PIEZOELECTRIC INVERTER

1. Scope
   This applies to the CCFT Inverter (Cold-Cathode Flourescent Tube Inverter)
   HBL-0335 (RoHS Compliant)

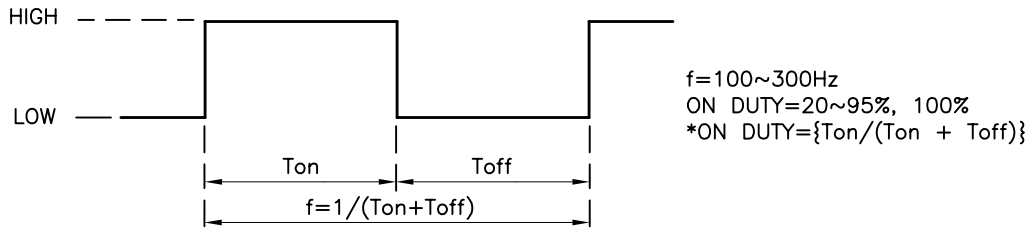
2. Electrical Characteristics
   a. Absolute Maximum Rating

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	350mA (Vin = 3.0V)
Output open voltage	900Vrms MIN (at ambient temperature 0°C)
Output current	2.0mArms ±10%
Frequency	160KHz ±10%
ON/OFF function	ON: ON/OFF terminal signal HIGH (2.5V ~ Vin) 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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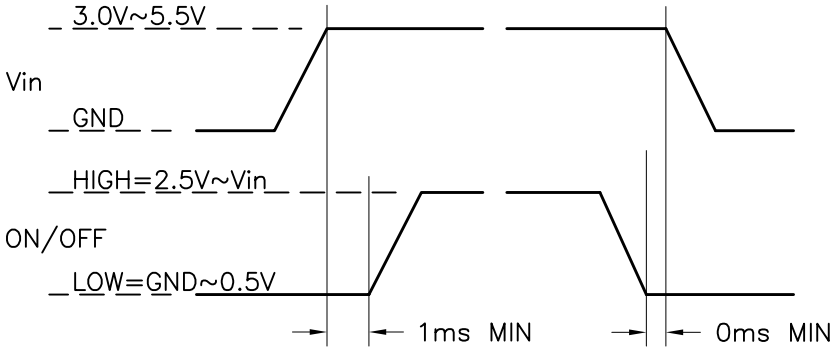
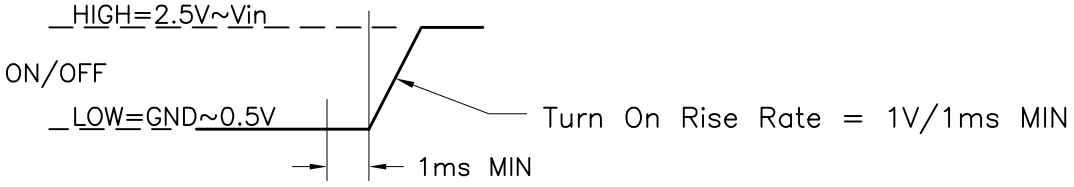
d. Input Sequence and the rise rate of voltage (ON/OFF)



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

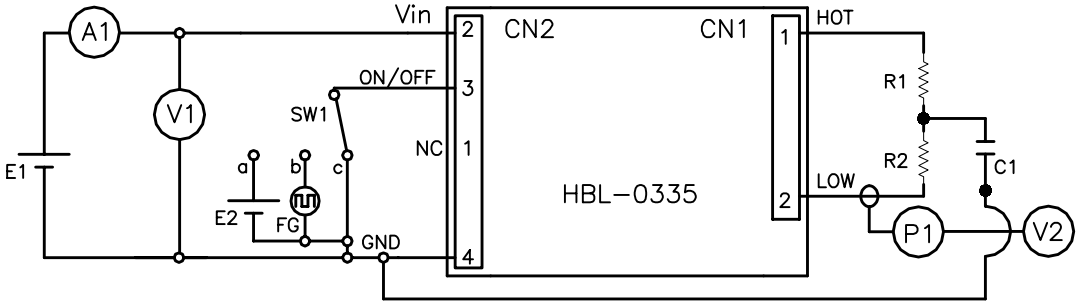
Input CN2:A4B-4PA-2DSA (71) (HRS)

Pin No.	Function
1	NC
2	Vin
3	ON/OFF
4	GND

Output CN1:HV-2P-HF-E1400E (JAE)

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: 100kΩ, 1W
R2: 61kΩ, 1W
C1: 5pF, 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 95%, 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 2mArms, 500H (Equivalent load resistance)	11
ON/OFF test	1 min:ON, 1min:OFF, 50000 times (Input voltage 5.5V, output current 2mArms, 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.

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7. Precautions for static electricity

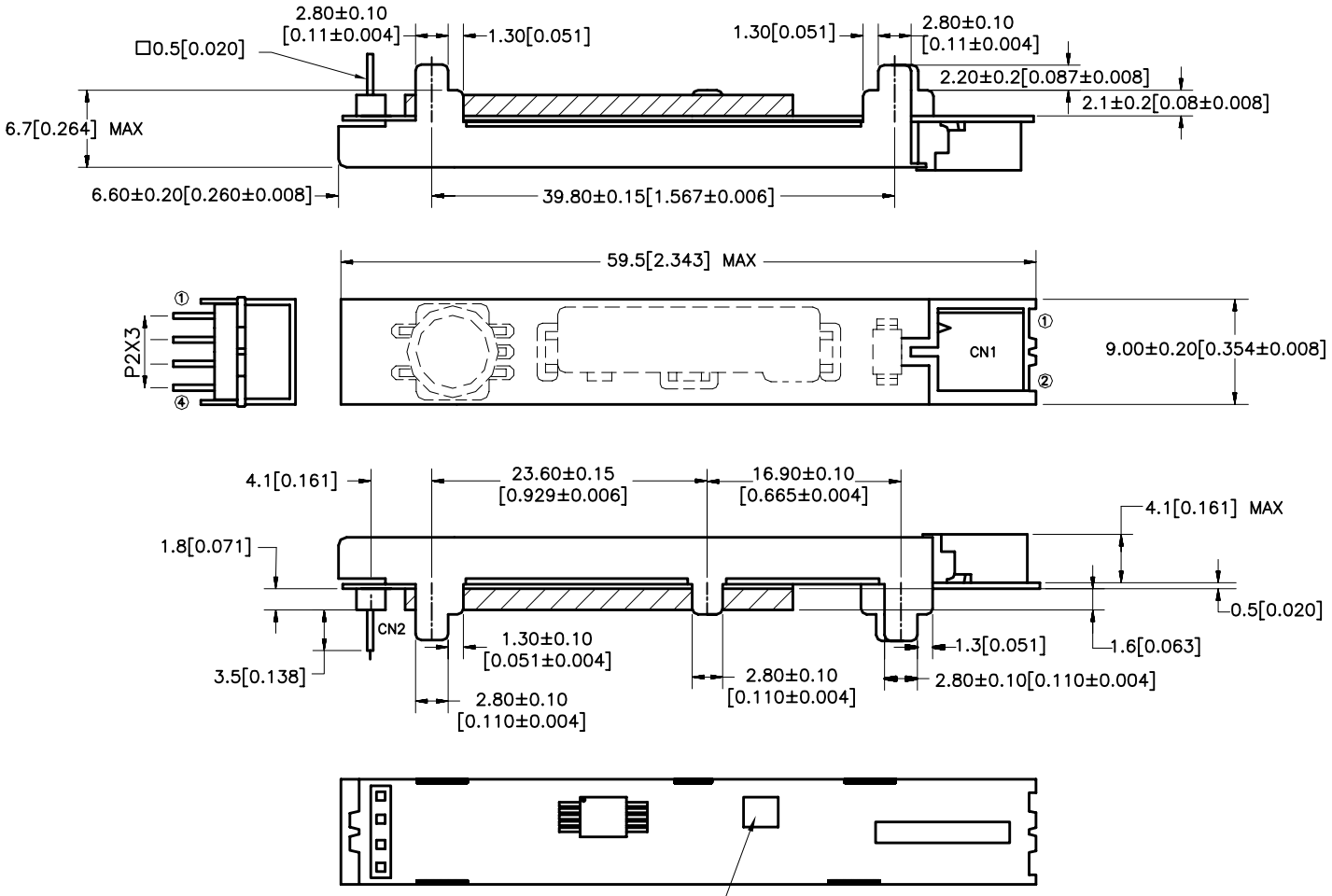
When transporting this product, use materials that will not develop an electrical charge. When handling this product, be sure to wear antistatic wrist bands or other protective equipment to prevent the product from being damaged by any electric charge.

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]



Product Version Marking Area
(HBL−0335: A)

CN1: HV−2P−HF−E1400E (JAE)

① High
② Low

CN2: A4B−4PA−2DSA (71) (HRS) Through Hole Soldering

① NC
② Vin
③ ON/OFF
④ GND

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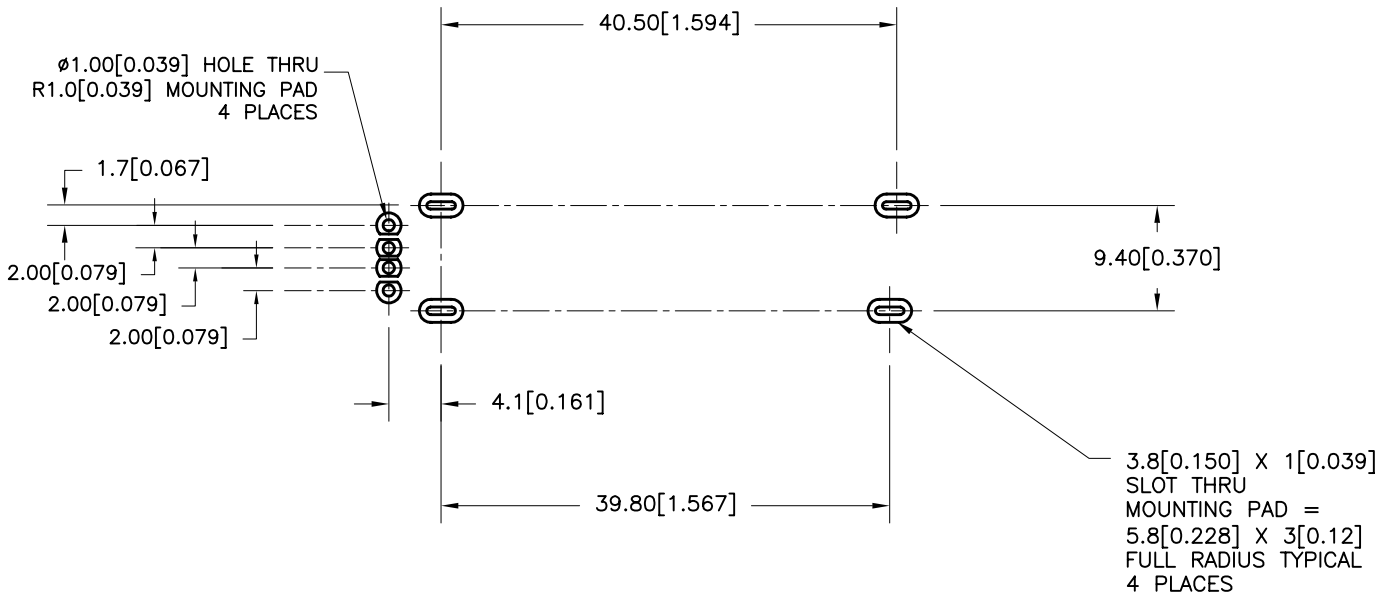
10. Recommended board layout
Dimensions are in mm[Inches]



(Bottom View)

11. Soldering Process:
This product cannot be supported to reflow soldering method and flow (wave) soldering method. Iron solder needs to be used to fix this product on the PCB.

12. This product is designed on the assumption that it is the replacement of HBL-0270 in order to comply with RoHS. However, there is a possibility that if a problem or symptom etc arises, It may be while installed in end-product even if there is no problem in the evaluation of the inverter unit. Therefore, plese execute an evaluation and various examinations while inverter is installed in the end product.

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