PC-17K1/2/4, PC-17L1/2/4, PC-17K1C(T/TN)

1. Description

These Photocouplers consist of a Gallium Arsenide Infrared Emitting Diode and a Silicon NPN Phototransistor per channel.

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PC-17 □ □ □

K : DIP type (7.62mm)
L : Long Creepage Distance (10.16mm)

1 : One Channel
2 : Two channels
4 : Four channels

none : Standard DIP type (Tube PKG)
C : SMD type (Tube PKG)
CT/CTN : SMD type (Reel/tape PKG)

2. Features

- Small Package Size
- Collector - Emitter Voltage : Min. 35V
- Current Transfer Ratio : Min. 50%
- Electrical Isolation Voltage : 5000Vrms
- Recognized by UL 1577 file No. E107486
- Approved by VDE 0884 file No. 104861
- RoHS Compliance

3. Applications

- Interface between two circuits of different potential
- Vending Machine, Cordless Phone
- Key Phone, Fax, Motor Control
- Programmable Logic Control
- Power Supply
- Computer Terminals

4. Absolute Maximum Ratings (at 25°C, unless otherwise noted)

Parameter		Symbol	Rating	Unit
Input to Output Isolation Voltage *1		VISO	5000	Vrms
Storage Temperature		Tstg	-55 ~ +125	°C
Operating Temperature		Topr	-30 ~ +100	°C
Lead Soldering Temperature*2		Tsol	260	°C
Total Power Dissipation		Ptot	200	mW
Input	Forward Current	IF	50	mA
	Reverse Voltage	VR	5	V
	Peak Forward Current *3	IFP	1	A
	Power Dissipation	PD	70	mW
Output	Collect-Emitter Breakdown Voltage	BVCEO	35(80*4)	V
	Emitter-Collector Breakdown Voltage	BVECO	6	V
	Collector Current	IC	50	mA
	Collect Power Dissipation	PC	150	mW

Note : *1. Measured at RH=40%~60% for 1min.

*2. Distance from end of the package = 2.0mm, time=5sec, Max.

*3. Input current with 100usec pluse width, 1% duty cycle

*4. Customer Option.(If BV_{CEO}=80V is needed, please contact to KODENSHI KOREA Co.)

5. Electro-Optical Characteristics (at 25°C unless otherwise noted)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Iuput	Forward Voltage	VF	-	1.15	1.30	V	IF=10mA
	Reverse Current	IR	-	-	10	uA	VR=5V
	Capacitance	CT	-	30	-	pF	V=0V, f=1MHz
Output	Collector-Emitter Breakdown Voltage	BVCEO	35	-	-	V	IC=0.5mA
	Emitter-Collector Breakdown Voltage	BVECO	6	-	-	V	IE=0.1mA
	Collector Dark Current	ICEO	-	-	100	nA	IF=0mA, VCE=24V
	Capacitance	CCE	-	10	-	pF	VCE=0V, f=1MHz
Coupled	Current Transfer Ratio *5	CTR	50	-	600	%	IF=5mA, VCE=5V
	Collector-Emitter Saturation Voltage	VCE(sat)	-	0.15	0.4	V	IF=5mA, IC=1mA
	Input-Output Capacitance *6	CI-O	-	1	-	pF	V=0V, f=1MHz
	Input-Output Isolation Resistance *6	RI-O	-	10^{11}	-	Ω	RH=40~60%, V=500Vdc
	Rise Time	tr	-	4	-	usec	VCE=2V, IC=2mA, RL=100Ω
	Fall Time	tf	-	4	-	usec	

Note : *5. The Current Transfer Ratio is defined as the ratio of output current to the forward input current.

The equation is described as following;

CTR = (IC / IF) * 100 [%]

*6. These parameters are measured between all input leads shorted together and all output leads shorted together.

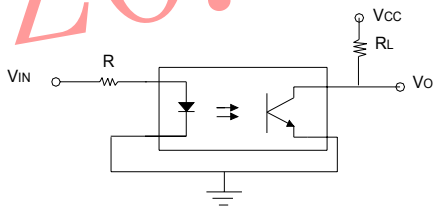
6. CTR Classification

Note : Acceptable CTR Rank Tolerance is ± 5 %.

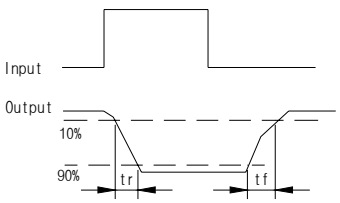
PC-17K1, PC-17L1, PC-17K1C		
C/O	Rank Mark	Rank Range [%]
□	AA	80~150
□	BB	100~200
□	BD	100~300
□	CB	150~250
□	CC	150~300
□	DB	200~300
□	DD	200~400
□	EC	250~400
□	GF	350~
PC-17K2/K4, PC-17L2/L4		
C/O	Rank Mark	Rank Range [%]
□	AF	80~
□	BF	100~

[C/O : ■ Customer Option]

Switching Time Test Circuit

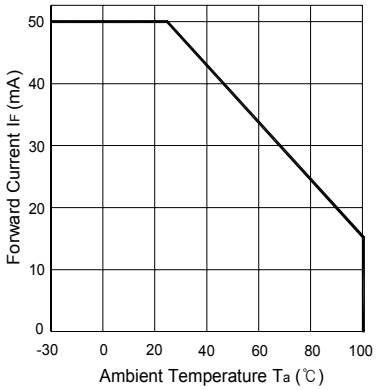


Test Circuit

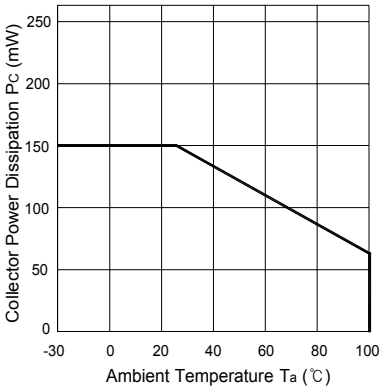


Waveform

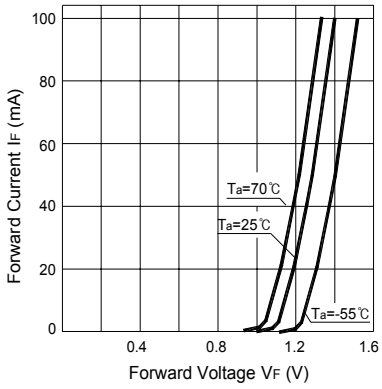
Forward Current vs. Ambient Temperature



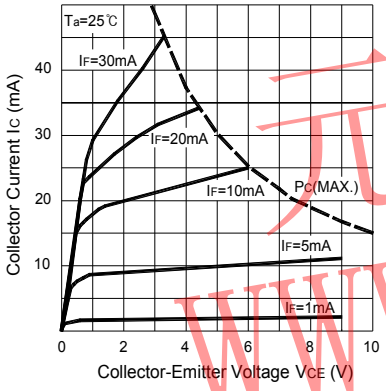
Collector Power Dissipation vs. Ambient Temperature



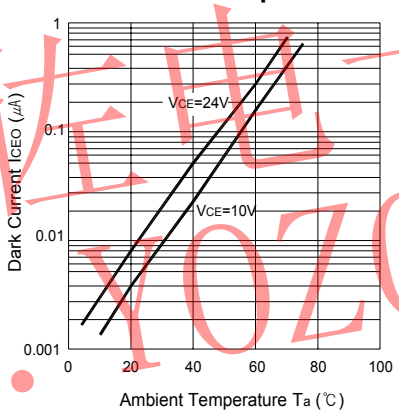
Forward Current vs. Forward Voltage



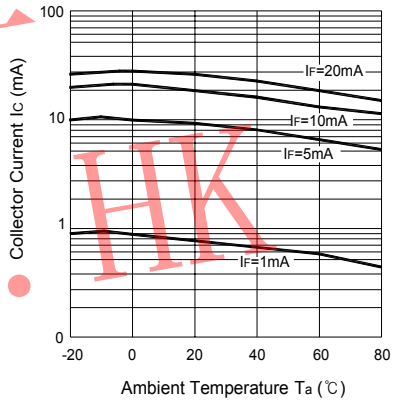
Collector Current vs. Collector-Emitter Voltage



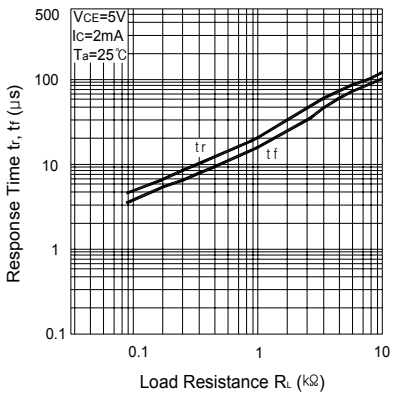
Dark Current vs. Ambient Temperature



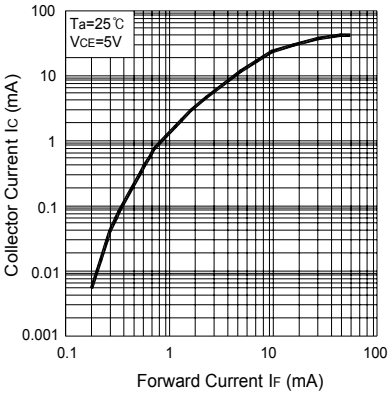
Collector Current vs. Ambient Temperature



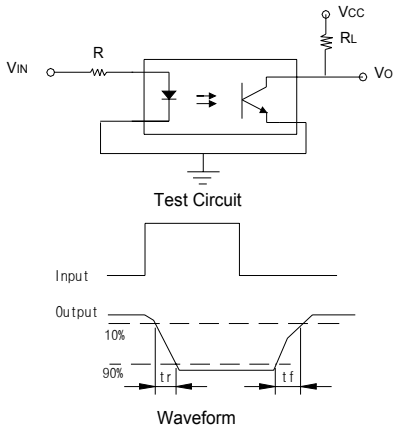
Response Time vs. Load Resistance



Collector Current vs. Forward Current



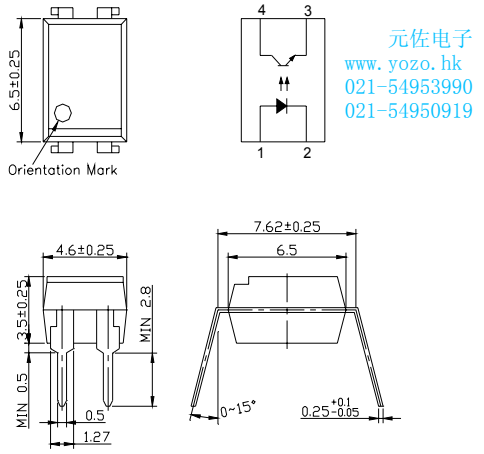
Switching Time Test Circuit



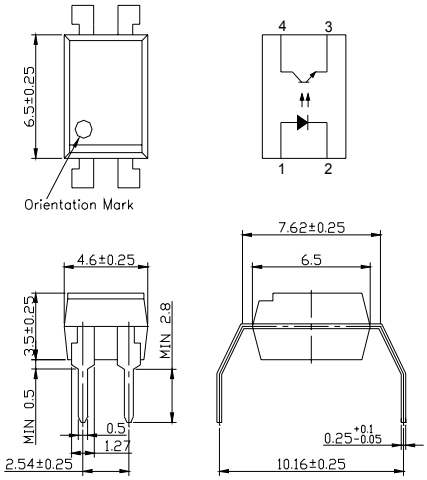
7. Outline Dimensions

(Unit : mm)

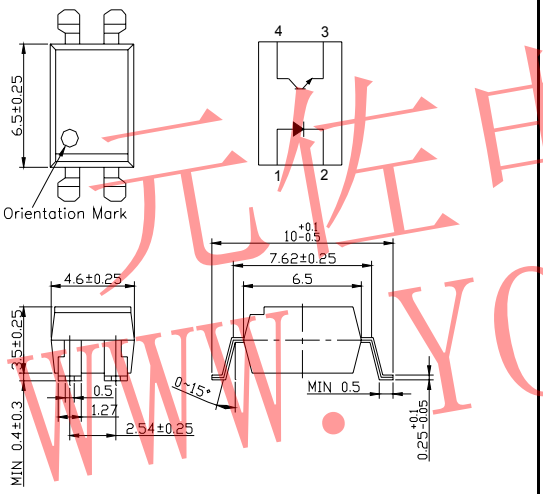
4-pin DIP type [PC-17K1]



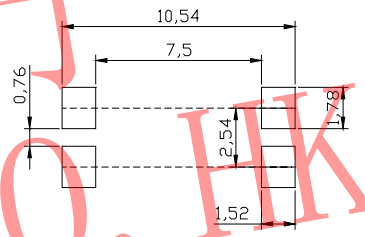
4-pin Long Creepage Distance type [PC-17L1]



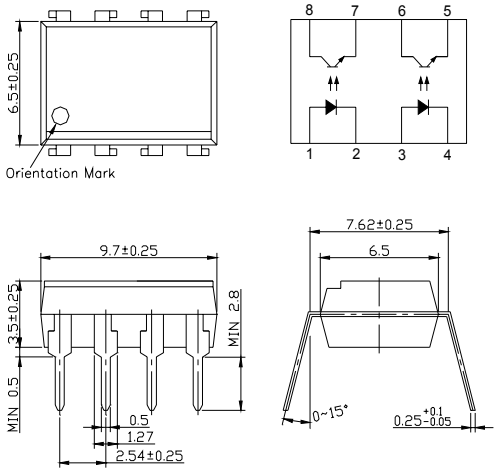
4-pin SMD type [PC-17K1C]



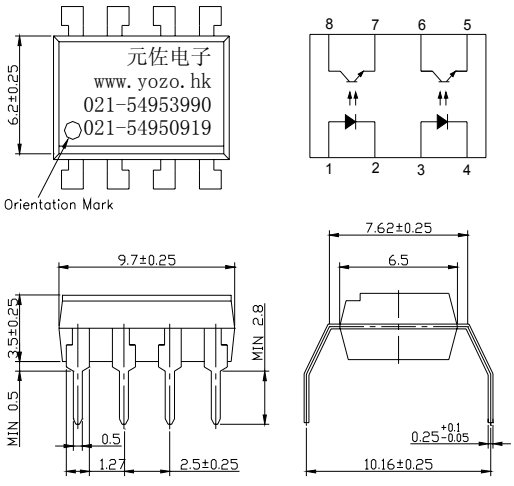
Recommended Footprint for PC-17K1C



8-pin DIP type [PC-17K2]

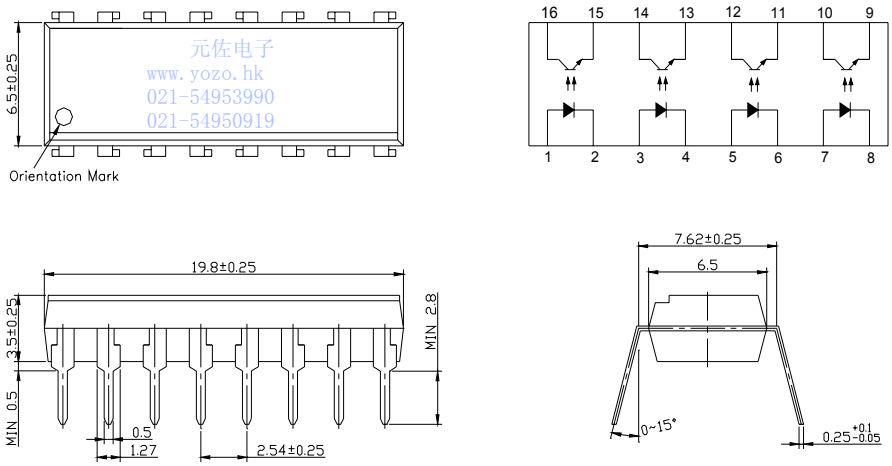


8-pin Long Creepage Distance type [PC-17L2]

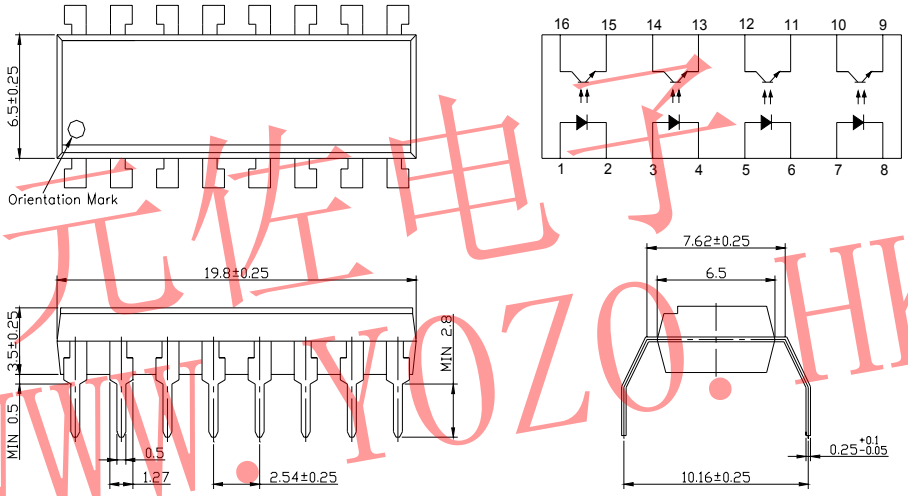


(Unit : mm)

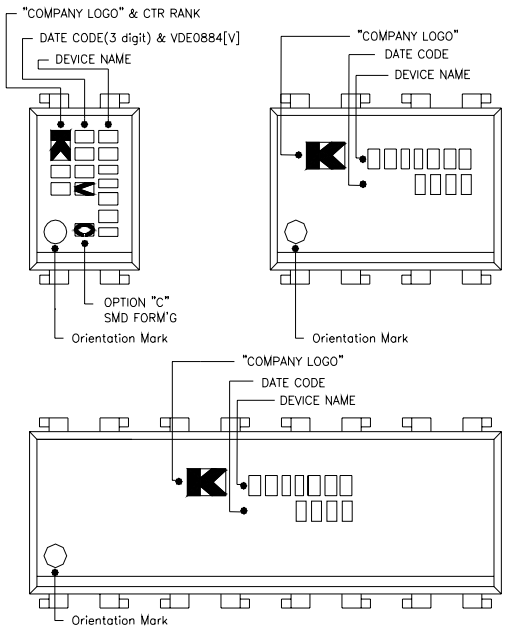
16-pin DIP type [PC-17K4]



16-pin Long Creepage Distance type [PC-17L4]



8. Marking Specification

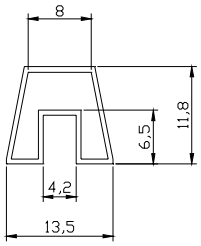
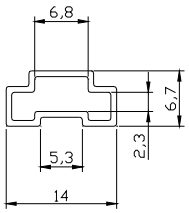
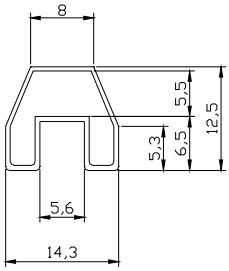


* K : KODENSHI mark "K"
* Date code (3 digit)
  - K1, L1, K1C : 3 digit
    - 1st digit : Year (Last 1 digit)
    - 2nd, 3rd digit : Week of production
  - K2/K4, L2/L4 : 4 digit
    - 1st, 2nd digit : Year (Last 2 digit)
    - 3rd, 4th digit : Week of production
* V : VDE0884 mark
* CTR Rank : refer to CTR Classification

9. Packing Specification

1) Standard Tube Packing

(Unit : mm)

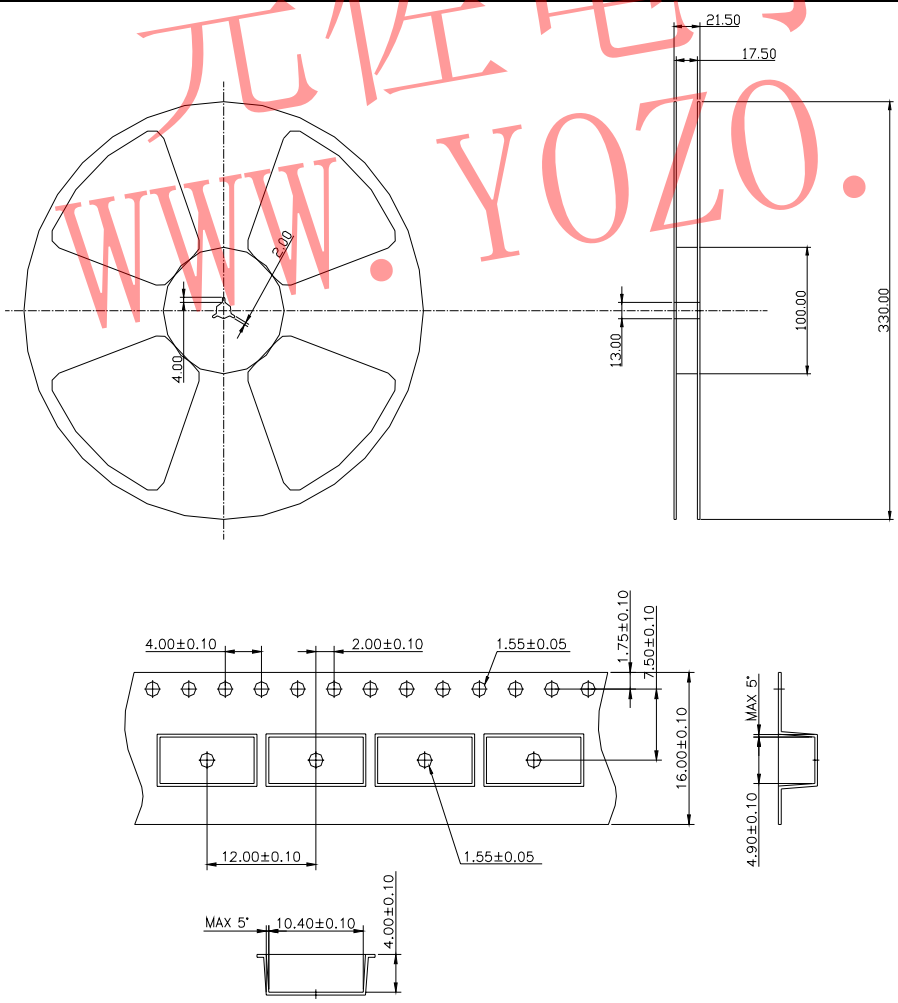
	PC-17K1/2/4	PC-17K1C	PC-17L1/2/4
Dimensions of Tube			
	Length = 500 Thickness = 0.6	Length = 500 Thickness = 0.6	Length = 500 Thickness = 0.6

Quantities of Devices per Tub

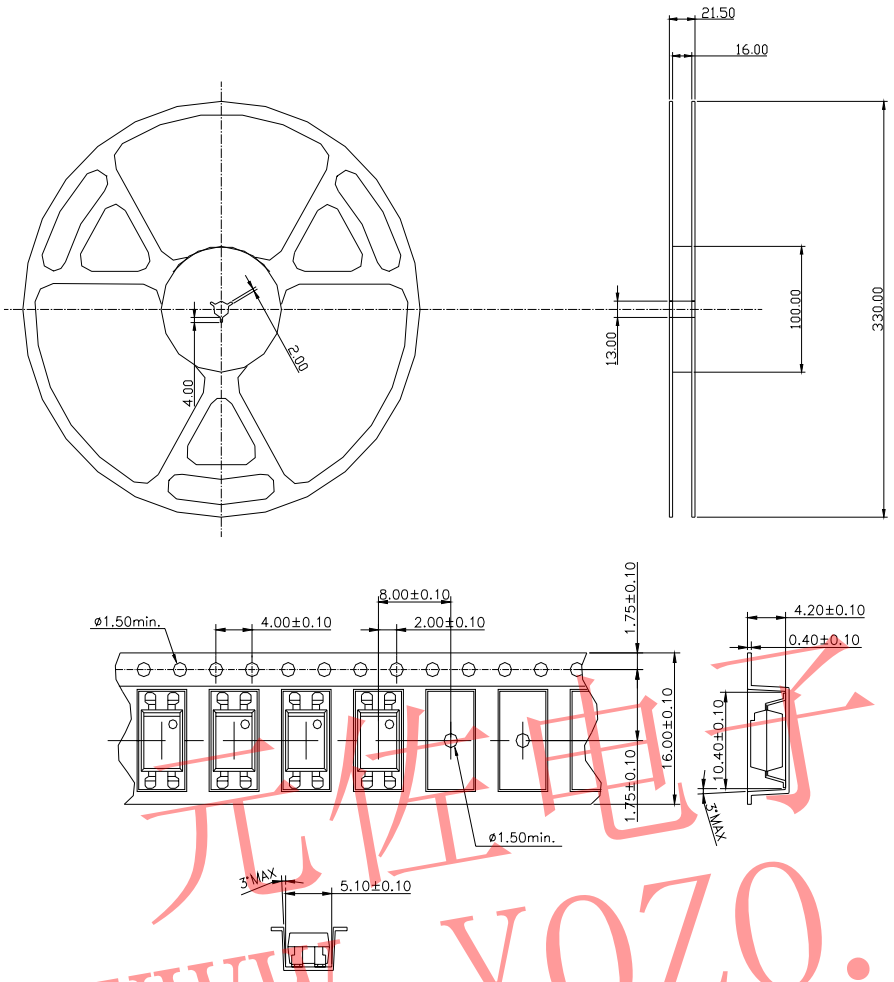
Number of Pins	4	8	16
Quantities (pcs)	100	45	20

2) Tape and Reel Packing

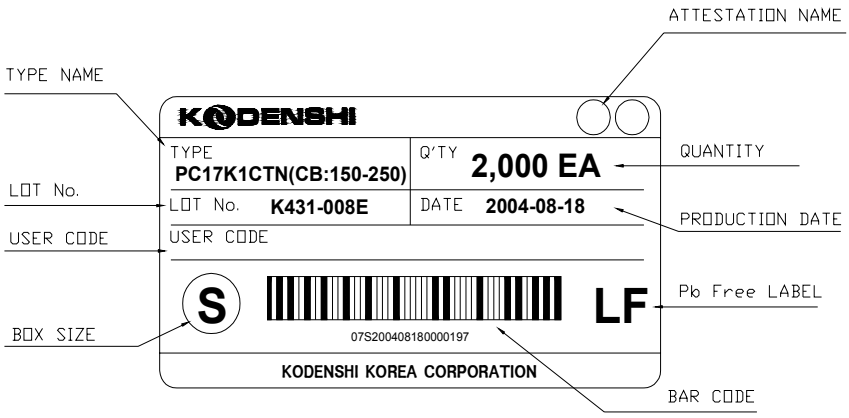
(Unit : mm)

Reel and Taping Dimensions **[PC-17K1CT]**	Packing Quantities
	1000 pcs/reel

(Unit : mm)

Reel and Taping Dimensions **[PC-17K1CTN]**	Packing Quantities
	元佐电子 www.yozo.hk 021-54953990 021-54950919 2000 pcs/reel

3) Label specification



10. Manufacturing Guidelines

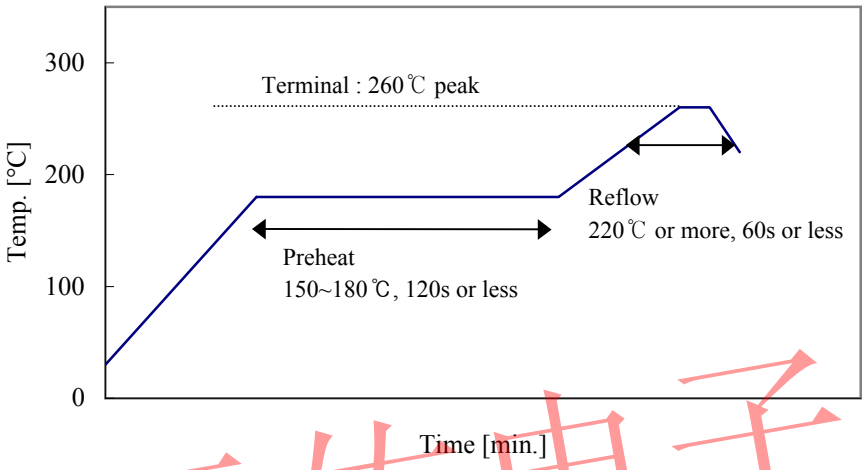
1) Soldering Method

- Reflow Soldering :

Reflow soldering should follow the temperature profile shown below.

Soldering should not exceed the curve of temperature profile and time.

Please don't solder more than twice.



- Dip soldering (Flow soldering) :

The thermal shock of the dip soldering is intended to increase thermal to devices.

To avoid the stress, a soldering iron or medium infrared ray/hot air reflow is recommanded.

- Hand Soldering :

Hand soldering should be completed within 5 sec. When the point of sholder iron is blow 260℃.

Please don't solder more than twice.

- Other notices

Please test the soldering method in actual condition and make sure the soldering works fine, since the impact on the junction between the device and PCB varies depanding on the tooling and soldering conditions.

11. Ordering Information

Model No.	Viso	Lead Form	Channel	Pin	CTR	Packing
PC-17K1	5000 Vrms	DIP type [7.62mm]	1	4	Refer to CTR Classification	Tube
PC-17K2			2	8		
PC-17K4			4	16		
PC-17L1		Long Creepage type [10.16mm]	1	4		Tube
PC-17L2			2	8		
PC-17L4			4	16		
PC-17K1C		Surface Mount type	1	4		Tube
PC-17K1CT			1	4		Reel and Tape (1000pcs/reel)
PC-17K1CTN			1	4		Reel and Tape (2000pcs/reel)

12. Caution(When use and storage of this device)

1) Store and use where there is no force causing transformation or change in quality
2) Store and use when there is no extreme humidity
3) Solder the lead-pin within the condition of ratings. Do not add extrorse force after soldering.

13. Period of Guarantee and Extent of Guarantee

1) Period of Guarantee

1 year after designated place.

2).Extent of Guarantee

KODENSHI Korea Corp. shall supply the replacements against defects that will caused from KODENSHI fault.

14. Others

In case where any trouble or questions arise, both parties agree to make full discussion covering the said problem.

*** Option Request**

No.	Items	Reference	Q'ty	Page

■ Important Notices

KKC takes no responsibility for damage caused by improper use of the device which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet.

Please obey the instructions mentioned below for actual use of this device.

1. This device is designed for general electronic equipment.
   Main use of this device are as follows;

(* Computer * OA equipment * Telecommunication equipment(Terminal)
* Measuring instrument * Machine tool *Industrial robot
* AV equipment * Home appliance, etc.)

2. Please take proper steps in order to maintain reliability and safety, in case this device is used for the uses mentioned below which require high reliability.

(* Unit concerning control and safety of a vehicle (air plane,train,automobile, etc.)
* Traffic signal * Gas leak detection breaker
* Fire box and burglar alarm box * Other safety equipment, etc.)

3. Please don't use for the uses mentioned below which require extremely high reliability.

(* Space equipment * Telecommunication equipment (Trunk)
* Nuclear control equipment * Medical equipment (relating to any fatal element), etc.)