

MESSRS : All the companies

Product Drawing

CUSTOMER'S PRODUCT NAME :

TDK PRODUCT NAME : DC/DC CONVERTER UNIT ALD-310012PJ125

***Notice**

Product Drawing is not contract. This is only technical data.

This technical data may change internal description without any notice.

When you design final product please request us specification through our sales or distributors.

After you receive the specification, the contract is effective on signature of the specification.



TDK-Lambda Corporation

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DWG.No.	CTR-3542-C
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Precautionary Notes Regarding the Use of This Converter

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.

Caution

- This product is designed for the driving LED backlight system.
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 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.
- 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.
- Please use all the mounting holes, because to defend the converter from vibration and impact.

Handling Precautions

- 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.
- 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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1. Range of Application

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2. Product Name

The product name is DC-DC converter unit ALD-210012PJ125.

3. Contents

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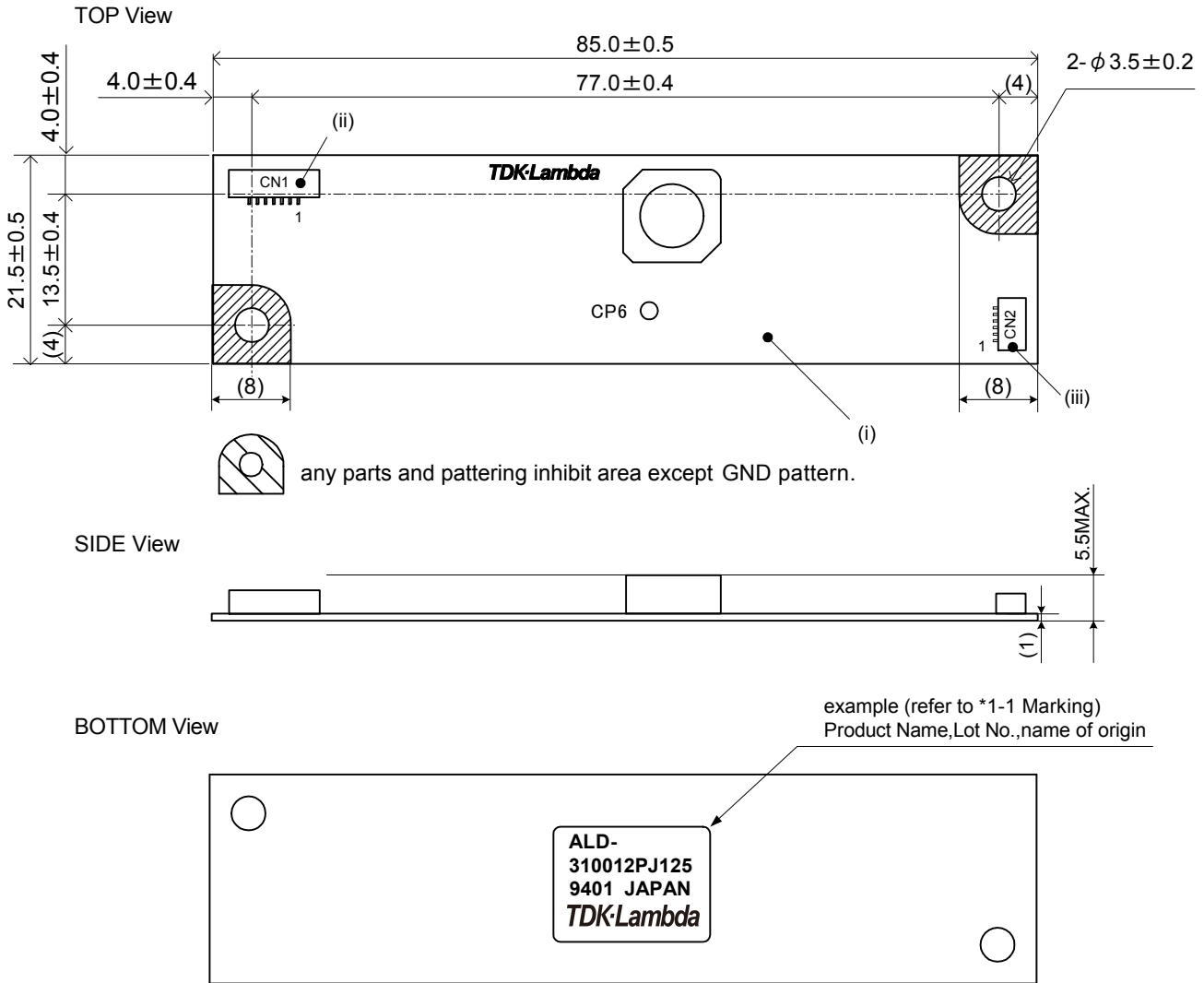
• The specifications may be changed without any notice.
 • When placing orders, please confirm "Specifications" or "Product Drawing" through TDK, TDK-lambda sales or distributors.

<Product Summary>

- *This product is DC-DC converter that is designed for LED driver.
- *This product has PWM DC dimming function (Apply external DC power source), PWM pulse dimming function (Apply external pulse source), Analog dimming (Add an external resistor) and remote on/off function.
- *This product has alarm function for safety operation. When load open is happened, this product limit the output voltage and output alarm voltage.
- *This product has alarm function for LED open detection. If any strings are open, CN1-8pin outputs around 5V. When all strings are connected normally, CN1-8pin outputs around 0V.

[1] Appearance, Structure and Dimensions

1-1. Outline



When LED driver is fixing, please confirm screw head and plate form is located within above hatching area include any tolerances.
 Tolerance is ±0.5mm unless otherwise specified.

Unit in mm
 Mass: 9g max

No.	Part Description	Item/Material	Qty.	Remark	corresponding connector
(i)	Print Circuit Board: PCB	FR-4	1	UL94V-0 τ=1.0	-
(ii)	Input Connector: CN1	53261-0871	1	Molex	51021-0800
(iii)	Output Connector: CN2	SM06B-SRSS-TB(LF)(SN)	1	JST	SHR-06V-S-B

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1-2. Pin Configuration

CN1(Input)

Pin No.	Symbol	Remark
CN1-1	Vin	Input Voltage
CN1-2		
CN1-3	GND	GND
CN1-4		
CN1-5	Vrmt	OFF : 0-0.4(V) / ON : 2.5-Vin(V)
CN1-6	Vbr/ Vpwm*/ Rbr1	PWM Dimming MIN : 0(V) ,or 0(%), or 0(k Ω) PWM Dimming MAX : 2.5(V) or ,100(%),or 10(k Ω)
CN1-7	Rbr2 (Vbr2)	Analog Dimming MIN : 0(k Ω) or 0(V) Analog Dimming MAX : 10(k Ω) or 4.0(V)
CN1-8	Vst	Normal : 0(V) / Abnormal : 5(V)

*Vpwm 0(V) : OFF / 3.3(V) : ON

Rbr2 is recommended for CN1-7.

If you use Vbr2, the Voltage may not be 0V according to power supply.

CN2(Output)

Pin No.	Symbol	Remark
CN2-1	+CH3	CH3 - Anode side
CN2-2	+CH2	CH2 - Anode side
CN2-3	+CH1	CH1 - Anode side
CN2-4	-CH1	CH1 - Cathode side
CN2-5	-CH2	CH2 - Cathode side
CN2-6	-CH3	CH3 - Cathode side

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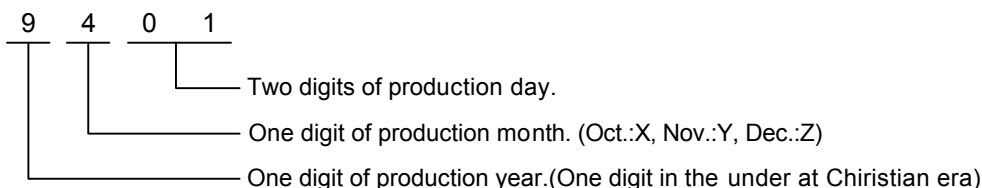
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*1-1 Marking

Product name, Lot No., Country of origin

1) Marking is attached on bottom side by the label.

2) Example (Apr.1st,2009)



3) Country of origin code (JAPAN, CHINA , MALAYSIA)

This product is conformity to RoHS directive.(*)

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

*1-2 For proper operation of circuit protection(IC Protector), Please use minimum of 6.3A capacity power supply for input.

*1-3 This product has 3.15A IC protector inside. Please confirm input current under 3.15Ao-p in any conditions.

[2] Absolute Maximum Ratings

Item	Symbol	Specification	Unit	Remark
Input Voltage	Vin	0~13.2	V	Ratings: 10.8~13.2V DC
	Vrmt	0~Vin		
	Vbr1	0~7		
	Vpwm	0~7		0(V) : OFF / 3.3(V) : ON
	Vbr2	0~4.2		
	Vst	This terminal is output terminal. Don't apply external voltage.		
Load Voltage	Vo	12.8(at Vin=10.8V) ~38	V	Minimum load Voltage > Vin+2V
Operating Temperature Range	Ta	-30~80	degC	
Storage Temperature Range	Ts	-40~85	degC	
Humidity Limit	RH	95	%RH	A maximum wet-bulb temperature is 38 degC. No dew.

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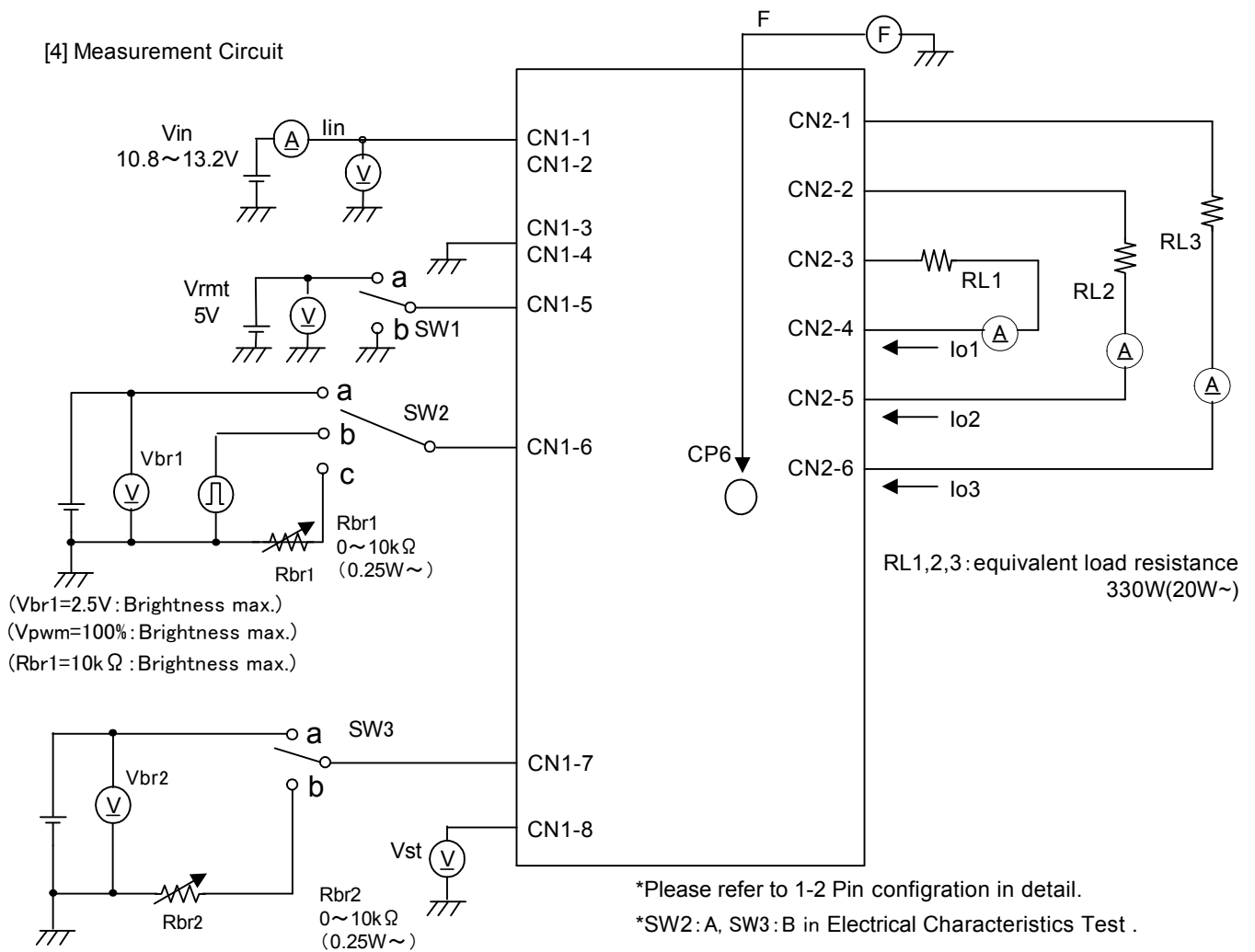
[3]Electrical Characteristics

Item	Symbol	Condition						Specification			Unit
		Vin(V)	Vrmt(V)	Vbr1	Rbr2	Ta(°C)	RL1-3(Ω)	MIN.	TYP.	MAX.	
Output Current	Iout1-3	12±0.5	5±0.25	2.5V	10KΩ	25±10	380	85	100	115	mA
PWM Dimming	I _{pwm} 1-3	12±0.5	5±0.25	1V	10KΩ	25±10	380	25	40	55	mA
Analog Dimming	I _{adim} 1-3	12±0.5	5±0.25	2.5V	1KΩ	25±10	380	25	40	55	mA
Input Current1	I _{in} 1	12±0.5	5±0.25	2.5V	10KΩ	25±10	380	-	1.1	1.5	A
Input Current2	I _{in} 2	12±0.5	0	2.5V	10KΩ	25±10	380	-	-	1.0	mA
PWM Burst Frequency	F	12±0.5	5±0.25	1V	10KΩ	25±10	380	180	225	270	Hz
Alarm Output *3-1	Vst1	12±0.5	5±0.25	2.5V / 10kΩ	10KΩ	25±10	380	-	-	1	V
	Vst2	12±0.5	5±0.25	2.5V / 10kΩ	10KΩ	25±10	∞	4.5	5.0	5.5	V

*3-1 This converter has alarm output function. If converter detects OVP or any strings open, pull Vst terminal to around 0V.

*3-2 Please use over 20mA for Analog Dimming.
(Analog Dimming can be 0~mA , but it is not assured under 20mA.)

[4] Measurement Circuit



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*4-1. SW1 function

SW1	ON/OFF control
a	Operating
b	Not operating
オープン	Not operating

*4-2. SW2 function

SW2	PWM Dimming
a	*PWM DC Dimming Vbr1=0~2.5V
b	*PWM Volume Dimming Vpwm=0~100%
c	*PWM Volume Dimming Rbr1=0~10kΩ
Open	Brightness max.

* Vbr1=2.5V : Brightness max.
 Vpwm=100% : Brightness max.
 Rbr1=10kΩ : Brightness max.

*4-3. SW3 function

SW3	PWM Dimming
a	*PWM DC Dimming Vbr2=0~2.5V
b	*PWM Volume Dimming Rbr2=0~10kΩ

Do not open SW3.

* Vbr2=4.0V : Brightness max.
 Rbr2=10kΩ : Brightness max.

*4-4. Measurement Equipment

- Ⓧ : DC Voltage Meter
(ADVANTEST R6452A or equivalent)
- Ⓐ : DC Current Meter
(ADVANTEST R6452A or equivalent)
- Ⓣ : True RMS Voltage Meter
(NF Circuit M2170 or equivalent)
- ⓕ : Frequency Counter
(ADVANTEST R6452A or equivalent)

*4-5. Protection Circuit Behaviour

Load Condition	Alarm output (CN1-6)*1	Remarks
normal	1V max.	Nomal operation
1 strings open	4.5V min.	Other string are nomal operation
2 strings open	4.5V min.	Other string are nomal operation
3 strings open	4.5V min.	Maintain minimum control operation

*1. In steady state alarm output keeps under 1V.
 If any stirings open or all strings open condition occurs, alarm output goes high around 5V.

*4-6. The alarm output might be generated at the transition state of ON/OFF by Vrmt or Vin.

*4-7. Please use over 20mA for Analog Dimming.
 (Analog Dimming can be 0`mA , but it is not assured under 20mA.)

*4-8. In PWM Dimming operation, please confirm the LCD panel before use.Flickering may occur due to ripple noise is on Dimming pin(CN1-6).

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[5] Reliability Test

This product is satisfied following reliability test.

Item	Condition	Judgement Standard
High Temperature Continuous Operation	80degC 500hrs.	Electrical and apperance should be in the spec.
Heat Shock	-40degC <-> 85degC 30min./each 100cycles	
Humidity Environment Off and on Operation	60degC 90%R.H. On 1hr / Off 3hrs. 500hrs.	
Vibration	5~10Hz Amplitude 10mm 10~200Hz Accerated Verocity 21.6m/s ² (2.2G) Log Sweep :10min. X,Y,Z direction 60min/each total 3hrs.	
Shock	588m/s ² (60G) 11ms Half-sine wave once each axis X,Y,Z,-X,-Y,-Z total 6times	

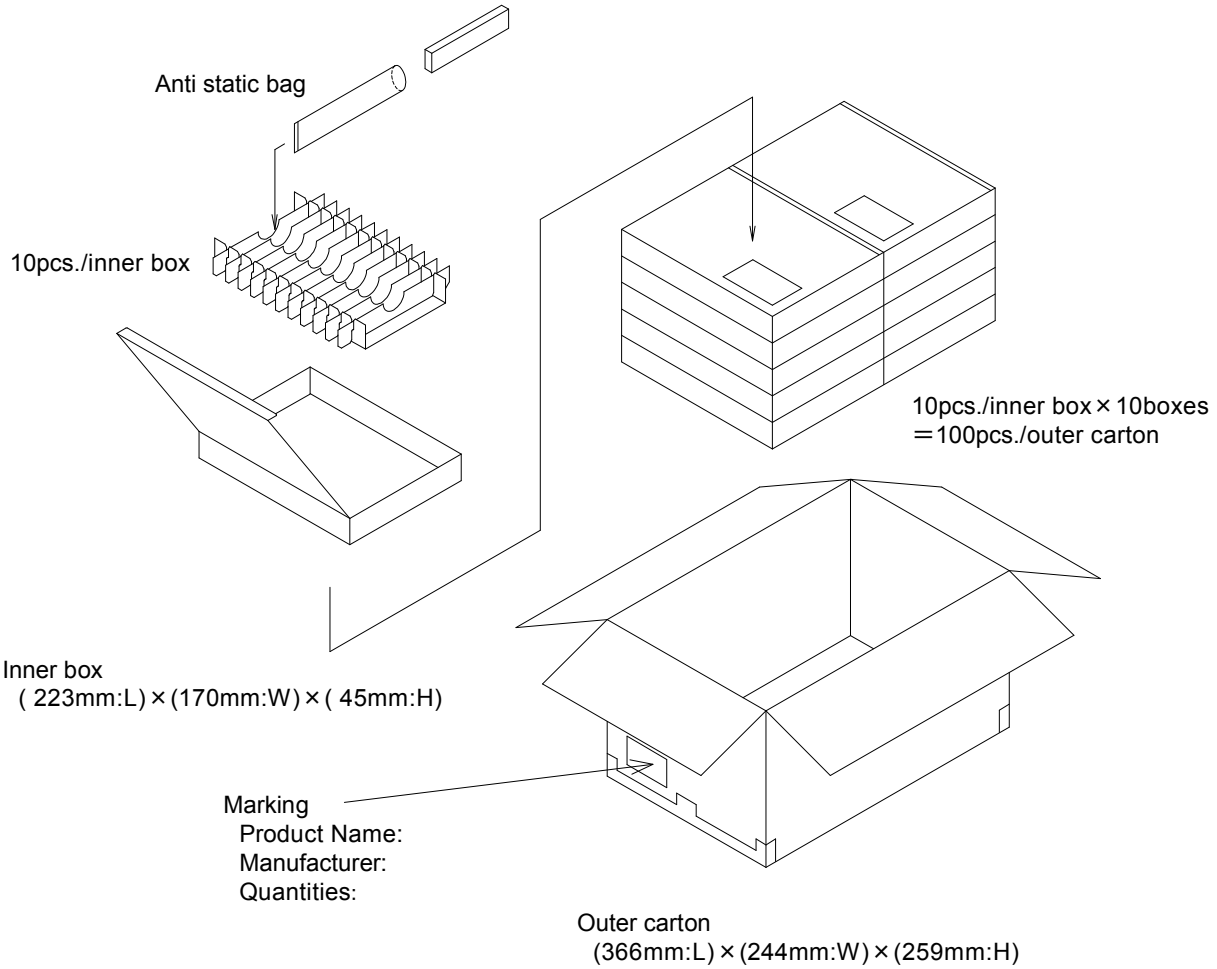
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[6] Packaging and Marking

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

- 6-1. Product Name ALD-310012PJ125
- 6-2. Manufacturer
- 6-3. Quantities

Packaging style is following (100 going iin with a standard.)



[7] Others

7-1. Test Conditions

Unless otherwise specified test environment is determined as temperature is (15~35)degC and humidity is (25~75)%RH.

7-2. Warranty

One year after shipment. This covers defects in material or workmanship. Defects units will be replaced at no charge.

7-3. Others

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

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