

**MESSRS :**

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**Product Drawing**

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**CUSTOMER'S PRODUCT NAME:**

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**TDK PRODUCT NAME:** DC-AC INVERTER  
CXA-0368

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***TDK-Lambda***

**TDK Corporation**

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DWG.No.	CTR-1215-D
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## Precautionary Notes Regarding the Use of This Inverter

**When using this product, give due consideration to the precautionary notes described below and ensure a safe design. Inappropriate use may result in electric shock, injury or fire.**



### Warning



- This product is subject to high voltage. Do not touch it while the power is on. Failing to do so may result in electric shock.



### Caution

- This product is designed for the lighting of a Cold Cathode Fluorescent Lamp. Do not use it with any other load.
- Store this product under the conditions defined in the specification document.
- Do not store this product in an environment where dust, dirt or corrosive gas(salt,acid,base, etc.) is present.
- This product is subject to high voltage. If there is a possibility that the user may touch the product, provide a proper indication in order to draw the user's attention.
- This product is designed for use with general electronic equipment. If it is to be used with medical equipment that directly affects human life or for the control of transportation equipment to which passengers entrust their lives, provide thorough fail-safe measures.
- Avoid using this product under high temperatures or high humidity or in an environment in which dust, dirt or any corrosive gas (salt,acid,base, etc.) is present. Also, be careful not to allow the formation of dew condensation. It may result in damage or electric shock.
- If the product does not have a built-in protective circuit (circuit breaker, fuse, etc.), it is recommended that a fuse be used at the input stage to prevent the generation of smoke or fire in the event of a malfunction. Even when the product has a built-in protective circuit (circuit breaker, fuse, etc.), the circuit may not function properly due to inappropriate operating conditions or power-supply capacity. It is recommended that an appropriate protective circuit (circuit breaker, fuse, etc.) be provided separately from the built-in circuit.
- Use the product only within the specified input voltage, output power, output voltage and operating temperature ranges. Exceeding these values may result in damage, etc.
- Provide a measure for the prevention of surge voltage due to lightning, etc. Abnormal voltage may result in damage, etc.
- To prevent problems arising from short-circuiting of the high-voltage section, provide appropriate measures to prevent the entry of foreign substances following installation.
- This product is not designed to provide resistance to radiation.
- Ripples could be superimposed on the voltage and the current in the input source connected to the inverter, depending on the impedance in the input source, wiring, etc. When you select an input source, please check waveforms, etc on the final set.

### Handling Precautions

- This product uses thin wires. Observe the following precautions and handle it with care so as not to cause wire breakage. Broken wire may result in damage, etc.
  - Do not stack multiple products on top of one another.
  - Do not allow the product to come in contact with tools, etc.
- Do not apply excessive stress during installation. It may cause chipping and cracking, resulting in damage, etc.
- Provide clearance between the high-voltage section of this product and the frame body on which the product is installed and also the conductor section as per listed on section [1] "Outline".
- Please do not use the product, when dropping it, since there is a possibility of the parts damage. Please confirm abnormality is not found in the product enough when using it by any chance.

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	DC-AC INVERTER CXA-0368		
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<The specifications may be changed without any notice.>

1. Part Name

The part name is CXA-0368.

2. Contents

Item	Attached view	Page
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<The specifications may be changed without any notice.>

- The specifications may be changed without any notice.
- When placing orders, please confirm "Specifications" or Product Drawing" through TDK sales or distributors.

•Features•

- This inverter is for two lamps. It has Dimming function and Remote function.
- This product has shutdown function.  
It shows an abnormal condition when the lamps open.
- With lamp failure detector.

Normal Operation : CN1-8=0V

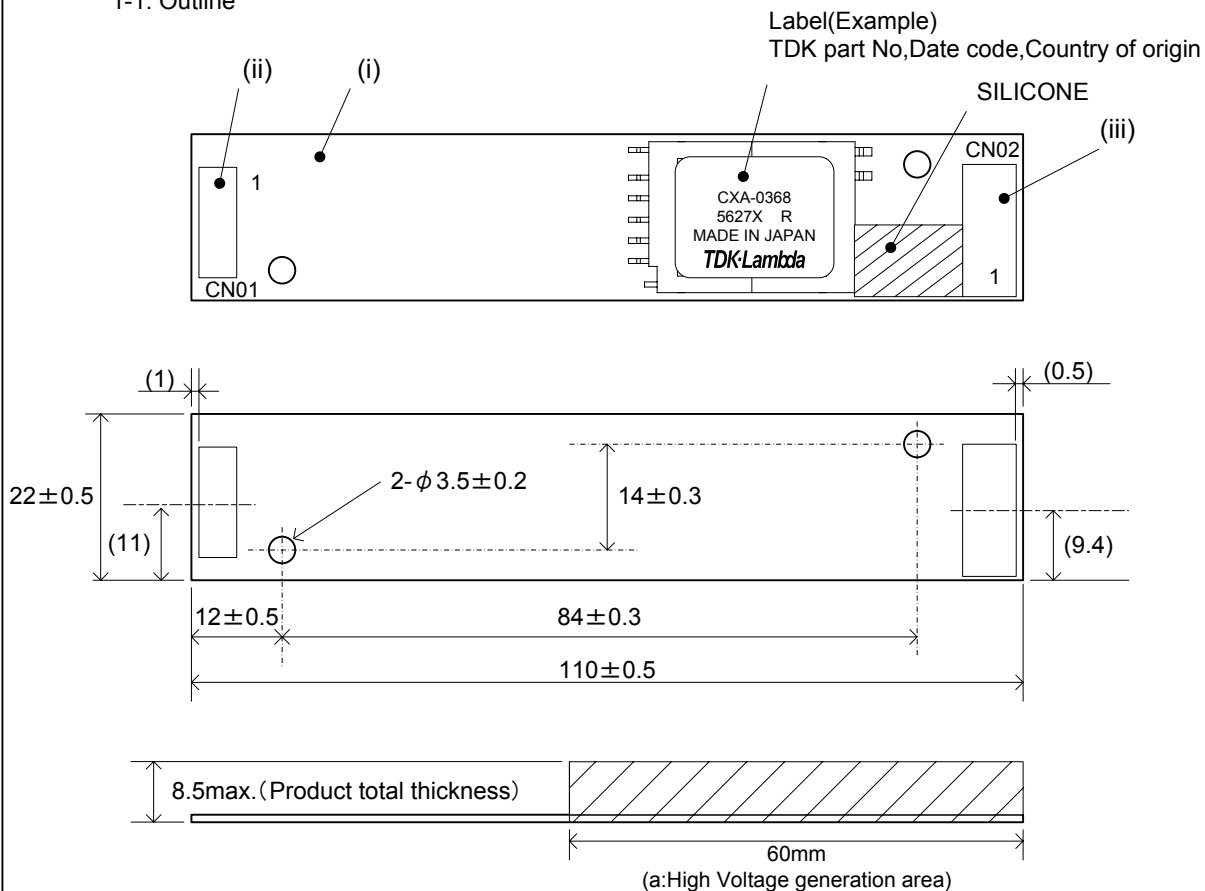
Some Lamps Open : CN1-8=5V

- This product is conformity to RoHS directive.(※)

(※) Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

[1] Outline

1-1. Outline



※Please secure 3mm or longer space distance from the high voltage generating area in all directions, please see Note 1-3 for the details.



Unit:mm  
Weight:21.0g.typ.

No.	Part Description	Material	QU	REMARK	MATES WITH
(i)	PCB	Composite (CEM-3)	1	UL94V-0 t=1.0	-
(ii)	Input Connector CN1	53261-0871	1	MOLEX	51021-0800
(iii)	Output Connector CN2	SM03(7-D1)B-BHS-1-TB(LF)(SN)	1	JST	BHR-04VS-1

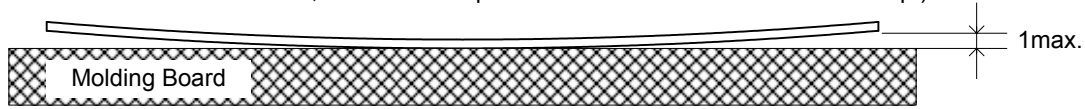
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Note 1-1.Flat degree

1)The warp and the twist are assumed that distance caused between a fixed board and the printed wiring board is 1mm or less.

(When the insulation board is detached, and it has the part side of the inverter on fixed board up.)



1-2.Connector Configuration

Input side CN1

Pin No.	Symbol	Rating	Notes
CN01-1	Vin	10.8~13.2V	Input Voltage
CN01-2			
CN01-3	GND	0V	GND
CN01-4			
CN01-5	Vrmt	-1~14.2V	Remote terminal -1~0.8V : OFF 2.0~14.2V : ON
CN01-6	Vbr1 / Rbr1	0~3.0V / 0~10kΩ	Dimmer terminal 1
CN01-7	Vbr2 / Rbr2	GND / 0~10kΩ	Dimmer terminal 2
CN01-8	Vst	13.2V / 10mA	The warning output

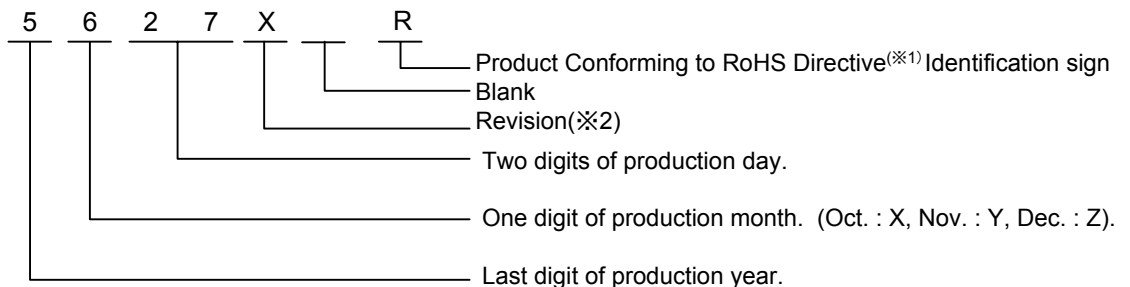
Out put side CN2

Pin No.	Symbol	Rating	Notes
CN02-1	VHigh1	600Vrms /6.0mArms	Output1
CN02-2	NC	-	Non Pin
CN02-3	VHigh2	600Vrms /6.0mArms	Output2
CN02-4	NC	-	Non Pin
CN02-5	NC	-	Non Pin
CN02-6	NC	-	Non Pin
CN02-7	VLow	(2V)	Output1,2 Return

Note1-2. Marking of TDK part No., Date code, Country of origin.

1) TDK part No., Date code, Country of origin, is marked on the transformer.

2) Date code example. (ex. Jun. 27. 2005)



3) Country of origin code example. (ex. MADE IN JAPAN. MADE IN CHINA).

(※1) Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, mercury, cadmium, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

(※2) It starts from X. And, it continues with A,B,...W,YZ,A1,...Z1,A2.

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Note1-3. Please use minimum of 3mm clearance (all directions) between inverter high voltage area and any conductors. Please refer to mechanical drawing for marking of high voltage area.

Note1-4. If the start up voltage falls below Cold Cathode Tube strike voltage, the CCFL will not light up easily specially at lower ambient temperature. Please review mounting instruction to avoid any abnormal operation due to coupling/leakage capacitance of inverter high voltage area to any surrounding conductor.

Note1-5. For CN01-8 Vst, when not lighting is detected,It becomes high impedance with an open collector.

Note1-6. For proper operation of circuit protection (fuse or IC PROTECTOR),Please use minimum of 3.6A capacity for input power supply.

Note1-7. For proper operation: Don't connect the out put VLOW(CN02-7) terminal to the input GND(CN01-3,4).

Note1-8. Please check your lamp characteristic for minimum operational current and set the limit point in your design to avoid flickering and/or abnormal operation.

[2] Absolute maximum ratings

Item	Symbol	Specification	Unit	Notes
Input Voltage	Vin	0~15	V	GND is 0V.
	Vrmt	-1~15		
	Vbr	0~15		
Load Resistance	RL	100	KΩ	
Operating Temp. range	Ta	-10~65	°C	
Storage Temp. range	Ts	-20~80	°C	
Humidity range	RH	95	%RH	A maximum wet ball temperature is 38 °C. No dew.

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<The specifications may be changed without any notice.>

[3] Electrical specifications

Item	Symbol	Conditions					Specifications			Unit
		Vin(V)	Vrmt(V)	Vbr(V)	Vst(V)	RL1 / RL2 (kΩ)	min.	typ.	max.	
Input Current1	Iin1	12±1.2	5±0.5	0	5±0.5	75 / 75	-	0.6	1.2	A
Input Current2	Iin2	12±1.2	0	0	5±0.5	75 / 75	-	1	2	mA
Input Current3	Iin3	12±1.2	5±0.5	0	5±0.5	$\infty / 75$ 75 / $\infty$ $\infty / \infty$	-	10	30	mA
Frequency	F1	12±1.2	5±0.5	0	5±0.5	75 / 75	50	56	62	kHz
Frequency(duty)	F2	12±1.2	5±0.5	3±0.05	5±0.5	75 / 75	150	175	200	Hz
Output Current1 (Brightness max.)	Iout1	12±1.2	5±0.5	0	5±0.5	75 / 75	11.3	12.0	12.7	mArms
Output Current2 (Brightness min.)	Iout2	12±1.2	5±0.5	3±0.05	5±0.5	75 / 75	3.0	4.0	5.0	mArms
Open Circuit Voltage	Vopen	10.8min	5±0.5	0	5±0.5	$\infty / \infty$	1500	1600	-	Vrms
Warning Output	Vst1	12±1.2	5±0.5	0	5±0.5	75 / 75	-	0	-	V
	Vst2	12±1.2	5±0.5	0	5±0.5	$\infty / 120$ 120 / $\infty$ $\infty / \infty$	-	5	-	V

Note3-1 For circuit connection, Please refer to test circuit diagram[4].

Note3-2 This inverter includes a protection circuit that stops the operation in about 3 seconds when all the lamps turn open.

Input current 3 is an input current at the time of shut down function operation.

Note3-3 This inverter has the alarm output that shows that the above mentioned shutdown function operates.

Impedance of CN01-8 is low (GND level), when the lamp (load) is normally connected.

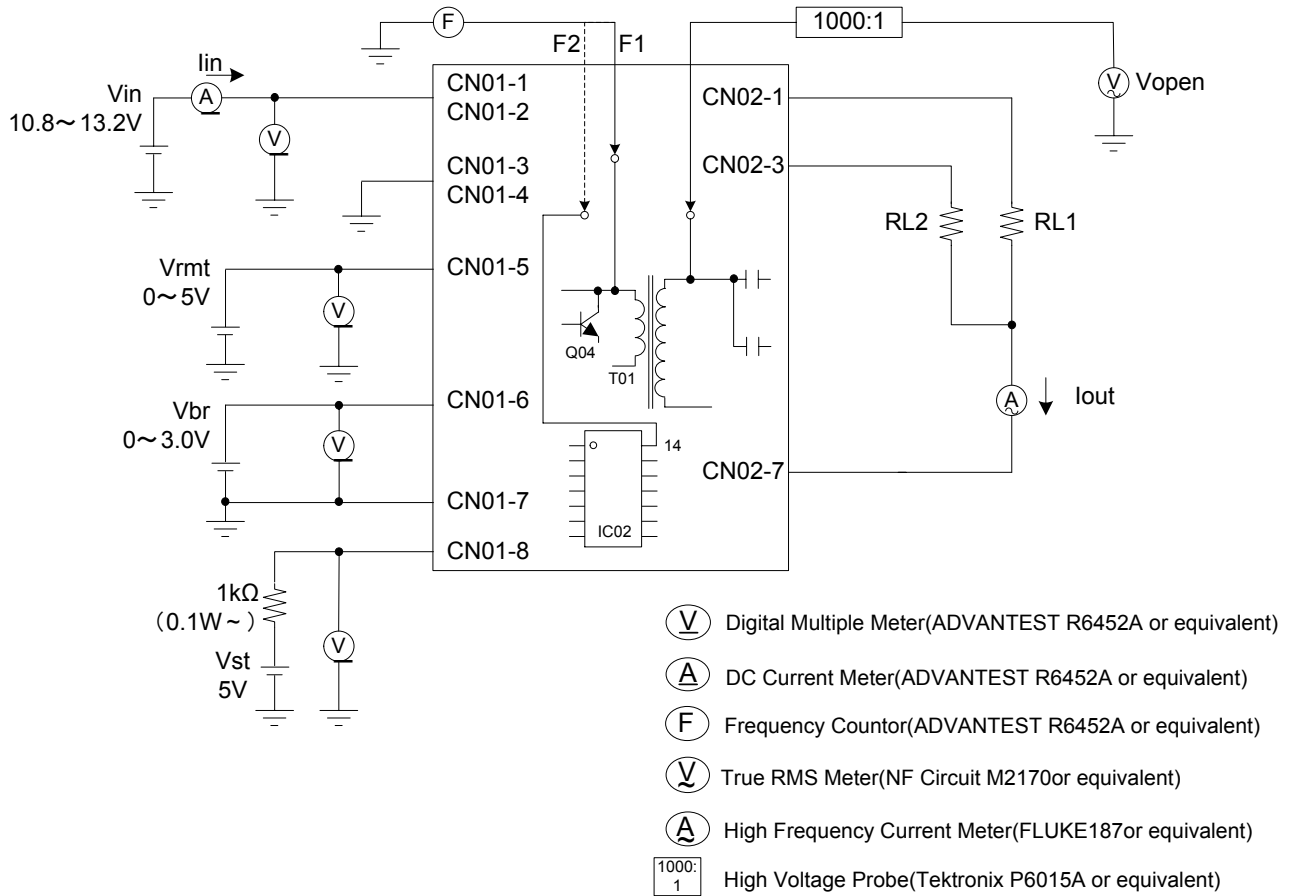
Impedance of CN01-8 is high (Open collector), when the lamp (load) is open.

To confirm the operation of the alarm output, it is assumed the measurement that impresses the voltage to CN01-8.

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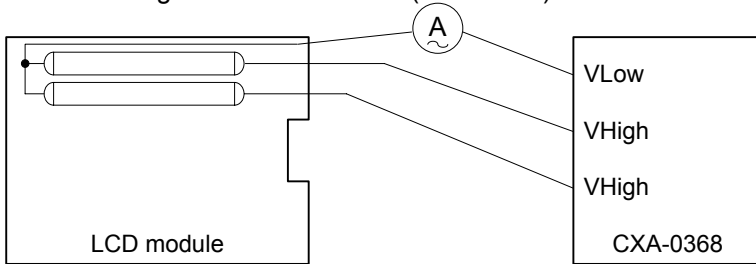
[4] Test circuit



Note4-1.

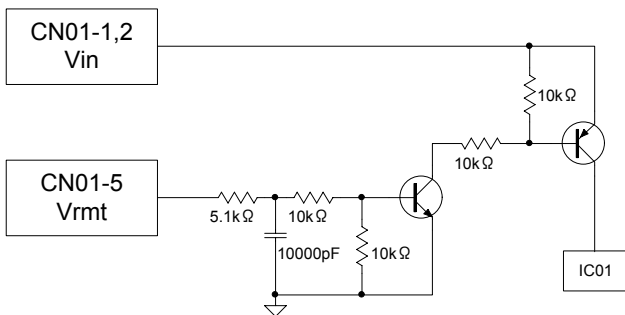
The lead length between the load resistance and the connector CN02-1,3(Vhigh) is 100mm or less.  
 The lead length between the load resistance and the connector CN2-7(Vlow) is 300mm or less.

Connection diagram of LCD module (Reference)



\*Connect the High Frequency Current Meter the Low -Voltage (VLow) side.

Remote terminal circuit (Reference)



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[5] Reliability test

Following test items are assured.

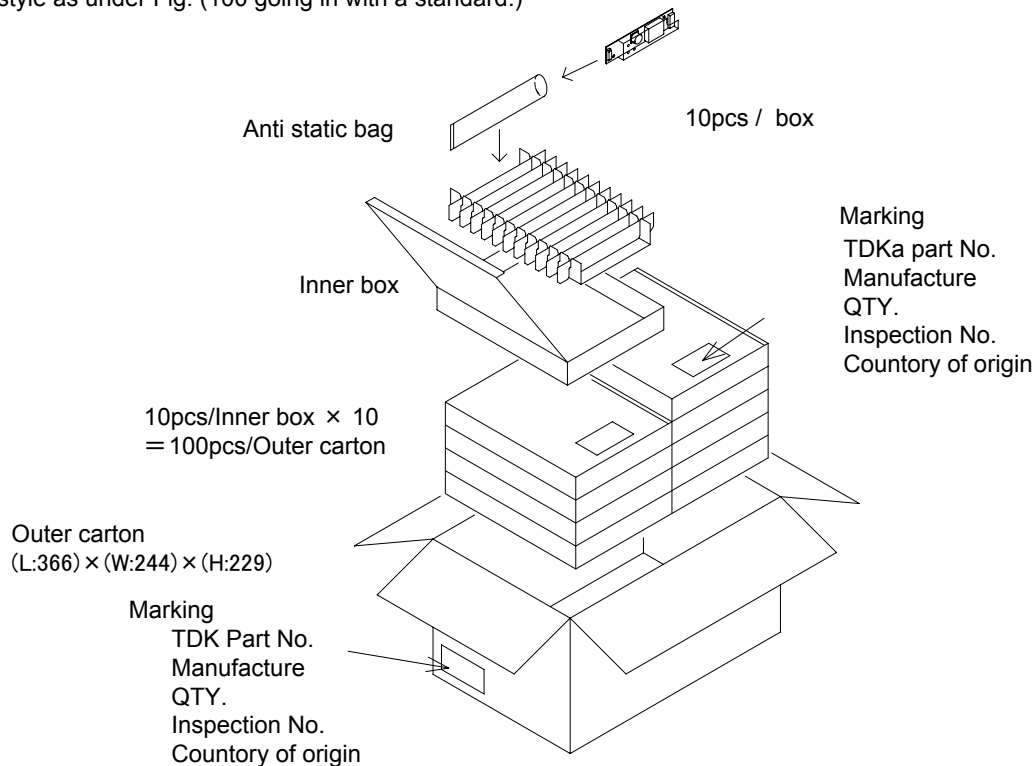
Item	Condition	Judgement
Low Temp.Non operational	-20°C 500h	Electrical and apperance should be in the spec.
Low Temp.operational	-10°C 500h Load cond.:TYP	
High Temp.Non operational	80°C 500h	
High Temp.operational	65°C 500h Load cond.:TYP	
Heat shock	-20°C⇔80°C 30min.Each 100 Cycles	
Humidity (Non operational)	60°C 90~95%RH 500h	
Vibration	9.8m/s <sup>2</sup> 11ms Harf-sine pulse 1 time each axis ±X,Y,Z	
Shock	980m/s <sup>2</sup> 11ms Harf-sine pulse 1 time each axis ±X,Y,Z	

[6] Packing and Marking

A shipping box is packaged to avoid from damage. Following items are printed on the box.

- 1) TDK part No.      CXA-0368
- 2) Manufacture      TDK
- 3) QTY.
- 4) Inspection No.
- 5) Country of origin

Packing style as under Fig. (100 going in with a standard.)



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[7] Others

7-1. Test cond.

A normal test condition :Temperature (20±15°C), Humidity (65±20%RH).

7-2. Std warantrny

One year after shipment. This covers any defects in material or workmanship. Defective units will be replaces at no charge.

7-3. MTTF

MTTF which calculated according to MIL-HDBK-217-F is as follows.

TEMPERATURES	25°C
MTTF	818000 hours or more

7-4. Others

TDK and customer are to discuss changes, problems, and modifications and etc, when needed.

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