

PIEZOELECTRIC INVERTER

1. Scope

This applies to the Piezoelectric Inverter HBL-0270.

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, $T_a = 25^{\circ}\text{C}$)

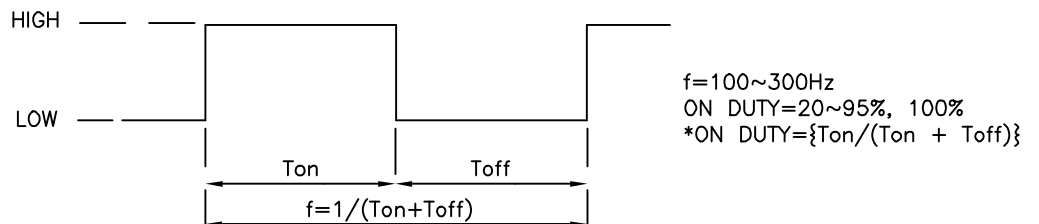
Values are those obtained 3 minutes after the power is turned on.

Item	Specification
Input Voltage	3.0V ~ 5.5V
Input current	TBD ($V_{in} = 3.0\text{V}$)
Output open voltage	900Vrms MIN (at ambient temperature 0°C)
Output current	2.0mA rms $\pm 10\%$
Frequency	160KHz $\pm 10\%$
ON/OFF function	ON: ON/OFF terminal signal HIGH (2.5V ~ V_{in}) OFF: ON/OFF terminal signal LOW (0V ~ 0.5V) (To turn on the inverter, apply voltage to the V_{in} terminal, then turn on the ON/OFF terminal.)
Dimming	By PWM at pin 3 (On/OFF terminal) with a square wave

c. Dimming

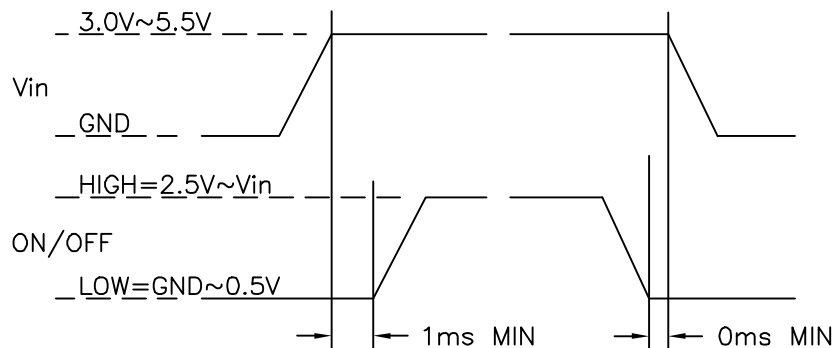
To use the dimming function, apply the following signal to the ON/OFF terminal, with a Duty rate of 20% ~ 95%.

No Dimming function with 100% Duty rate (always High)



FILE NAME: ACAD\MXFMR\A3130211.DWG	SCALE: NONE	REV: PRE	DATE: 01/13/03	SHEET 1 OF 5
TAMURA CORPORATION OF AMERICA 43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590 TEL: (909)699-1270 • FAX: 9096769482	TITLE: HBL-0270 PIEZOELECTRIC INVERTER			
	DOCUMENT NUMBER: P-A3-13021			
CONTENTS OF THIS DRAWING ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE				
PROPRIETY NOTICE: THIS DRAWING PRINT OR DOCUMENT AND SUBJECT MATTER DISCLOSED HEREIN ARE PROPRIETARY ITEMS TO WHICH TAMURA RETAINS THE EXCLUSIVE RIGHT OF DISSEMINATION, REPRODUCTION, MANUFACTURE AND SALE. THIS DRAWING, PRINT OR DOCUMENT IS SUBMITTED IN CONFIDENCE FOR CONSIDERATION BY THE RECIPIENT ALONE UNLESS PERMISSION FOR FURTHER DISCLOSURE IS EXPRESSLY GRANTED IN WRITING.				

d. Input Sequence



The ON/OFF pin slew rate must be 1V/ms or faster. If the minimum slew rate requirement is not met, then the inverter output may not start.

3. Input/Output Interface Connection

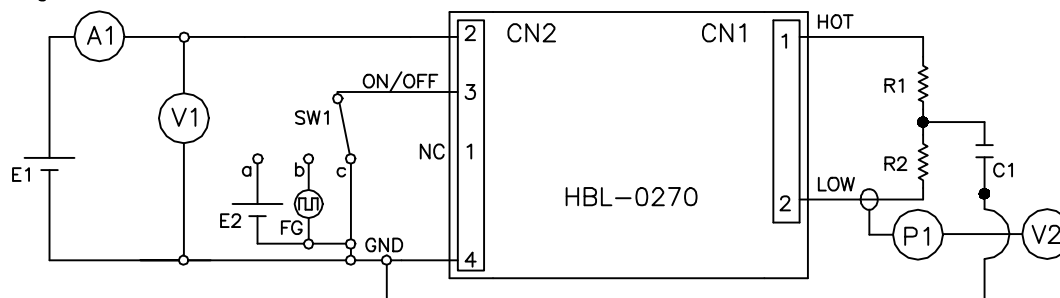
Input CN2:A4B-4PA-2DS (HIROSE)

Pin No.	Function
1	V_{in}
2	V_{in}
3	ON/OFF
4	GND
5	GND
6	GND

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

Pin No.	Function
1	HOT
2	COLD

4. Measuring Circuit and Method for Electrical Characteristic



E1: DC regulated power supply

E2: DC regulated power supply

V1: Effective value voltmeter

A1: DC ammeter

P1: Probe

FG: Function generator

Equivalent load

R1: 100k Ω , 1W

R2: 61k Ω , 1W

C1: 5pF, 3kV

3.0V ~ 5.5V

2.5V

3400B (YHP) or equivalent

Type 2011 Class 0.5 (YEW) or equivalent

P6021 (Tektronix) or equivalent

FILE NAME: ACAD\MXFMR\A3130212.DWG	SCALE: NONE	REV: PRE	DATE: 01/13/03	SHEET 2 OF 5
TAMURA CORPORATION OF AMERICA				
43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590				
TEL: (909)699-1270 • FAX: 9096769482				
CONTENTS OF THIS DRAWING ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE				
PROPRIETY NOTICE: THIS DRAWING PRINT OR DOCUMENT AND SUBJECT MATTER DISCLOSED HEREIN ARE PROPRIETARY ITEMS TO WHICH TAMURA RETAINS THE EXCLUSIVE RIGHT OF DISSEMINATION, REPRODUCTION, MANUFACTURE AND SALE. THIS DRAWING, PRINT OR DOCUMENT IS SUBMITTED IN CONFIDENCE FOR CONSIDERATION BY THE RECIPIENT ALONE UNLESS PERMISSION FOR FURTHER DISCLOSURE IS EXPRESSLY GRANTED IN WRITING.				
TITLE:		HBL-0270 PIEZOELECTRIC INVERTER		
DOCUMENT NUMBER:		P-A3-13021		

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 1.4mArms, 500H (Equivalent load resistance)	11
ON/OFF test	1 min:ON, 1min: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.

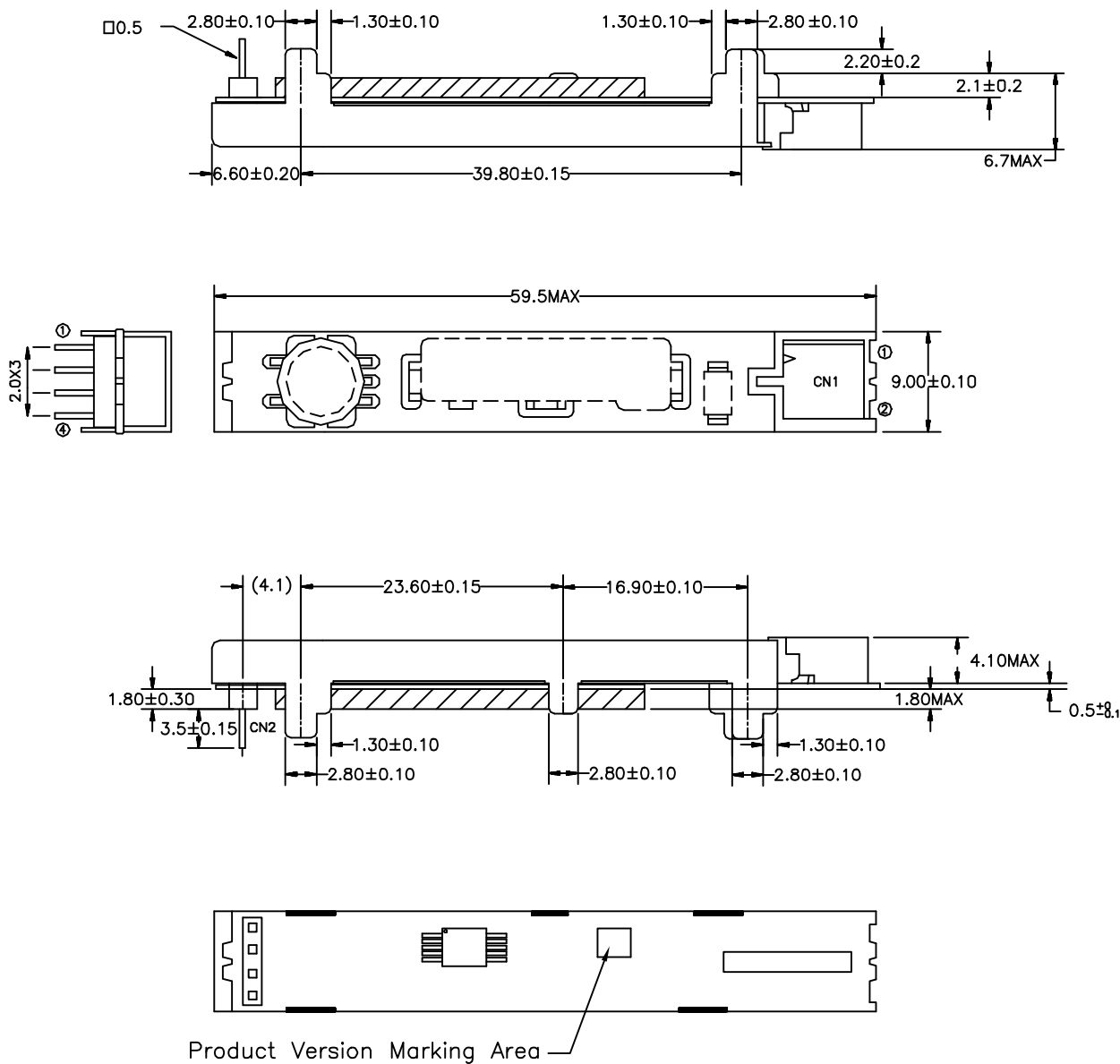
7. Precautions for static electricity

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.

8. An input fuse is built into this inverter.

FILE NAME: ACAD\MXFMR\A3130213.DWG	SCALE: NONE	REV: PRE	DATE: 01/13/03	SHEET 3 OF 5
TAMURA CORPORATION OF AMERICA 43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590 TEL: (909)699-1270 • FAX: 9096769482	TITLE: HBL-0270 PIEZOELECTRIC INVERTER			
	DOCUMENT NUMBER: P-A3-13021			
CONTENTS OF THIS DRAWING ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE				
PROPRIETY NOTICE: THIS DRAWING PRINT OR DOCUMENT AND SUBJECT MATTER DISCLOSED HEREIN ARE PROPRIETARY ITEMS TO WHICH TAMURA RETAINS THE EXCLUSIVE RIGHT OF DISSEMINATION, REPRODUCTION, MANUFACTURE AND SALE. THIS DRAWING, PRINT OR DOCUMENT IS SUBMITTED IN CONFIDENCE FOR CONSIDERATION BY THE RECIPIENT ALONE UNLESS PERMISSION FOR FURTHER DISCLOSURE IS EXPRESSLY GRANTED IN WRITING.				

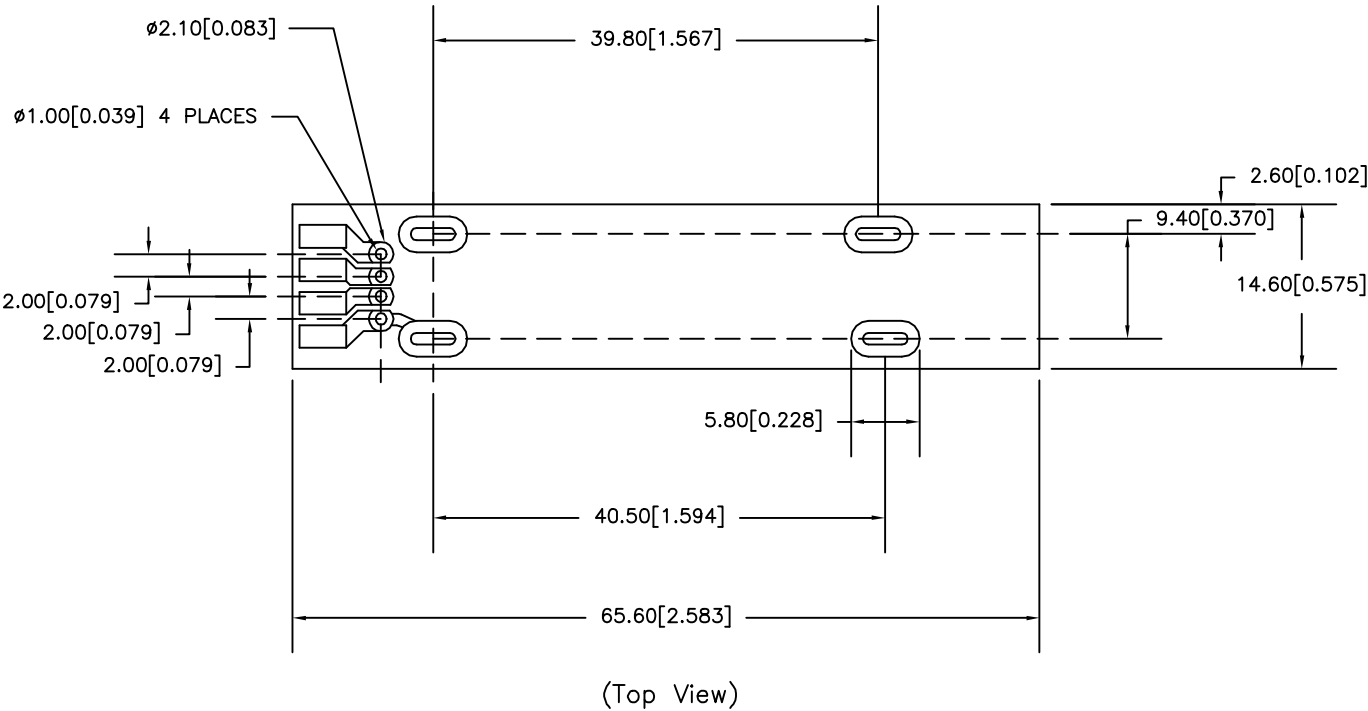
9. Dimensions and Connectors



- CN1: HV-2P-HF (JAE)
① High
② Low
- Mating Connector: HV-2S-C1 (JAE)
IL-Z-C1-A-7000 (Contact)
- CN2: A4B-4PA-2DSA (HRS)
① Vcc
② Vin
③ ON/OFF
④ GND
- Through Hole Soldering

FILE NAME: ACAD\MXFMR\A3130214.DWG	SCALE: NONE	REV: PRE	DATE: 01/13/03	SHEET 4 OF 5
TAMURA CORPORATION OF AMERICA 43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590 TEL: (909)699-1270 • FAX: 9096769482	TITLE: HBL-0270 PIEZOELECTRIC INVERTER			
	DOCUMENT NUMBER: P-A3-13021			
CONTENTS OF THIS DRAWING ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE				
PROPRIETY NOTICE: THIS DRAWING PRINT OR DOCUMENT AND SUBJECT MATTER DISCLOSED HEREIN ARE PROPRIETARY ITEMS TO WHICH TAMURA RETAINS THE EXCLUSIVE RIGHT OF DISSEMINATION, REPRODUCTION, MANUFACTURE AND SALE. THIS DRAWING, PRINT OR DOCUMENT IS SUBMITTED IN CONFIDENCE FOR CONSIDERATION BY THE RECIPIENT ALONE UNLESS PERMISSION FOR FURTHER DISCLOSURE IS EXPRESSLY GRANTED IN WRITING.				

10. Recommended board layout



FILE NAME: ACAD\MXFMR\A3130215.DWG	SCALE: NONE	REV: PRE	DATE: 01/13/03	SHEET 5 OF 5
TAMURA CORPORATION OF AMERICA 43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590 TEL: (909)699-1270 • FAX: 9096769482	TITLE: HBL-0270 PIEZOELECTRIC INVERTER			
	DOCUMENT NUMBER: P-A3-13021			
CONTENTS OF THIS DRAWING ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE				
PROPRIETY NOTICE: THIS DRAWING PRINT OR DOCUMENT AND SUBJECT MATTER DISCLOSED HEREIN ARE PROPRIETARY ITEMS TO WHICH TAMURA RETAINS THE EXCLUSIVE RIGHT OF DISSEMINATION, REPRODUCTION, MANUFACTURE AND SALE. THIS DRAWING, PRINT OR DOCUMENT IS SUBMITTED IN CONFIDENCE FOR CONSIDERATION BY THE RECIPIENT ALONE UNLESS PERMISSION FOR FURTHER DISCLOSURE IS EXPRESSLY GRANTED IN WRITING.				