# REVISIONS

| REV | DESCRIPTION | DATE | ISSUED BY |
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| – | ISSUED DRAWING | 05/10/06 | Y. SEKIGUCHI |
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| FILE NAME: ACAD\MXFMR\A313620C.DWG | SCALE: NONE | REV: – | COVER SHEET |
| TITLE:<br>HBL–0334 PIEZOELECTRIC INVERTER | DOCUMENT NUMBER: P–A3–13620 | | |
| TAMURA CORPORATION OF AMERICA<br>43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590<br>TEL: (951)699–1270 • FAX: 9516769482 | PREPARED BY: | K. BRENNAN | 05/09/06 |
| | ENGINEERING: | M. PITCHAI | 05/10/06 |
| | APPROVED: | Y. SEKIGUCHI | 05/10/06 |

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PIEZOELECTRIC INVERTER

1. Scope

This applies to the CCFT Inverter (Cold-Cathode Flourescent Tube Inverter) HBL-0334 (RoHS Compliant)

2. Electrical Characteristics

a. Absolute Maximum Rating

| | |
|---|---|
| Input voltage | 6.0V MAX. |
| Max. output power | 0.8W MAX. |

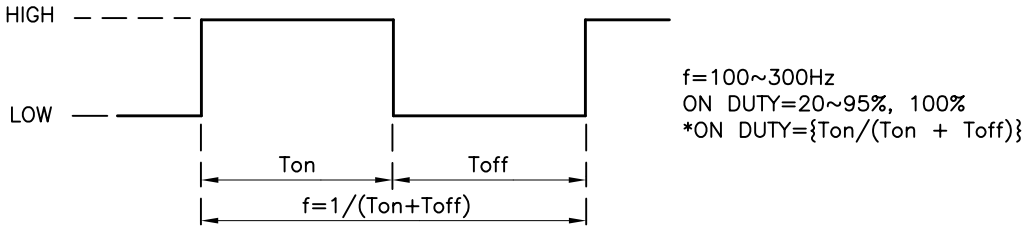
b. Input/Output Characteristics

The measuring circuit and measuring method shall be as set forth in Section 4. (Unless otherwise specified, Ta = 25°C)
Values are those obtained 3 minutes after the power is turned on.

| Item | Specification |
|---|---|
| Input Voltage | 3.0V ~ 5.5V |
| Input current | 280mA MAX (Vin = 3.0V) |
| Output open voltage | 1100Vrms MIN (at ambient temperature 0°C) |
| Output current | 1.4mArms ±10% |
| Frequency | 100KHz ±10% |
| ON/OFF function | ON: ON/OFF terminal signal HIGH (2.5V ~ Vin)<br>OFF: ON/OFF terminal signal LOW (0V ~ 0.5V) |

c. Duty Dimming

The duty dimming must be possible by applying the following signal to the ON/OFF terminal,

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| FILE NAME: ACAD\MXFMR\A3136201.DWG | SCALE: NONE | REV: - | DATE: 05/09/06 | SHEET 1 OF 4 |
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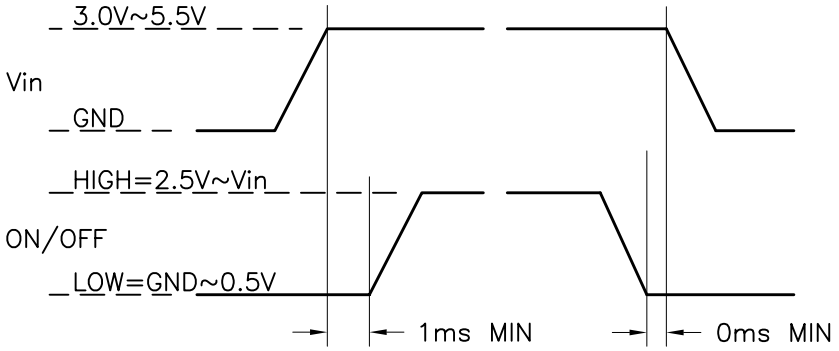
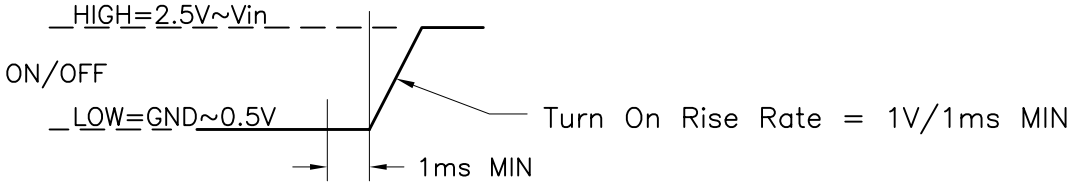
d. Input Sequence and the rise rate of voltage (ON/OFF)




Until Vin voltage reaches the spec voltage, it does not change ON/OFF function from LOW to HIGH.
When the terminal Vin is turned off, it is necessary to ON/OFF=LOW.




The start up rise rate must be 1V/1ms or faster. If the minimum slow rate requirement is not met then the inverter output may not start.

3. Input/Output Interface Connection

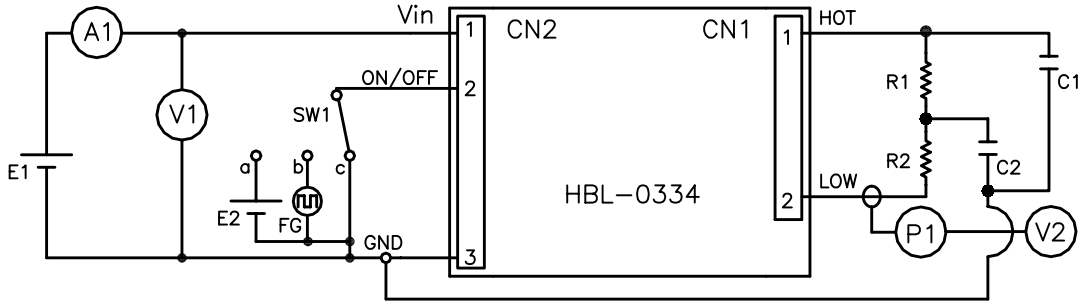
Input CN2: SM03B-SRSS-TB (LF) (JST) or SM03B-SRSS-TB (LF) (SN) (JST)

| Pin No. | Function |
|---|---|
| 1 | Vin |
| 2 | ON/OFF |
| 3 | GND |

Output CN1: SM02B-BHSS-1-TB (LF) (JST) or SM02B-BHSS-1-TB (LF) (SN) (JST)

| Pin No. | Function |
|---|---|
| 1 | HOT |
| 2 | COLD |

4. Measuring Circuit and Method for Electrical Characteristic




| | |
|---|---|
| E1: DC regulated power supply | 3.0V ~ 5.5V |
| E2: DC regulated power supply | 2.5V |
| V1: DC voltmeter | TR6851 (ADVANTEST) or equivalent |
| V2: Effective value voltmeter | 3400B (YHP) or equivalent |
| A1: DC ammeter | Type 2011 Class 0.5 (YEW) or equivalent |
| P1: Probe | P6021 (Tektronix) or equivalent |
| FG: Function generator | 3314A (HP) or equivalent |

<Equivalent load for inspection>
R1: 133kΩ, 1W
R2: 133kΩ, 1W
C1: 2pF, 3kV
C2: 3pF, 3kV

5. Ambient Conditions

a. Temperature
Operating temperature: 0°C ~ 50°C
Storage temperature: −20°C ~ 70°C

b. Humidity
Operating humidity: 20% ~ 80% (No condensation)
Storage humidity: 5% ~ 90% (No condensation)

6. Reliability
The reliability is verified on the following items

| Item | Specification | Sample Qty |
|---|---|---|
| Left at high temp. | Ambient temperature 70°C, 240H | 4 |
| Left at low temp. | Ambient temperature −20°C, 240H | 4 |
| Left at High temp. and high humidity | Ambient temperature 40°C, Humidity 90%, 240H | 4 |
| Temperature Cycle | −20°C ~ 70°C, 5 cycles | 4 |
| High temperature power on | Ambient temperature 50°C, input voltage 5.5V, output current 1.4mArms, 500H (Equivalent load resistance) | 11 |
| ON/OFF test | 5 sec:ON, 5 sec:OFF, 50000 times (Input voltage 5.5V, output current 1.4mArms, Equivalent load resistance) | 5 |
| Vibration | Acceleration 3G, frequency sweep 10~55Hz for 45 min. Once in each of X, Y, and Z directions. | 3 |
| Shock | Acceleration 80G, acting time 11ms, 3 times in each of X, Y, and Z directions. | 3 |

After the end of each test. leave the product at room temperature and humidity for 24 hours. The Electrical and Mechanical characteristics shall remain within spec.

7. Precautions for static electricity

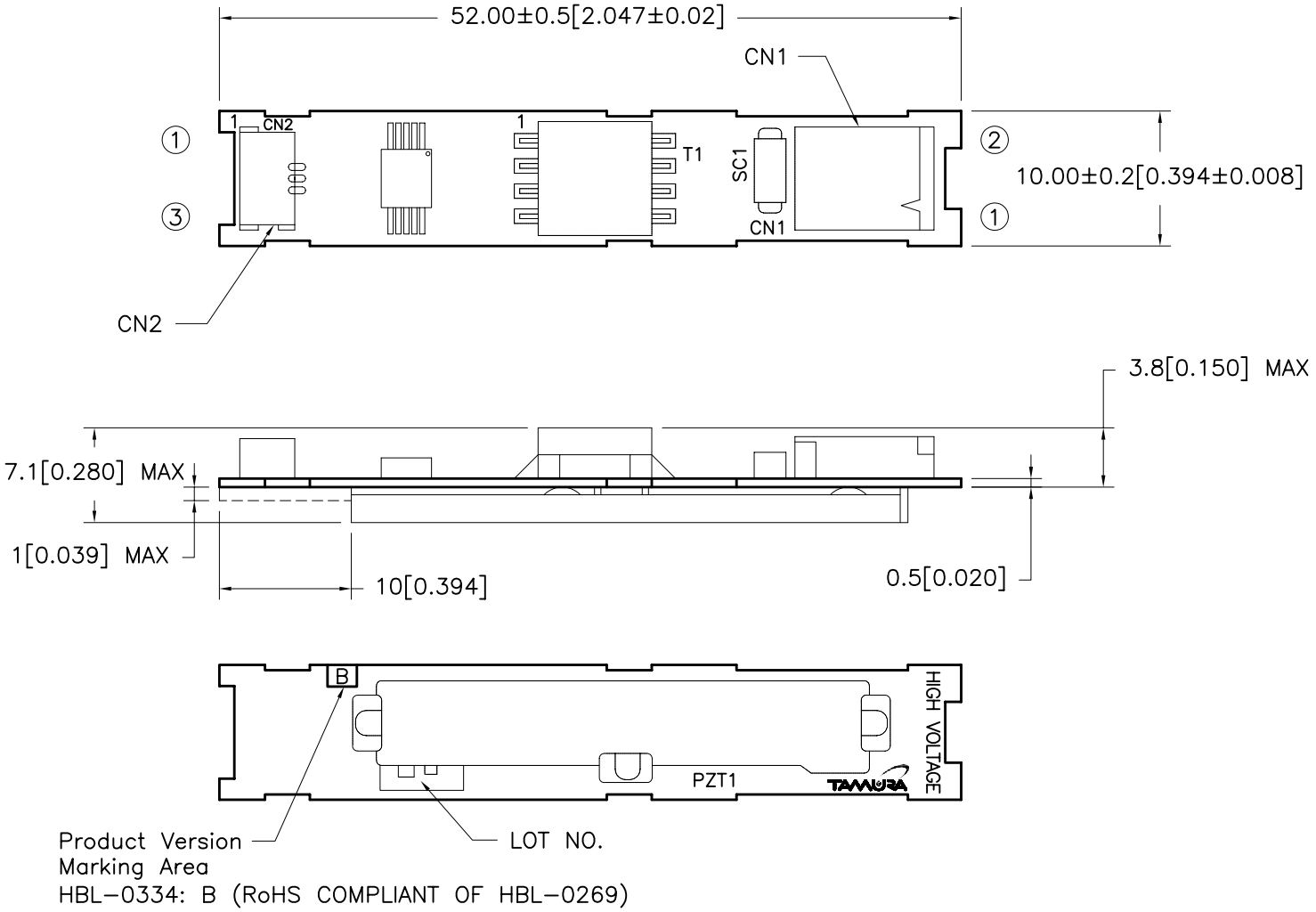
When transporting this product, use materials that will not develop an electrical charge. When handling this product, be sure to wear antistatic wrist bands or other protective equipment to prevent the product from being damaged by any electric charge.

Please make sure neither excessive impact nor bending occurs to the part during handling and transportation. This could cause the part to malfunction.

8. An input fuse is built into this inverter.

9. Dimensions and Connectors:

Dimensions are in mm[Inches]




HBL−0334: B (RoHS COMPLIANT OF HBL−0269)

CN1: SM02B−BHSS−1−TB (LF) (JST)

① HOT
② COLD

CN2: SM03B−SRSS−TB (LF) (JST)

① VIN
② ON/OFF
③ GND

| FILE NAME: ACAD\MXFMR\A3136204.DWG | SCALE: NONE | REV: − | DATE: 05/09/06 | SHEET 4 OF 4 |
|---|---|---|---|---|
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