

**MESSRS :**

---

**Product Drawing**

---

**CUSTOMER'S PRODUCT NAME:**

---

**TDK PRODUCT NAME:** DC-AC INVERTER  
CXA-0379

---

***TDK-Lambda***

**TDK Corporation**

Corporate Headquarters  
13-1, Nihonbashi 1-chome, Chuo-ku,  
Tokyo 103, JAPAN  
Telephone : 81-3-3278-5111

PREPARED BY	APPROVED BY	AUTHORIZED BY
<i>Dec 8 , 2006 K.Oshima</i>	<i>Dec. 8 , 2006 Y.Kimura</i>	<i>Dec. 8 , 2006 N.Kitajima</i>

DWG.No.	CTR-1203-H
---------	------------

## 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.

	No.	MATERIALS NAME	QU	MATERIAL	REMARK
	PRODUCT NAME or MODEL, TITLE				
	DC-AC INVERTER UNIT CXA-0379				
TDK CORPORATION	NAME OF DRAWING		DRAWING No.		PAGE
	Product Specification		CTR-1203-G		1/11

1. Part Name

The part name is CXA-0379.

2. Contents

Item	Attached view	Page
[1] Outline		
1-1. Outline	[1] section	3
1-2. Connector Configuration	[1] section	3
1-3. Dimensional drawing	[1] section	5
[2] Absolute Maximum Ratings	[2] section	6
[3] Electrical specifications	[3] section	6
[4] Test Circuit	[4] section	7
[5] Reliability Test	[5] section	9
[6] Packaging and Marking	[6] section	10
[7] Others		
7-1. Test Cond.	[7] section	11
7-2. Std Warranty	[7] section	11
7-3. Ozone Depleting Substances(ODS)	[7] section	11
7-4. MTTF	[7] section	11
7-5. Others	[7] section	11

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING		DRAWING No.		PAGE
Product Specification		CTR-1203-G		2

TDK CORPORATION

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

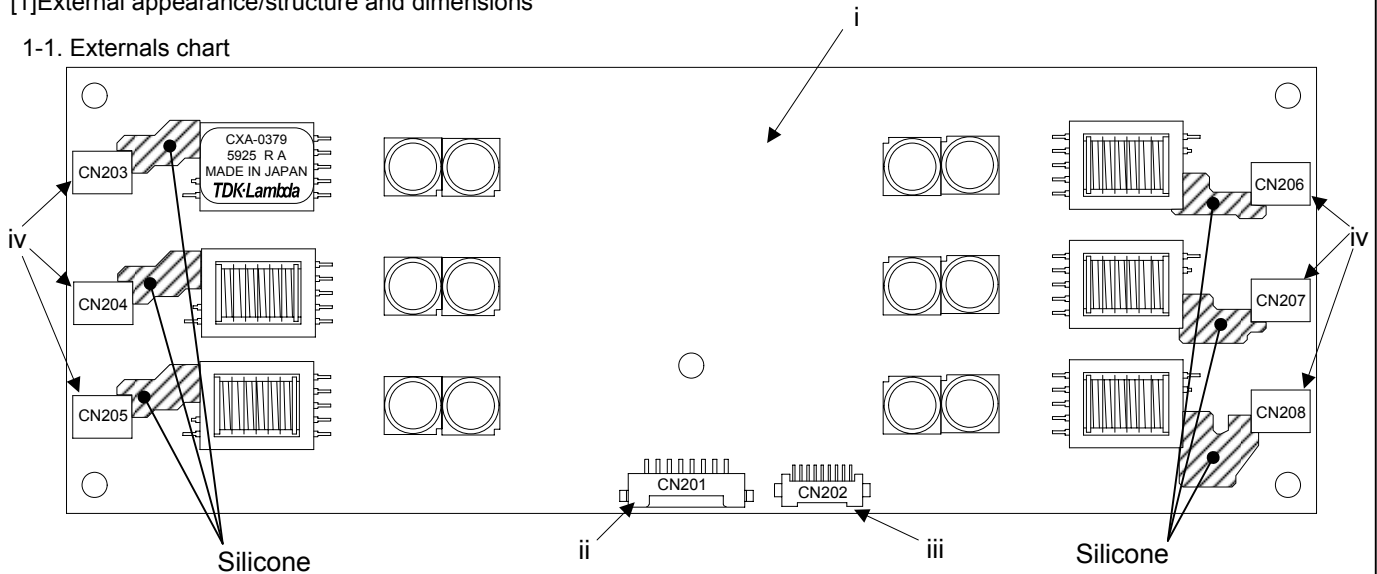
●Product Outline●

- This product is a 6-lamp inverter and has dimming functions and remote functions.
- This product has a shutdown function for safety to stop high voltage generation when loads (lamps) are open.
- The high voltage generating section is coated with silicone as a measure against dust.
- This product has an alarm output (a detection function for lamp blowout) to inform abnormality of lamps (loads) when it detects the non-lighting condition (open state of the loads) of the lamps.
- This is a RoHS Directive compliant (※)product.

(※) RoHS Directive compliant: This means that, except for exempted applications, lead, cadmium, mercury, hexavalent chromium, and specified bromite fire retardant materials of PBB and PBDE are not used based on EU Directive 2002/95/EC.

[1]External appearance/structure and dimensions

1-1. Externals chart



No.	Product name	Type name / material	Quantity	Remarks
i	Printed wiring board PCB	Composite (CEM-3)	1	UL94V-0 t=1.2
ii	Input connector CN201	DF3Z-8P-2H(21)	1	HRS
iii	Input connector CN202	IL-Z-9PL-SMTY-E1500	1	JAE
iv	Output connector CN203,CN204,CN205, CN206,CN207,CN208	SM02B-BHSS-1-TB(LF)(SN)	6	JST

1-2. Pin connection

Input side CN201

Pin No.	Symbol	Rating	Remarks
CN201-1	GND	0V	GND
CN201-2			
CN201-3			
CN201-4			
CN201-5	Vin	11.4 ~ 12.6V	Power + 12±0.6V
CN201-6			
CN201-7			
CN201-8			

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING		DRAWING No.		PAGE
Product Specification		CTR-1203-G		3

TDK CORPORATION

Input side CN202

Pin No.	Symbol	Rating	Remarks
CN202-1	GND	0V	GND
CN202-2			
CN202-3	Vst	0V/5V	Alarm output
CN202-4	BRTC	0V/5V	Remort terminal
CN202-5	BRTH	0V	Dimming pin -
CN202-6	BRTL	0~10kΩ or 0~1V	Dimming pin +
CN202-7	BRTP	0V/5V	PWM signal
CN202-8	Hi/Lo	0V/5V	Hi/Lo
CN202-9	PWSEL	0V/5V	PWM signal selection

BRTC logic  
 H : Back light ON  
 L : Back light OFF  
 Open : Back light ON

Dimming pin connection (between BRTH and BRTL)  
 0Ω or 0V : Luminance min.  
 10kΩ or 1V : Luminance max.

PWSEL logic  
 H : Internal dimming  
 L : External dimming  
 Open : Internal dimming

Hi / Lo logic  
 H : Lo  
 L : Hi  
 Open : Lo

Output side CN203

Pin No.	Symbol	Rating	Remarks
CN203-1	VHIGH1	790Vrms 6.5mArms	CCFL HOT
CN203-2	VLOW1	(0.6V)	CCFL COLD

Output side CN206

Pin No.	Symbol	Rating	Remarks
CN206-1	VHIGH4	790Vrms 6.5mArms	CCFL HOT
CN206-2	VLOW4	(0.6V)	CCFL COLD

Output side CN204

Pin No.	Symbol	Rating	Remarks
CN204-1	VHIGH2	790Vrms 6.5mArms	CCFL HOT
CN204-2	VLOW2	(0.6V)	CCFL COLD

Output side CN207

Pin No.	Symbol	Rating	Remarks
CN207-1	VHIGH5	790Vrms 6.5mArms	CCFL HOT
CN207-2	VLOW5	(0.6V)	CCFL COLD

Output side CN205

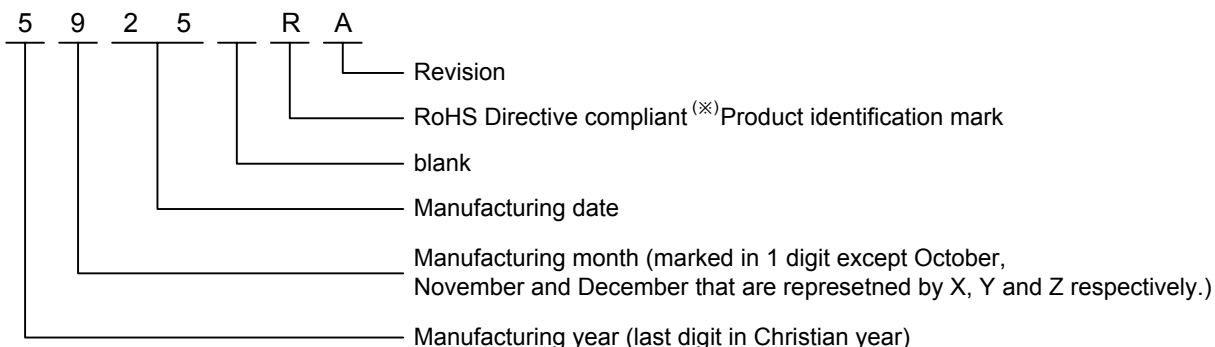
Pin No.	Symbol	Rating	Remarks
CN205-1	VHIGH3	790Vrms 6.5mArms	CCFL HOT
CN205-2	VLOW3	(0.6V)	CCFL COLD

Output side CN208

Pin No.	Symbol	Rating	Remarks
CN208-1	VHIGH6	790Vrms 6.5mArms	CCFL HOT
CN208-2	VLOW6	(0.6V)	CCFL COLD

Note 1-1. Marking of product name, lot no., and country of origin

- 1) Product name, lot no. and country of origin are marked on a label on a transformer.
- 2) Lot no. marking example (manufactured on September 25, 2005)



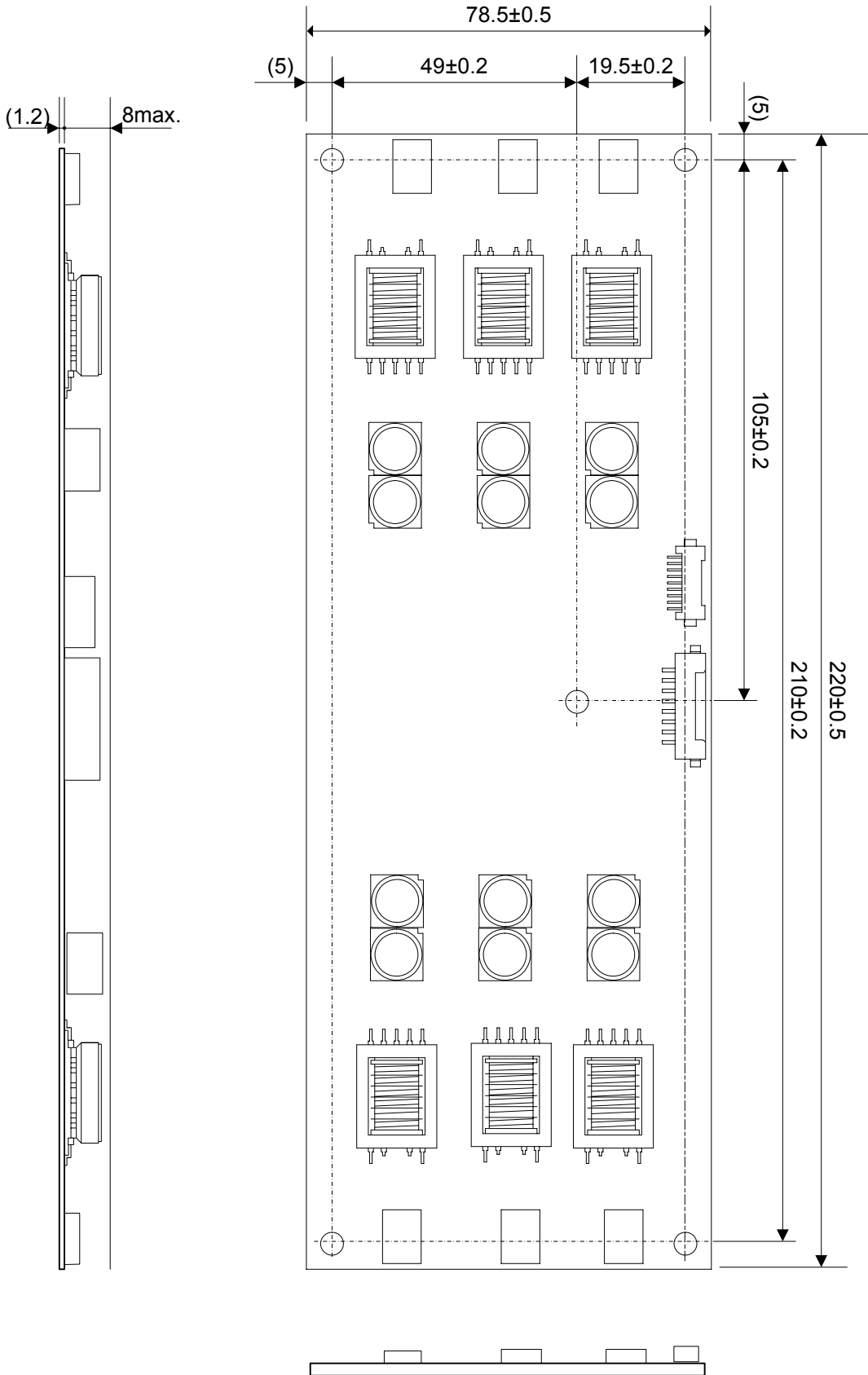
- 3) Country of origin marking example (MADE IN CHINA, MADE IN JAPAN, etc)

(※) RoHS Directive compliant: This means that, except for exempted applications, lead, cadmium, mercury, hexavalent chromium, and specified bromite fire retardant materials of PBB and PBDE are not used based on EU Directive 2002/95/EC.

Note 1-2. High voltage is generated between the transformer and the output connector. When you mount a conductive material (metal frame, etc) near the high-tension section during installation, please be careful to secure 3mm or larger spatial distance in all directions around it to prevent electric discharge between the high-tension section and the conductive material.

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
TDK CORPORATION	NAME OF DRAWING		DRAWING No.	PAGE
	Product Specification		CTR-1203-G	4

1-3. Dimensional drawing



Dimensions in mm

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING			DRAWING No.	PAGE
Product Specification			CTR-1203-G	5

TDK CORPORATION

[2] Absolute maximum rating

Item	Symbol	Spec	Unit	Remarks
Input voltage	Vin	0~13.2	V	
	BRTC	0~13.2		
	BRTL	0~2		
Output voltage	Po	5.5	W	Per lamp
Operating temperature range	Ta	0~60	°C	
Storage temperature range	Ts	-30~85	°C	
Humidity range	RH	95	%RH	Maximum wet-bulb temperature to be 38°C No condensation to occur

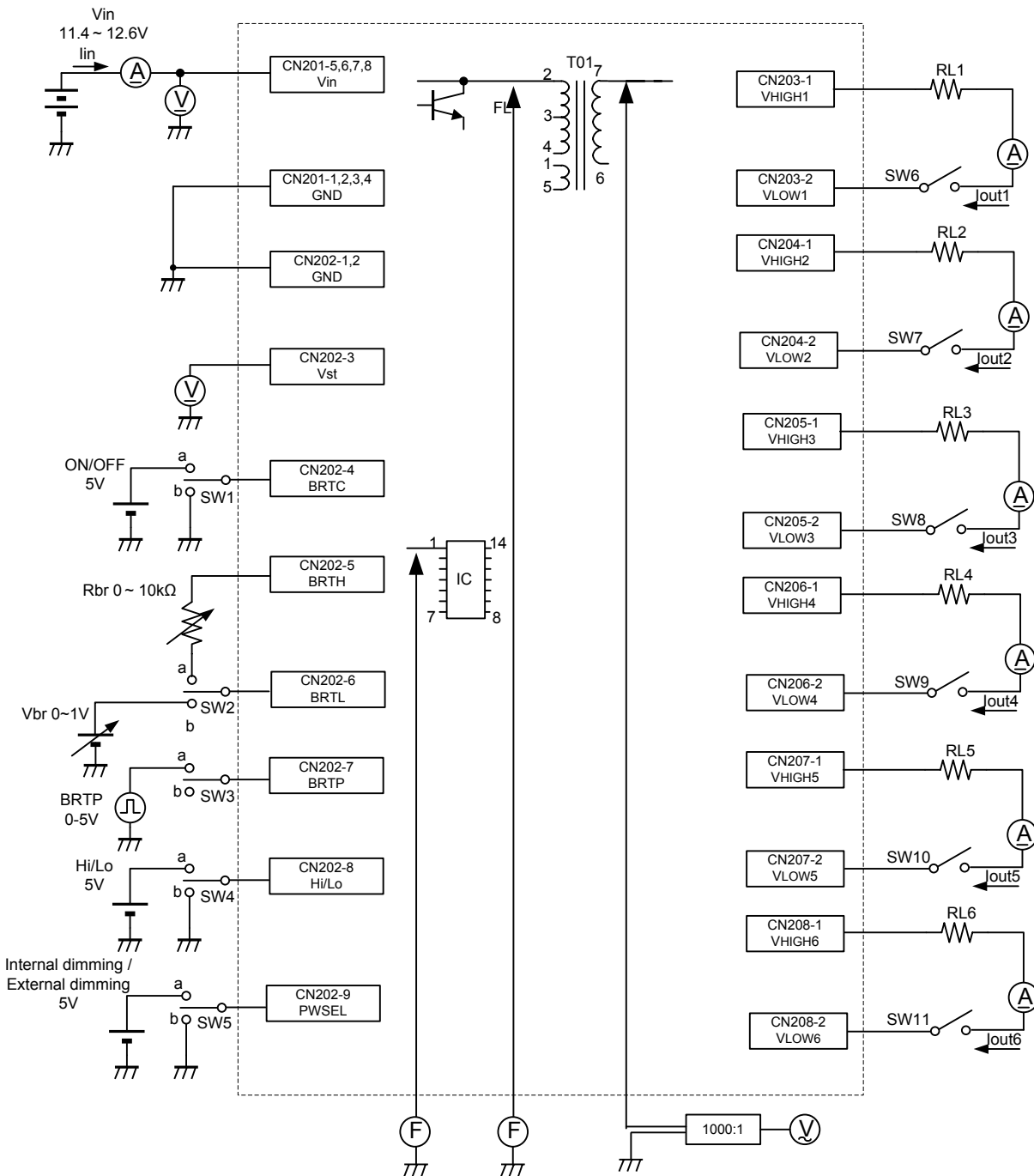
[3] Electrical characteristics

Item	Symbol	Condition						Spec			Unit
		Vin(V)	BRTC(V)	BRTL(V)	Hi/Lo(V)	Ta(°C)	RL1~6	MIN.	TYP.	MAX.	
Output current 1 (Hi max.)	Io1~6	12.0±0.6	5±0.05	1±0.05	0	23±5	120kΩ	6.0	6.5	7.0	mArms
Output current 2 (Lo max.)	Io1~6	12.0±0.6	5±0.05	1±0.05	5±0.05	23±5	120kΩ	5.5	6.0	6.5	mArms
Output current 3 (Hi min.)	Io1~6	12.0±0.6	5±0.05	0	0	23±5	120kΩ	2.3	3.3	4.3	mArms
Output current 4 (Lo min.)	Io1~6	12.0±0.6	5±0.05	0	5±0.05	23±5	120kΩ	2.0	3.0	4.0	mArms
Input current 1 (Hi max.)	Iin1	12.0±0.6	5±0.05	1±0.05	0	23±5	120kΩ	-	3.5	5.3	A
Input current 2 (OFF)	Iin2	12.0±0.6	0	1±0.05	0	23±5	120kΩ	-	0	1	mA
Oscillation frequency	F1	12.0±0.6	5±0.05	1±0.05	0	23±5	120kΩ	54	59	64	kHz
Dimming frequency	F2	12.0±0.6	5±0.05	1±0.05	0	23±5	120kΩ	241	255	269	Hz
Alarm output	Vst1	12.0±0.6	5±0.05	1±0.05	0	23±5	120kΩ	0	0.1	0.5	V
	Vst2	12.0±0.6	5±0.05	1±0.05	0	23±5	1-lamp OFF	4.5	5.1	5.5	V
Open-circuit voltage	Vo	12.0±0.6	5±0.05	1±0.05	0	23±5	∞	1.7	1.9	-	kV

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING			DRAWING No.	
Product Specification			CTR-1203-G	
PAGE			6	

TDK CORPORATION

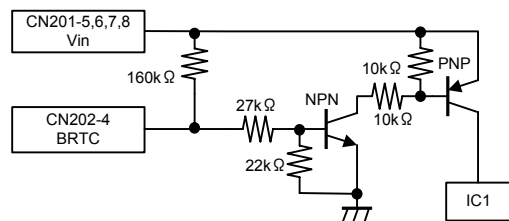
[4] Test circuit



Measuring apparatus

- :DC voltmeter (ADVANTEST R6451A or equivalent)
- :DC ampere meter (ADVANTEST R6451A or equivalent)
- :Effective value voltmeter (KEITHLEY 2001 or equivalent)
- :Freuqence counter (ADVANTEST R6452A or equivalent)
- :High-frequency ampere meter (KEITHLEY 2001 or equivalent)
- :High voltage probe (Tektronix P3000 or equivalent)

Vrmt pin circuit (reference)



No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING		DRAWING No.		PAGE
Product Specification		CTR-1203-G		7

TDK CORPORATION

Note 4-1.

To be the one to operate as follows by a-b of SW1.

SW1	Unit operation
a	Operates
b	Does not operate
Open	Operates

Note 4-2.

To be the one to operate as follows by a-b of SW2.

SW2	Output current tuning
a	Variable resistance dimming
b	Voltage dimming

Note 4-3.

To be the one to operate as follows by a-b of SW3.

SW3	Dimming signal
a	External PWM dimming
b	Internal PWM dimming
Open	Internal PWM dimming

Note 4-4.

To be the one to operate as follows by a-b of SW4.

SW4	Unit operation
a	Lo mode
b	Hi mode
Open	Lo mode

Note 4-4.

To be the one to operate as follows by a-b of SW5.

SW5	Dimming switchover
a	Internal PWM dimming selection
b	External PWM dimming selection
Open	Internal PWM dimming selection

Note 4-3. Protection circuit operation

Loading condition	Shutdown function	Alarm output (CN202-3)
when load is normal	Does not shut down	0V
loads (lamps) when 1 to 6 lamps are open	Shuts down	5V

\* When any one or more of SW6 through SW11 turn open in the measurement circuit, the protection circuit will output 5V to shut down.

Note 4-4. The voltage applied to the load could be lower than the output open-circuit voltage when the distributed capacitance in a mounted condition is high (due to leakage of current by distributed capacitance), and makes it particularly hard to light when driving a cold-cathode tube in low temperatures.  
Please be careful in your installation to make the distributed capacitance as low as possible.  
(For example, make high-tension wiring to a cold-cathode tube as short as possible, and never use stranded wire for the high-tension wiring.)

Note 4-5. In a low current zone, please confirm characteristics of the lamp before use. Flickering could occur depending on a lamp.

Note 4-6. Please set the input power source capacity to 9A or higher. If it is less than 9A, there is a possibility for a circuit protection element (fuse or IC protector) not to melt.

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING		DRAWING No.		PAGE
Product Specification		CTR-1203-G		8
TDK CORPORATION				

[5] Reliability tests

To meet the following reliability tests.

Test item	Test conditions	Judgment criteria
Low temperature exposure	-30°C 500h	No defect to exist in electric characteristics and external appearance.
Low temperature operation	0°C 500h Operating condition: As rated	
High temperature exposure	85°C 500h	
High temperature operation	60°C 500h Operating condition: As rated	
Thermal shock	-30°C⇔85°C 100 cycles 30 min. each	
Moisture resistance	40°C 90~95%RH 500h	
Moisture resistant operation	40°C 90~95%RH 500h	
Vibration	10~55Hz Half-amplitude 0.75mm 58~500Hz 9.8m/s <sup>2</sup> Sweeping time: 11 min. 60 min. each in X, Y, Z directions	
Shock	980m/s <sup>2</sup> 6ms sinusoidal half wave ±1 time for X, Y, Z direction each	

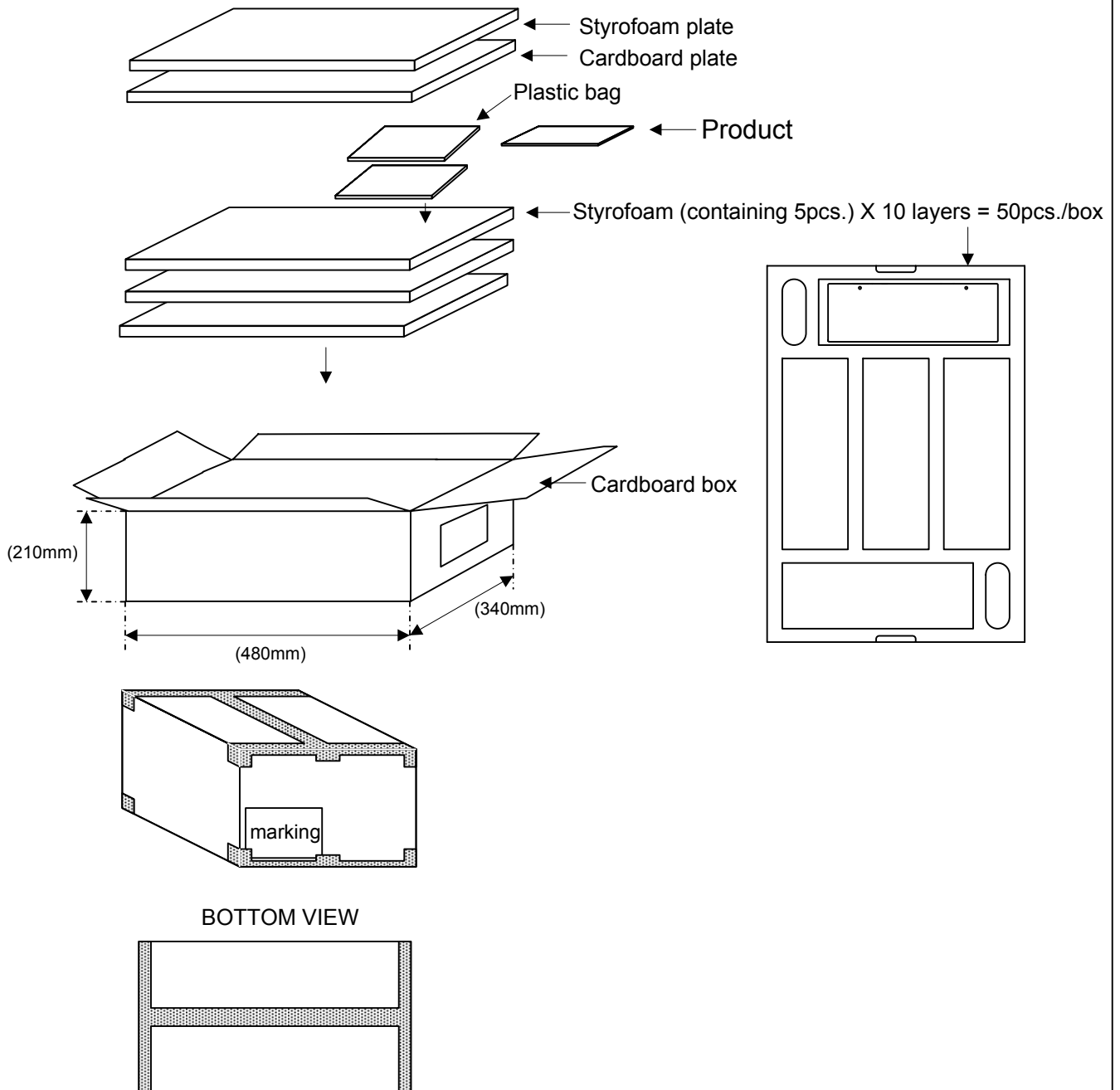
No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING			DRAWING No.	PAGE
Product Specification			CTR-1203-G	9

TDK CORPORATION

[ 6 ] Packaging and marking

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

- 6-1. Product name           CXA-0379
- 6-2. Manufacturer name    TDK
- 6-3. Customer part number
- 6-4. Quantity
- 6-5. Inspection No.
- 6-6. Country of origin



No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
NAME OF DRAWING			DRAWING No.	PAGE
Product Specification			CTR-1203-G	10

TDK CORPORATION

[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.Ozone Depleting Substances(ODS)

Ozone Depleting Substances(ODS) are not used in product.

7-4.MTTF

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

TEMPERATURES 25°C MTTF 298000 hours or more

7-5. Others.

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

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0379				
TDK CORPORATION	NAME OF DRAWING		DRAWING No.	PAGE
	Product Specification		CTR-1203-G	11