC to AC inverter features onboard connectors and can be easily dimmed using an external pulse-width modulated control signal or using the onboard PWM with an external analog voltage. This unit is only 17mm in height and the four mounting holes makes installation very straight forward.

Powered by a regulated +12 volt DC source the MS263047 is specially designed to power the Samsung 21.3" display.

Package Configuration



Weight: 100 grams

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

Connectors and Pin Descriptions

| J1 Molex 22-05-3071 | J2-J5 JST SM02(8.0)B-BHS-1-TB | J6-J7 JST SM02(12.0)B-BHS-1-TB |
|---|---|--|
| J1-1 +Vin J1-2 +Vin J1-3 +GND J1-4 +GND J1-5 Control J1-6 Enable J1-7 GND | J2-J5-1 ACout J2-J5-2 N/C J2-J5-3 ACout | J6-J7-1 ACout J6-J7-2 N/C J6-J7-3 N/C J6-J7-4 ACout |



Absolute Maximum Ratings ^(Note 1)

| Rating | Symbol | Value | Units |
|-----------------------|----------|-------------|-------|
| Input Voltage | V_{in} | -0.3 to +15 | Vdc |
| Operating Temperature | T_a | -0 to +85 | °C |
| Storage Temperature | T_s | -40 to +80 | °C |

Recommended Operating Conditions

| Rating | Symbol | Value | Units |
|---|----------|---------------|-------|
| Input Voltage | V_{in} | +10.8 to 12.6 | Vdc |
| Operating Temperature ^(Note 2) | T_a | 0 to +70 | °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} | - | 3.1 | 3.6 | A_{DC} |
| Input Ripple Current | I_{rip} | - | 50 | - | mA_{pk-pk} |
| Operating Frequency | F_o | 31 | 36 | 41 | KHz |
| Efficiency | η | - | 93 | - | % |
| Output Voltage (no load) | V_{start} | 2000 | - | - | V |
| Output Voltage (with lamp) | V_{out} | - | 860 | - | V |
| Output Current (per tube) | I_{out} | - | 6.7 | - | mArms |
| Disable/Enable (pin J1-6) | | | | | |
| Turn-off Threshold | V_{thoff} | - | - | 2.0 | V |
| Turn-On Threshold | V_{thon} | 4.0 | - | - | V |
| Impedance to V_{in} | $R_{disable}$ | 9.5 | 10 | 10.5 | 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) Provided data is not tested but guaranteed by design.

Input voltage specification modified for clarity on 4/2004.



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 | uA |

Pin Descriptions

- Vin** Input voltage to the inverter. All pins should be connected for optimum reliability and efficiency .
- GND** Inverter ground. All pins should be connected for optimum reliability and efficiency.
- 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.
- Disable/Enable** Inverter disable. Pull this pin low to disable inverter operation. If this pin is left floating or driven high, the inverter is enabled.

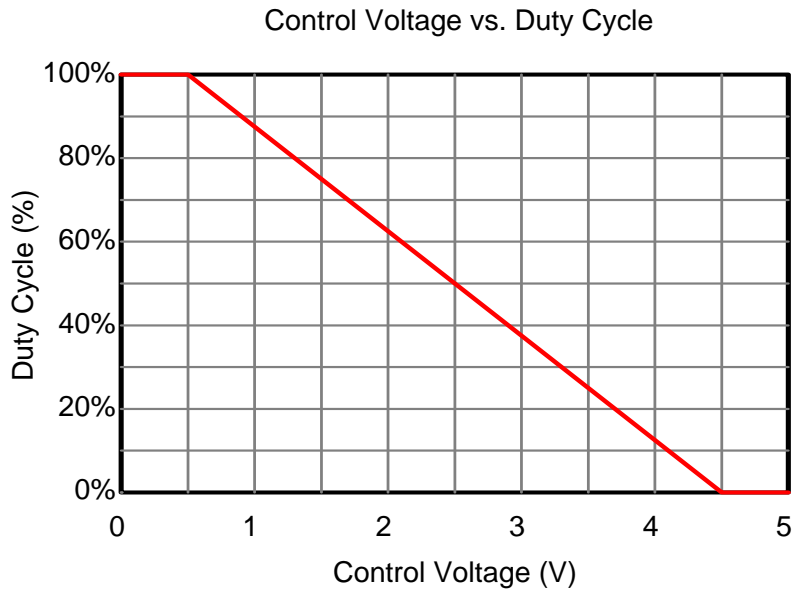
Application information

The MS263047 is designed to power six cold cathode fluorescent tubes with combined power of 50 watts.

External shutdown of the inverter is accomplished using the Disable pin. Pulling this pin low (below V_{thoff}) disables the inverter. Enabling the inverter is accomplished by pulling this pin high (above V_{thon}).

An analog voltage applied to the control pin will activate the on board PWM circuit. 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.

An external PWM circuit may be used by applying this signal to the enable input while connecting the control input to ground.



Graph 1

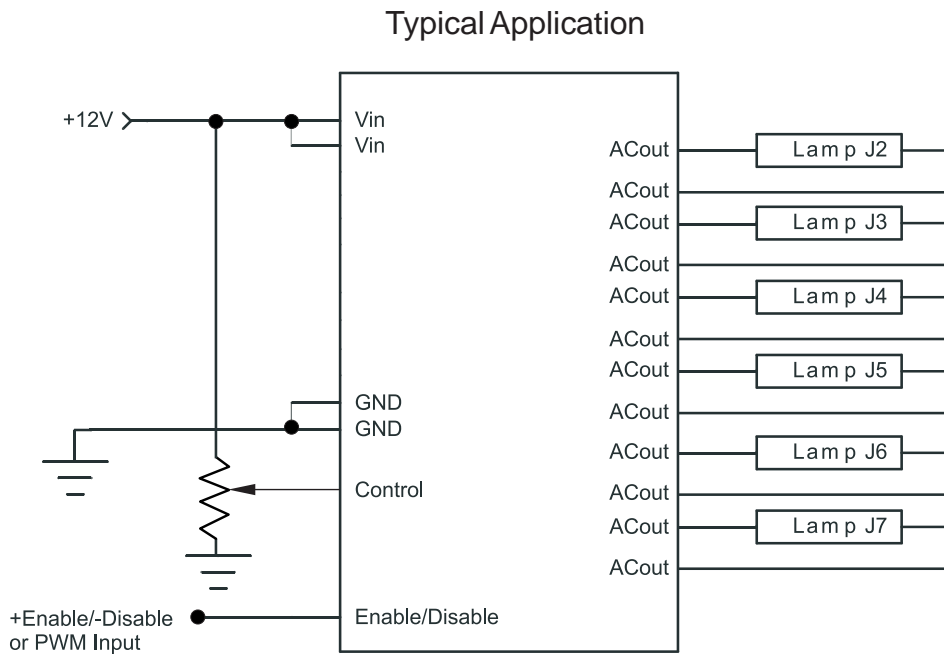


Figure 1



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