

## Description

The CYTLP785 consist of a photo-transistor optically coupled to a gallium arsenide infrared emitting diode, The CYTLP785 offer sigal isolated channels in an eight lead plastic DIP , DIP-M or SMD package.

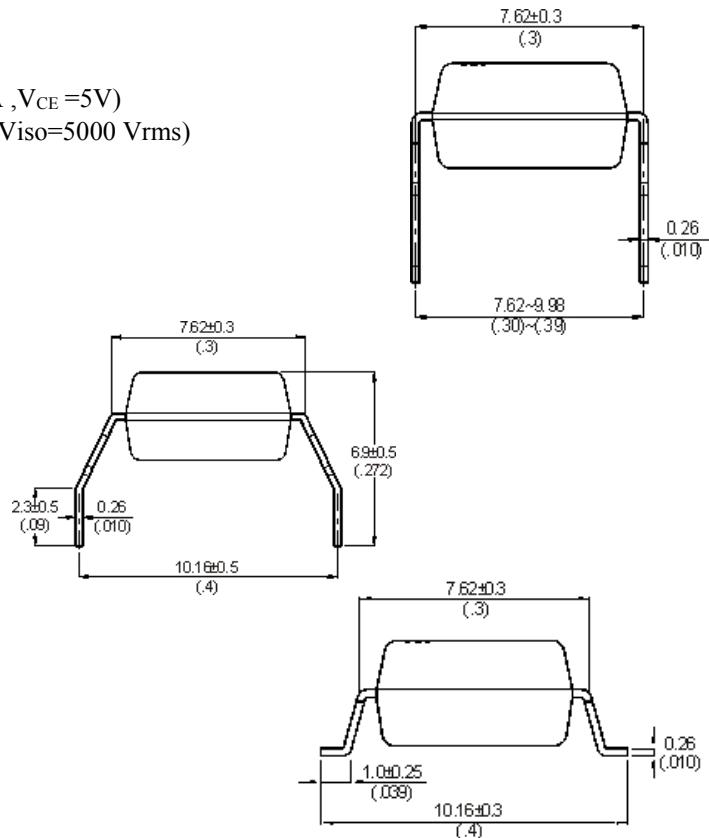
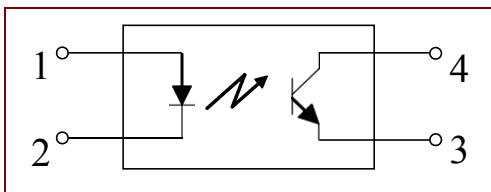
## Features

- Current transfer ratio (CTR: 50~600% at  $I_F = 5\text{mA}$  ,  $V_{CE} = 5\text{V}$ )
- High isolation voltage between input and output ( $V_{iso} = 5000\text{Vrms}$ )
- Minimum  $BV_{CEO}$  of 80V guaranteed
- UL approved (NO.:E497745)
- Compliance with EU REACH and RoHS
- CQC approved (NO.:CQC20001238665)

## Applications

- Switching power supply, intelligent meter
- Industrial control, measuring instruments
- Office equipment such as copiers
- Household appliances, such as air conditioners, fans, water heaters, etc.

## Block Diagram and Package



## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Rating	Unit
Input	Forward Current	$I_F$	50	mA
	Reverse Voltage	$V_R$	6	V
	Power Dissipation	P	70	mW
	Junction temperature	$T_j$	125	$^\circ\text{C}$
Output	Collector Power Dissipation	$P_C$	150	mW
	Collector Current	$I_C$	50	mA
	Collector-Emitter Voltage	$V_{CEO}$	80	V
	Emitter-Collector Voltage	$V_{ECO}$	7	V
	Junction temperature	$T_j$	125	$^\circ\text{C}$
Total Power Dissipation		$P_{tot}$	200	mW
Isolation Voltage		$V_{iso}$	5000	Vrms
Operating Temperature		$T_{opr}$	-55~+110	$^\circ\text{C}$
Storage Temperature		$T_{stg}$	-55~+125	$^\circ\text{C}$
Soldering Temperature		$T_{sol}$	260	$^\circ\text{C}$

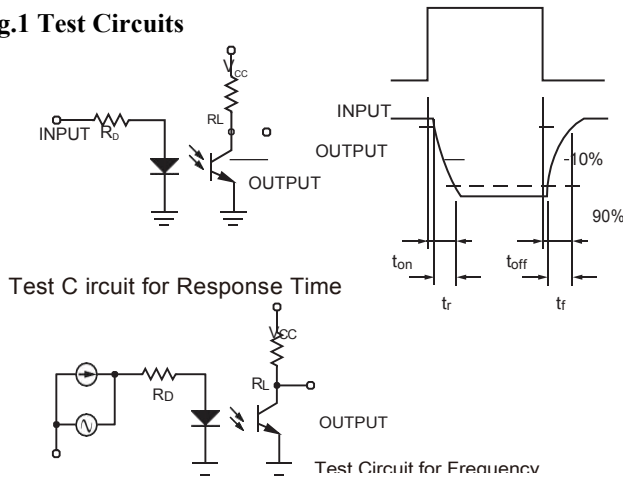
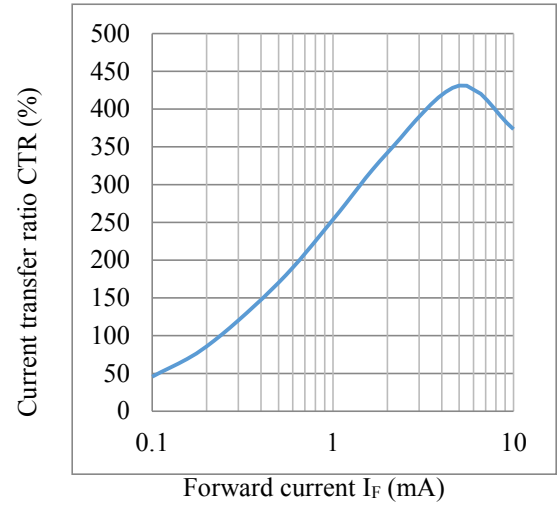
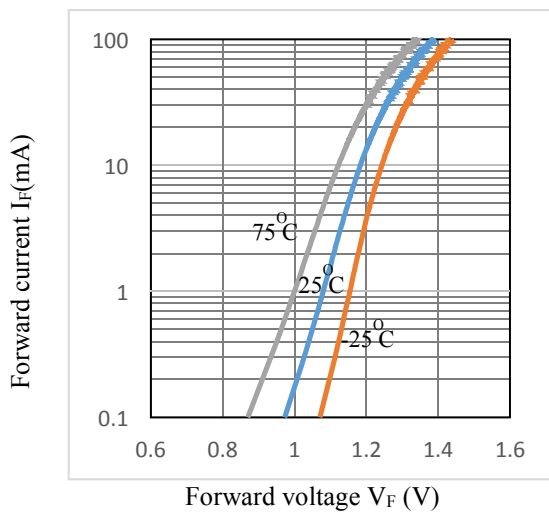
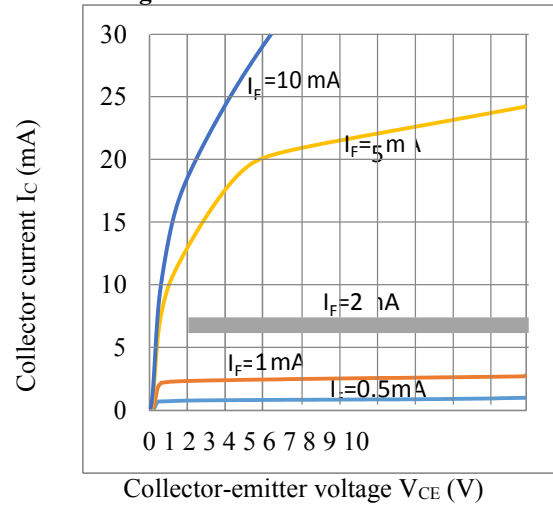
## Electro-optical Characteristics (Ta=25°C)

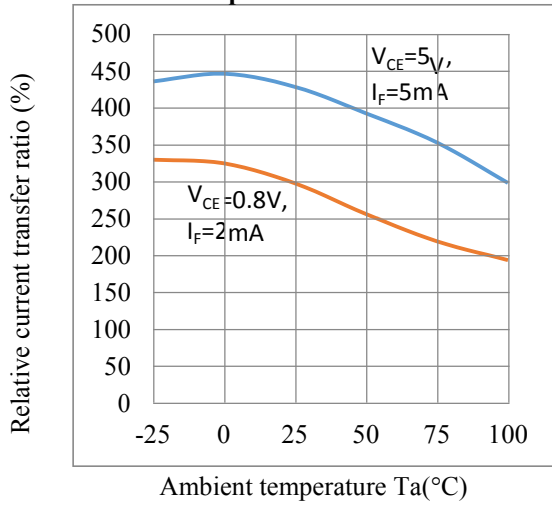
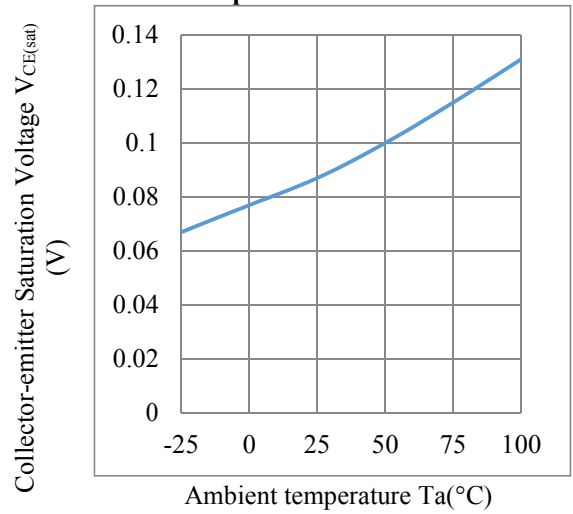
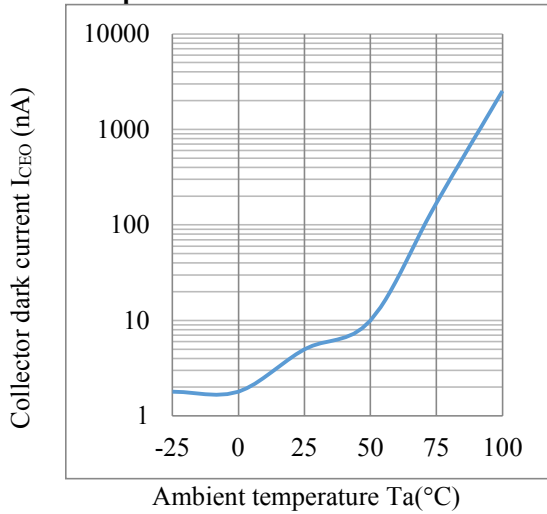
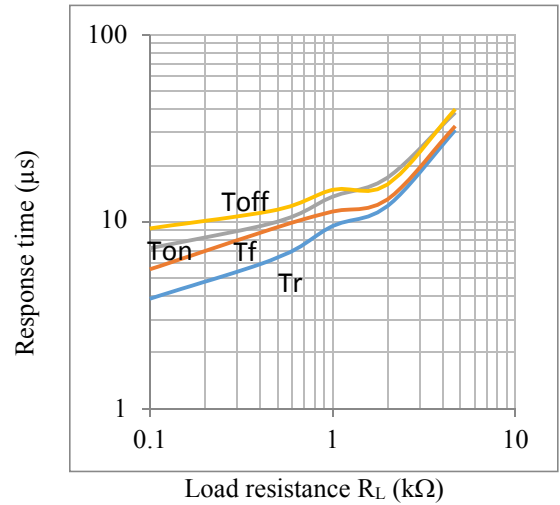
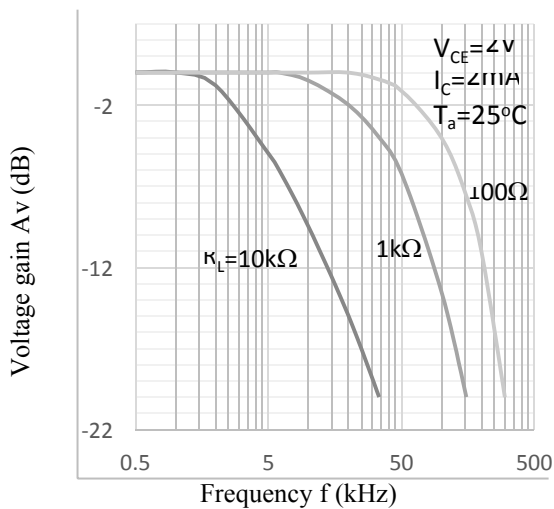
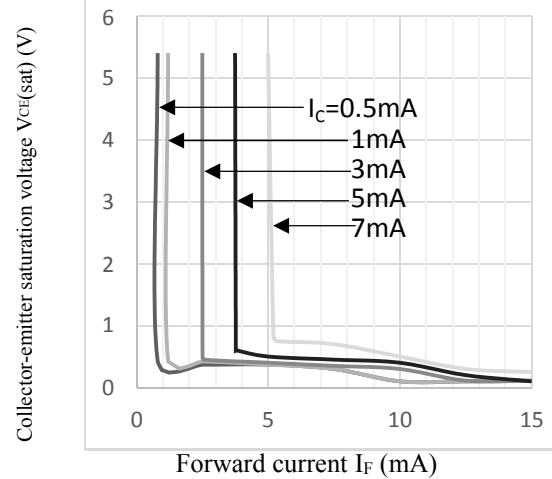
Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	$V_{F1}$	$I_F=10mA$	1.0	-	1.3	V
	Forward Voltage	$V_{F2}$	$I_F=20mA$	1.1	-	1.4	V
	Reverse Current	$I_R$	$V_R=5V$	-	-	10	$\mu A$
	Terminal Capacitance	$C_t$	$V=0, f=1kHz$	-	30	250	pF
Output	Collector Dark Current	$I_{CEO}$	$V_{CE}=50V$	-	-	100	nA
	Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=0.1mA, I_F=0$	80	-	-	V
	Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_E=10\mu A, I_F=0$	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	$I_F=5mA, V_{CE}=5V$	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=2mA, I_C=5mA$	-	0.25	0.8	V
	Isolation Resistance	$R_{ISO}$	DC500V, 40~60%R.H.	$1 \times 10^{12}$	-	-	$\Omega$
	Floating Capacitance	$C_f$	$V=0, f=1MHz$	-	0.6	1.0	pF
	Cut-off Frequency	$F_c$	$V_{CE}=5V, I_C=2mA,$ $R_L=100\Omega, -3dB$	-	80	-	kHz
Switching Characteristics	Rise Time	$T_r$	$V_{CE}=10V, I_C=2mA,$ $R_L=100\Omega$	-	2	-	$\mu s$
	Fall Time	$T_f$		-	3	-	$\mu s$
	Turn On Time	$T_{on}$		-	3	-	$\mu s$
	Turn Off Time	$T_{off}$		-	3	-	$\mu s$
	Turn On Time	$T_{on}$	$R_L = 1.9 k\Omega$ $V_{CC} = 5 V, I_F = 16 mA$	-	2	-	$\mu s$
	Storage time	$T_s$		-	15	-	$\mu s$
	Turn Off Time	$T_{off}$		-	25	-	$\mu s$

\*  $CTR=I_C/I_F \times 100\%$

## Rank Table of CTR

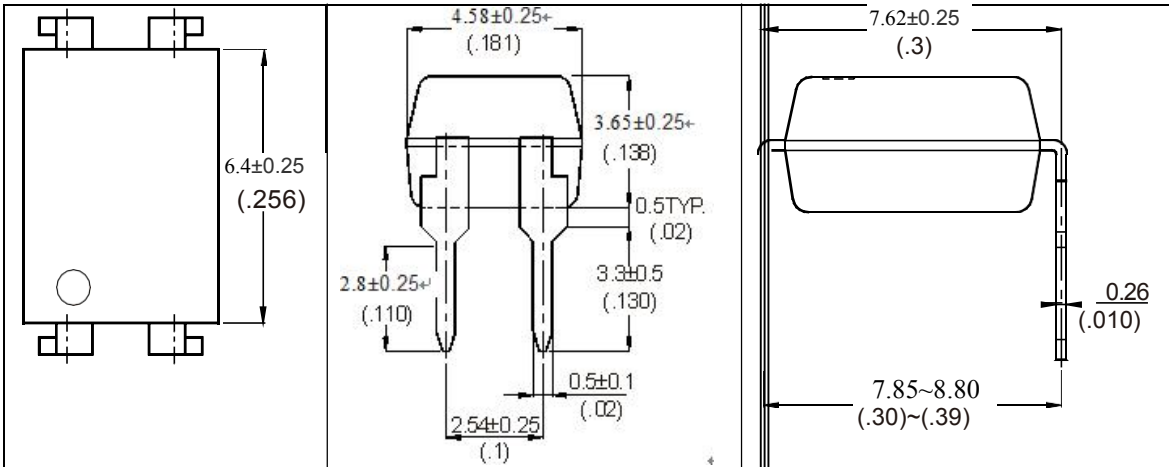
TYPE	Classification	Current Transfer Ratio (%) ( $I_C/I_F$ )		Marking Of Classification
		$I_F = 5mA, V_{CE} = 5V, T_a = 25^\circ C$		
		Min	Max	
CYTLP785	None	50	600	
	Rank Y	50	150	
	Rank GR	100	300	
	Rank BL	200	600	
	Rank GB	100	600	
	Rank YH	75	150	
	Rank GRL	100	200	
	Rank GRH	150	300	
	Rank BLL	200	400	

**Fig.1 Test Circuits**

**Fig.2 Current Transfer Ratio vs. Forward Current**

**Fig.3 Forward Current vs. Forward Voltage**

**Fig.4 Collector Current vs. Collector-emitter Voltage**


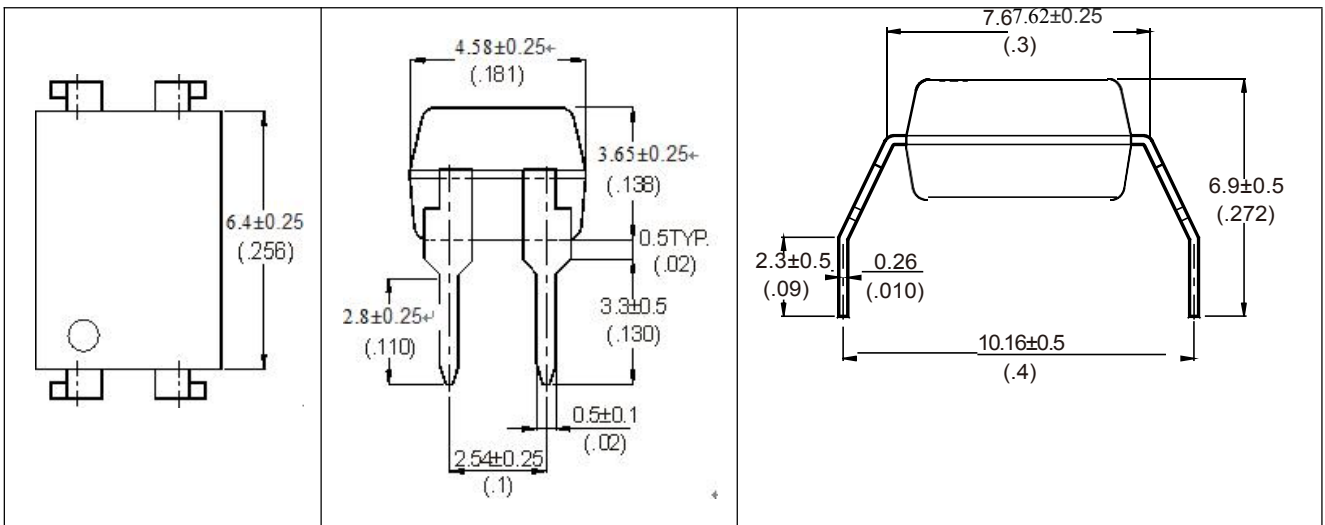
**Fig.5 Relative Current Transfer Ratio vs. Ambient Temperature**

**Fig.6 Collector-emitter Saturation Voltage vs. Ambient Temperature**

**Fig.7 Collector Dark Current vs. Ambient Temperature**

**Fig.8 Response Time vs. Load Resistance**

**Fig.9 Frequency Response**

**Fig.10 Collector-emitter Saturation Voltage vs. Forward Current**


## Outline Dimensions

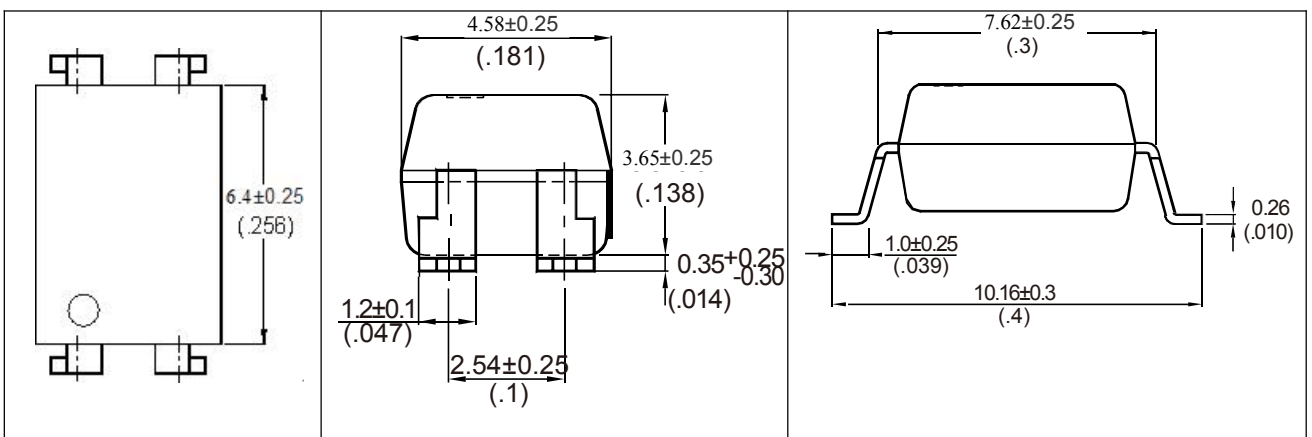
Unit: mm (inch)



4-pin DIP

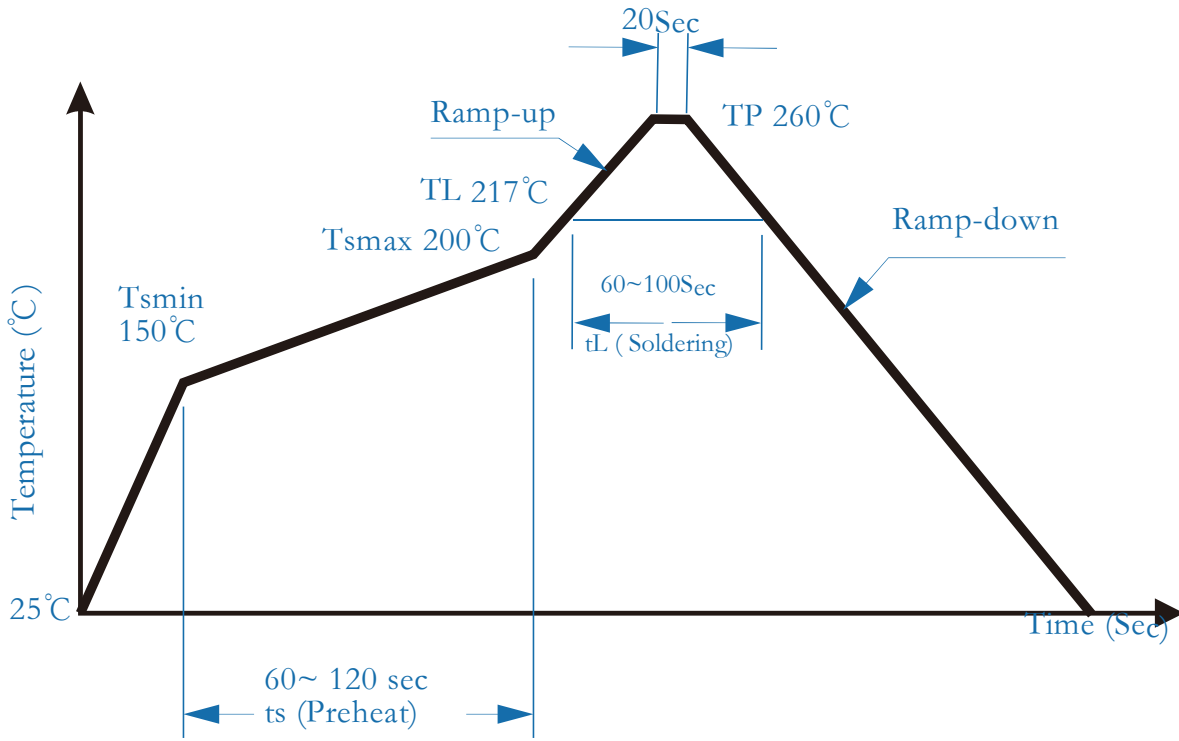


4-pin DIP (M Type)



4-pin SMD

**Solder Reflow Profile**



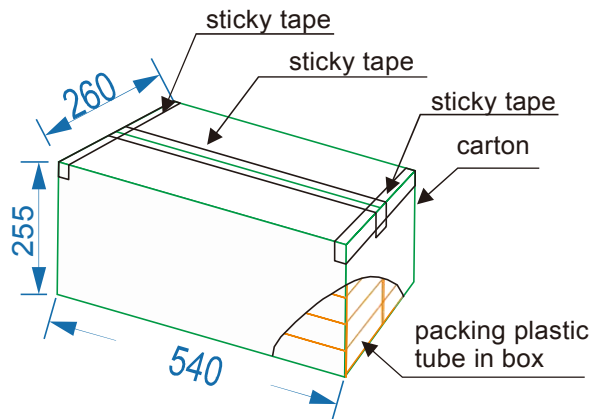
## Packing

### ■ Summary table

Package Type	Packing Form	Quantity per Reel/Tube	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SMD-4	Reel (φ330mm)	2k pcs/reel	5 reels /box	4 boxes /ctn	-	350*340*108 mm	458*365*350 mm	Guard band 200mm min.
DIP-4	Tube (500*12*11mm)	100pcs /tube	60 tubes/box	6 boxes /ctn	NA	526*118*75mm	540*260*255 mm	Endplug (blue) and
DIP-4 (M)	Tube (500*13*11mm)	100pcs /tube	60 tubes/box	6 boxes /ctn	NA	526*128*77mm	540*270*275 mm	Endplug (white) keep the direction

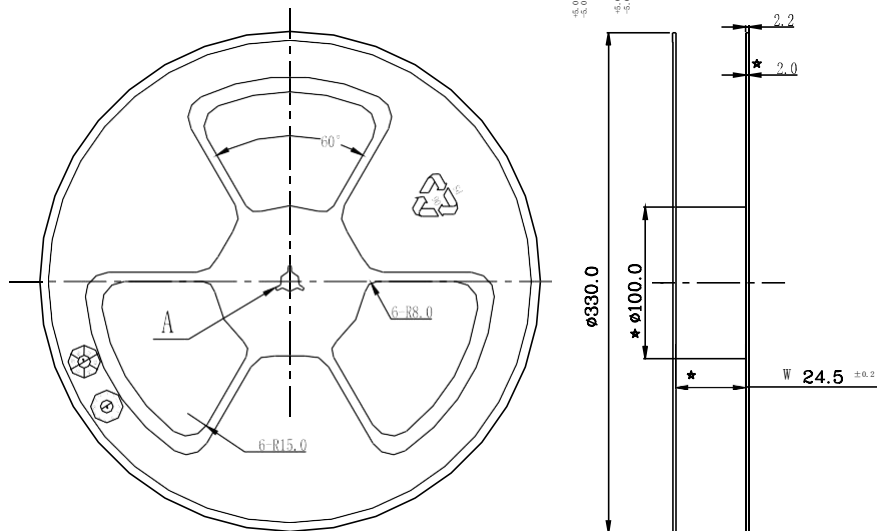
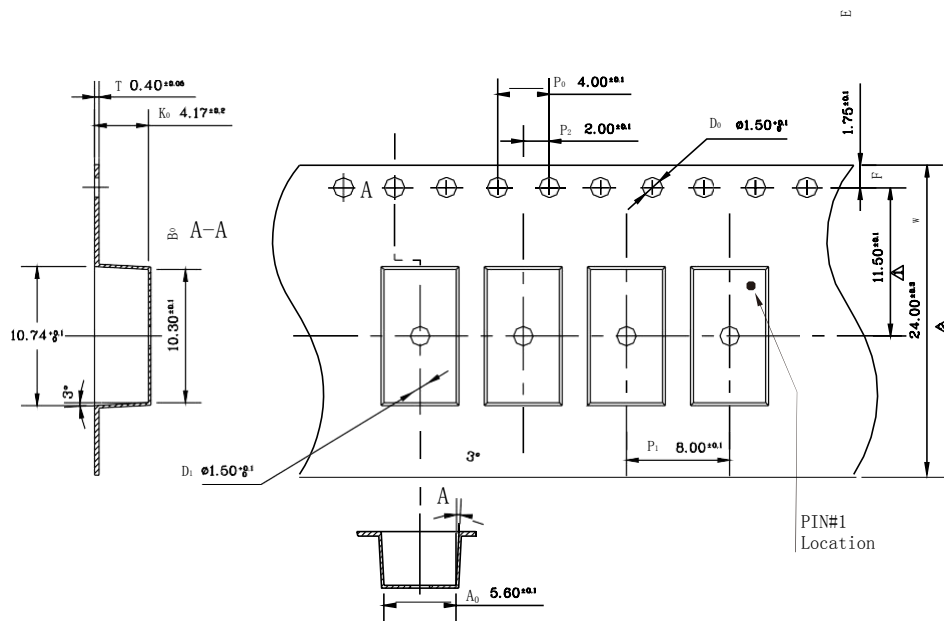
### ■ DIP-4 (tube)

- 1) Qty/ctn: 36000pcs
- 2) Inner packing:
  - i. 100pcs/tube, antistatic tube, indication of trade mark and antistatic.
  - ii. 60 tubes/box.
- 3) Schematic:



### ■ SMD-4 (Tape & Reel)

- 4) Qty/reel: 2000 pcs. Qty/ctn: 40000 pcs.
- 5) Inner packing: 2000pcs/reel.
- 6) Schematic:





CHEUYUI Research and Development co., ltd reserves the right to alter the design or specifications in this data sheet without prior notice. Customers are solely responsible for obtaining the latest version of relevant documents before placing orders. It is the responsibility of the user to ensure that the circuit is fit for the user's application and meets with the user's requirements. No representation or warranty is given and no liability whatsoever is assumed by CHEUYUI with respect to the accuracy or use of such information, or infringement of patents or other intellectual property rights arising from such use or otherwise. CHEUYUI Research and Development co., ltd does not assume any legal responsibility or will not be held legally liable (whether in contract, tort (including negligence), breach of statutory duty, restriction or otherwise) for any damages, loss of profit, business, contract, It is advised that normal static precautions be taken in handling and assembly of this component to prevent damage and/or degradation which may be induced by ESD.