

# PIEZOELECTRIC INVERTER 0.68W/7.2V/285VAC/2.4mA

## 1. Scope

This applies to the CFL Inverter (cold-cathode tube inverter) HBL-0218.

## 2. Electrical Characteristics

### a. Absolute Maximum Rating

Input voltage	11V MAX. @ Ta=25°C
Max. output power	1.2W MAX. @ Ta=25°C

### b. Input/Output Characteristics

The measuring circuit and measuring method shall be as set forth in Section 3.  
(Unless otherwise specified, Ta = 25°C)

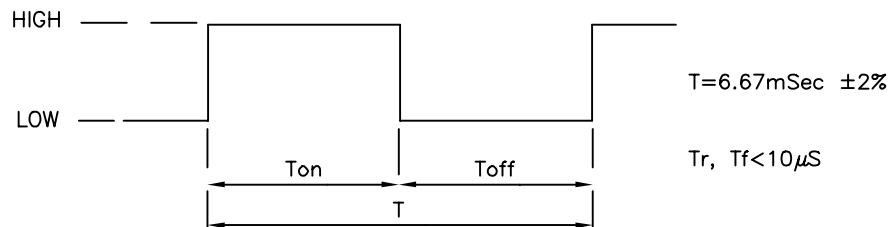
Values are those obtained 3 minutes after the power is turned on.

Item	Specification
Input Voltage	5.0V ~ 10.0V
Tolerance of Lamp Current	2.4mA <sub>rms</sub> +/-10% (at VR=760Ω, RL=119kΩ+/-15%) 1.5mA <sub>rms</sub> +/-10% (at VR=1.63kΩ, RL=206kΩ+/-15%) 1.0mA <sub>rms</sub> +/-10% (at VR=4.19kΩ, RL=322kΩ+/-15%) 0.8mA <sub>rms</sub> +/-10% (at VR=10.6kΩ, RL=370kΩ+/-15%) *Note: Operate Inverter alone with CCFL load.
Frequency	160KHz ± 15%
Output open voltage	1080V <sub>rms</sub> min (at ambient temperature 0°C)
Input current	99mA max. (Vin=7.0V, VR=4.19kΩ, RL=322kΩ+/-15%) 194mA max. (Vin=7.0V, VR=760Ω, RL=119kΩ±15%) *Note: Operate Inverter alone with CCFL load.
ON/OFF function	ON: ON/OFF terminal signal HIGH (5V±0.5V) OFF: ON/OFF terminal signal LOW (0.5V MAX) (To turn on the inverter, apply voltage to the Vin terminal, then turn on the ON/OFF terminal.)
Input Ripple Voltage	0.2V p-p Max

### c. Dimming

To use the dimming function, apply the following signal to the ON/OFF terminal, with a Duty rate of 38% ~ 95%.

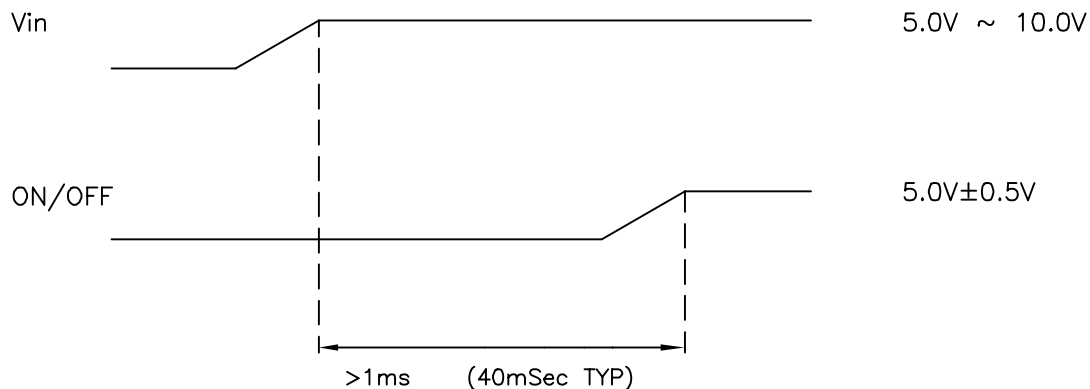
No Dimming function with 100% Duty rate (always High)



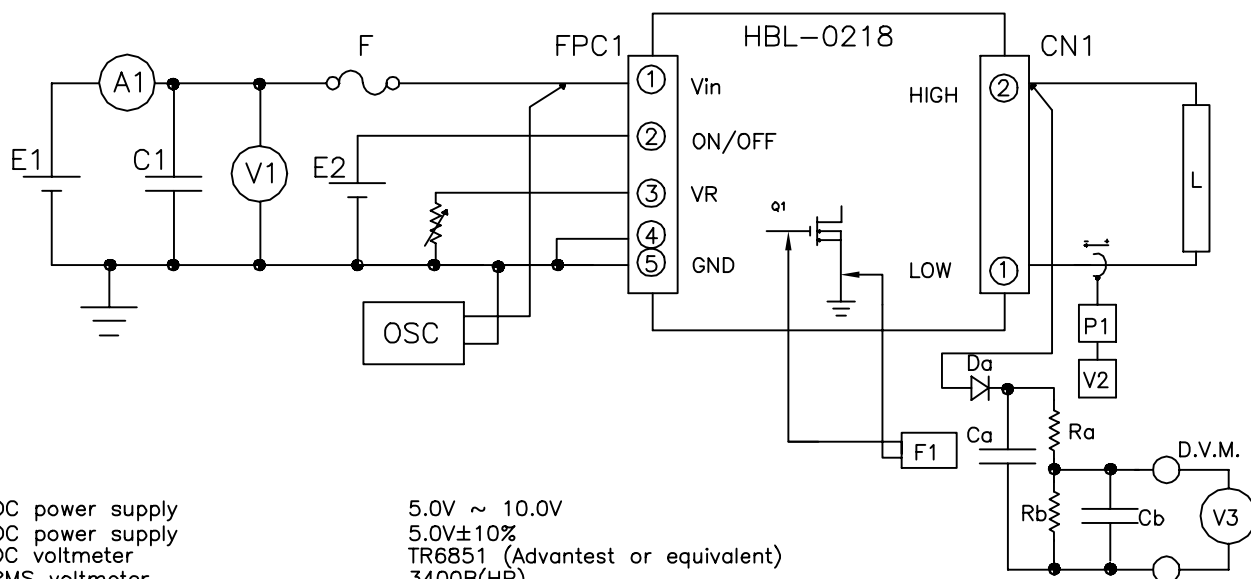
FILE NAME: ACAD\MXFMR\A3122371.DWG	SCALE: NONE	REV: -	DATE: 9/29/99	SHEET 1 OF 5
TAMURA CORPORATION OF AMERICA 43352 BUSINESS PARK DRIVE • TEMECULA • CA • 92590 TEL: (909)699-1270 • FAX: 9096769482	TITLE: HBL-0218		PIEZOELECTRIC INVERTER 0.68W/7.2V/285VAC/2.4mA	
	DOCUMENT NUMBER:		P-A3-12237	
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d. Standby Current  
 $2\mu\text{A}$  MAX @ ON/OFF terminal signal LOW,  $V_{in}=5.0\text{V} \sim 10.0\text{V}$

e. Input Sequence



#### 4. Measuring Circuit and Method for Electrical Characteristic



E1: DC power supply  
 E2: DC power supply  
 V1: DC voltmeter  
 V2: RMS voltmeter  
 V3: DC voltmeter  
 A1: DC Ammeter  
 Stand-by current shall be measured by 2011-34 (YEW) or equivalent.  
 F1: Frequency counter  
 OSC: Oscilloscope  
 P1: Current probe  
 VR: Potentiometer  
 L: Rated load  
 F1: F0805BOR50FWTR (Kyocera)  
 C1: C3225JE1E475M (TDK)  
 Da: Diode, SHV-08NK (Sanken)  
 Ca: Capacitor, DE0607SL330J3K (Murata)  
 Cb: Capacitor, 33nF/50V  
 Ra: Resistor, HV1-N7 100M $\Omega$   
 Rb: Resistor, 100k $\Omega$

5.0V ~ 10.0V  
 5.0V $\pm$ 10%  
 TR6851 (Advantest or equivalent)  
 3400B(HP)  
 TR6851 (Advantest or equivalent)  
 Type 2011 Class 0.5(YEW or equivalent)  
 5384A (YHP or equivalent)  
 2445 (Tektronix)  
 P6021 (Tektronix)  
 Refer to Clause 1-3  
 CFL ( $\phi$ 2.6mm typ. x L=110mm typ.)

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	HBL-0218		0.68W/7.2V/285VAC/2.4mA	
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#### 4. Ambient Conditions

##### a. Temperature

Operating temperature: 0°C ~ 60°C

Storage temperature: -20°C ~ 70°C

##### b. Humidity

Operating humidity: 20% ~ 80% (No condensation)

Storage humidity: 5% ~ 90% (No condensation)

#### 5. Reliability

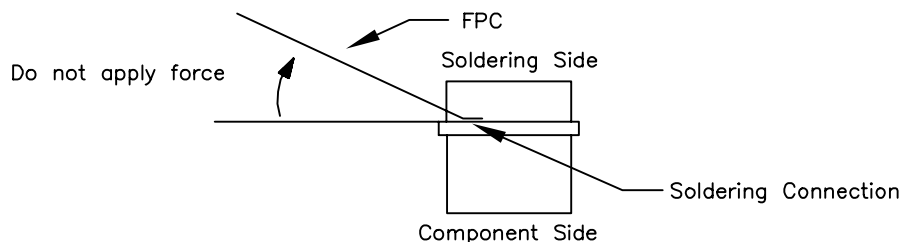
The reliability is verified on the following items

Item	Specification
High temp. storage	Ambient temperature 70°C, 240H
Low temp. storage	Ambient temperature -20°C, 240H
High temp. and humidity storage	Ambient temperature 40°C, Humidity 90%, 240H
Temperature Cycle	-20°C ~ 70°C, 5 cycle
High temperature operation	Ambient temperature 60°C, input voltage 5.5V, output current 2.0mArms, 500H (Equivalent load resistance)
ON/OFF test	1 min:ON, 1min:OFF, 50000 times (Input voltage 5.5V, output current 2.0mArms, Equivalent load resistance)
Vibration	Acceleration 3G, frequency 10~ 55Hz, sweep 45 min. Once in each of X, Y, and Z directions.
Shock	Acceleration 80G, acting time 11ms, 3 times in each of X, Y, and Z directions.

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.

#### 6. Caution for FPC (Flexible Printed Circuit) Connector

Please do not apply force to remove soldering connection.



#### 7. Marking

a. Label containing Model No., Qty and Lot No. should be on carton.

b. Manufacturing lot number on part explanation

Example: The 1st lot in June, 1999

9 6 A 1

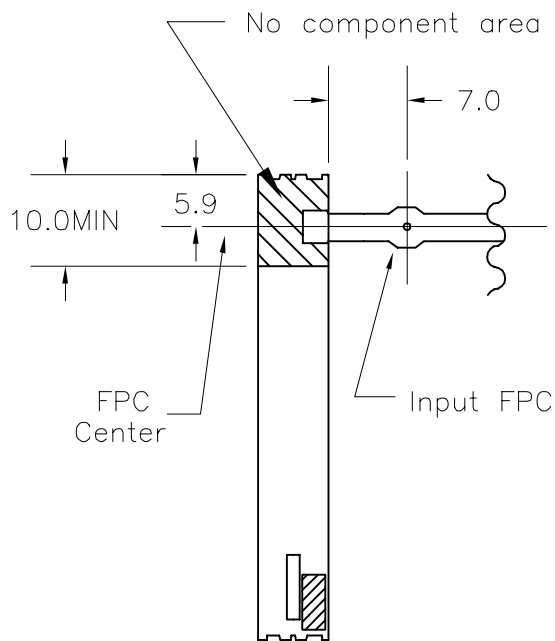
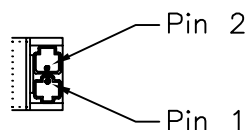
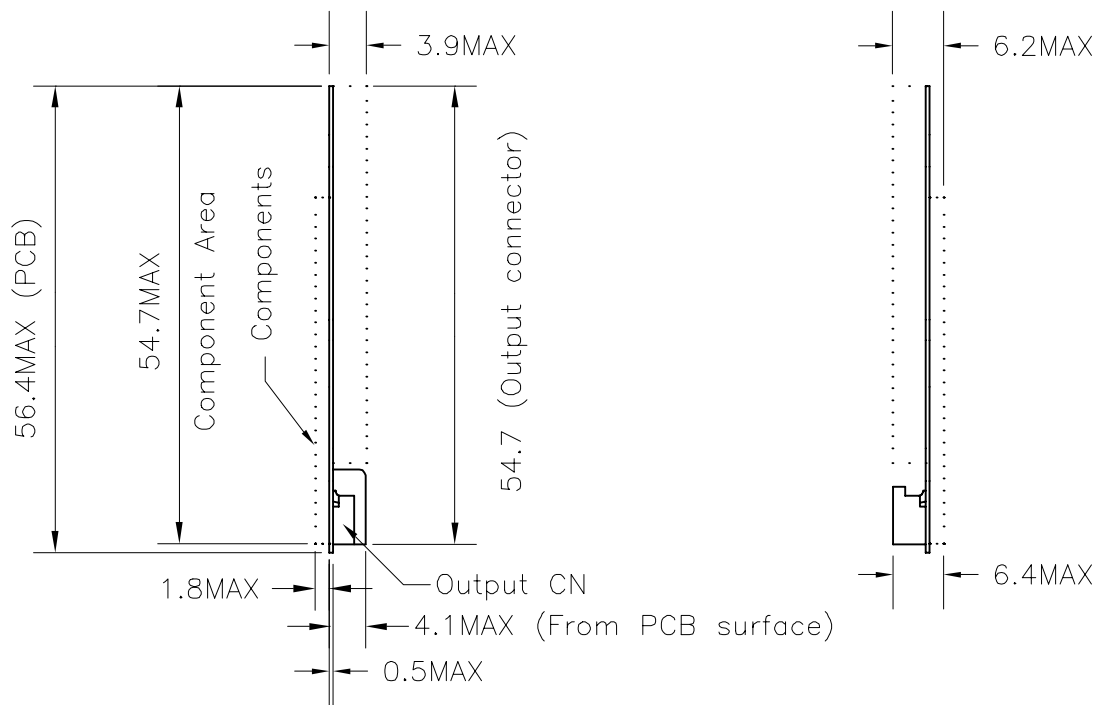
- Production Line, Factory ID
- Lot number in a month A: 1st lot (ascending order of the alphabet)
- Month (from January thru September : the digit, Oct: X, Nov: Y, Dec: Z)
- Last digit of the calendar year

#### 8. Precautions for static electricity

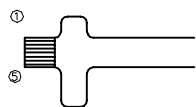
When transporting this product, use materials that will not develop an electrical charge.

When handling this product, be sure to wear antistatic wrist bands or other protective equipment to prevent the product from being destroyed by any electric charge.

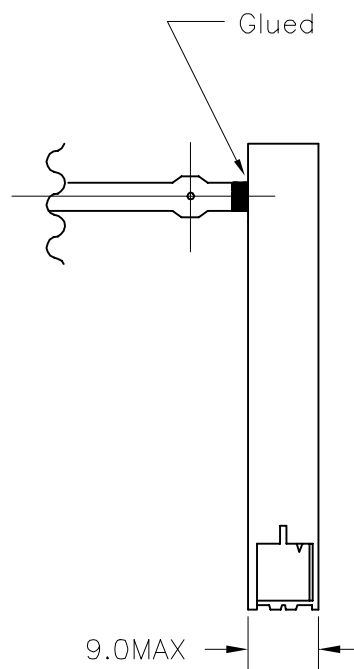
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Input FPC



- ① Vin
- ② ON/OFF
- ③ Vr
- ④ ⑤ GND



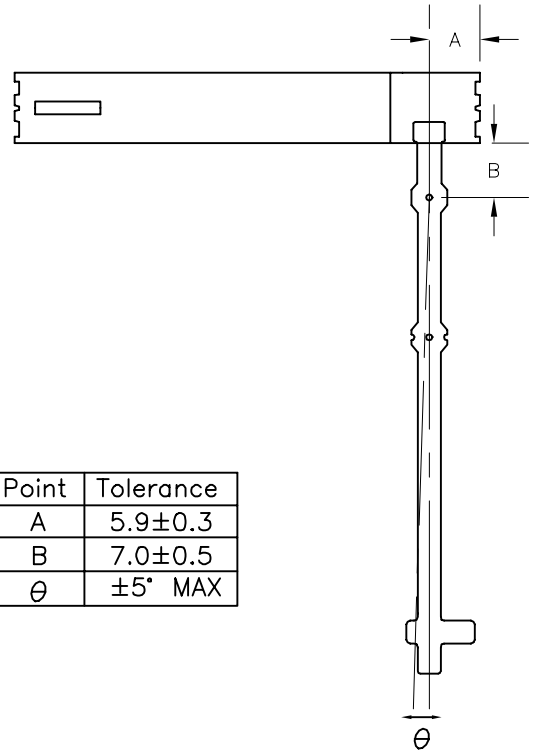
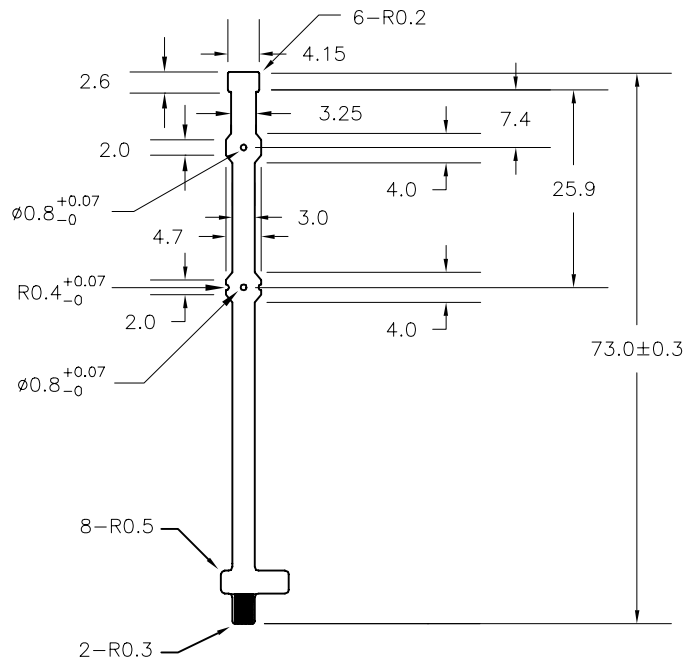
Output CN: HV-2P-HF (JAE)

- ① Low
- ② High

Tolerance  $\pm 0.1$  unless otherwise specified.  
Unit: mm

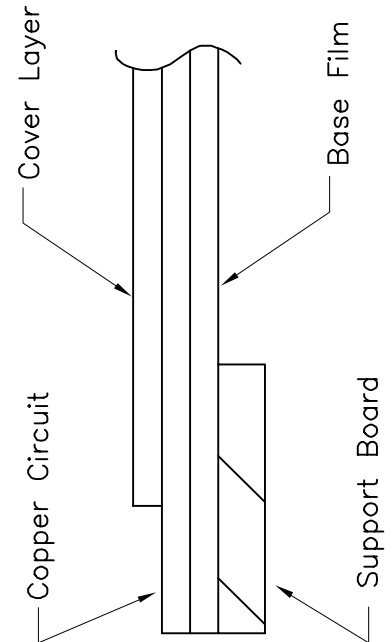
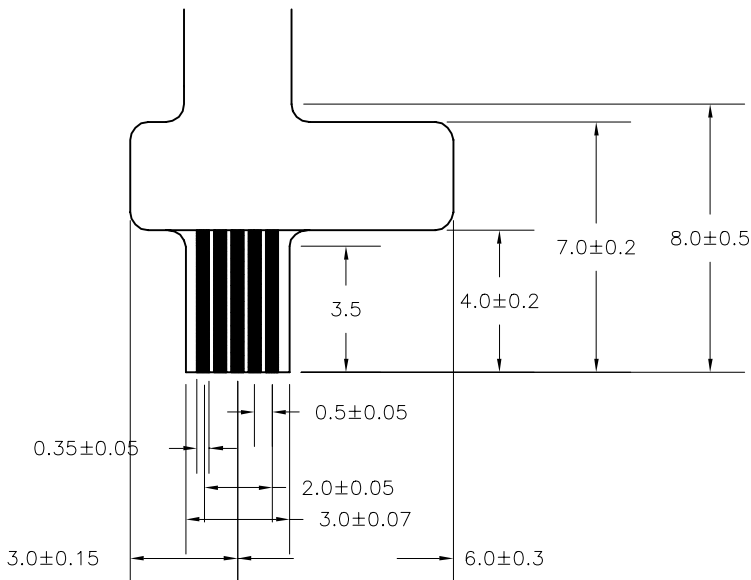
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# Input Outline Dimensions (Reference)



Point	Tolerance
A	$5.9 \pm 0.3$
B	$7.0 \pm 0.5$
$\theta$	$\pm 5^\circ \text{ MAX}$

## F P C Position Detail



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