



BRIGHTTEK

BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

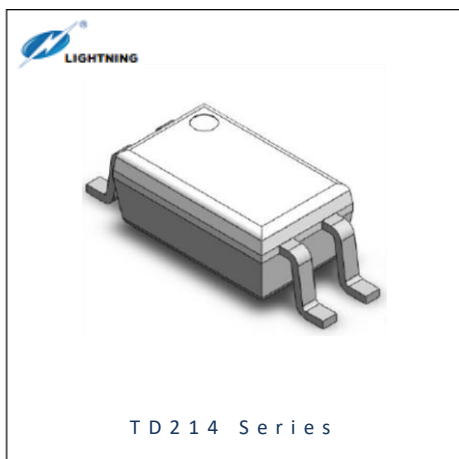
Release Date: 04 April 2025 Version: A00

PRODUCT DATASHEET



- ▶ AC Input Photo Coupler
- ▶ SSOP4
- ▶ Photo Transistor

TD214X(T1)-GV



APPLICATIONS:

- Switch mode power supplies
- Programmable controllers
- Household appliances
- Office equipment

TD214 Series

DESCRIPTION:

The TD214 series combine two AlGaAs infrared emitting diodes as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic SSOP4 package

With the robust coplanar double mold structure, TD214 series provide the most stable isolation feature.

FEATURES:

- High isolation 3750 Vrms
- AC input with transistor output
- Operating temperature range -55°C to +110°C
- MSL class 1
- Regulatory Approvals:
 - UL - UL1577
 - VDE - EN60747-5-5 (VDE0884-5)
 - CQC - GB4943.1, GB8898
 - cUL - CSA Component Acceptance Service Notice 5A
- Packing: 3000pcs/reel



Partner with:



**NAMING & ORDERING INFORMATION:**

Naming Information:

TD214 X (T1) - G V	
TD214	Part Number
X	Selection: CTR (X=none, or A~C)
T1	Selection: Tape and Reel Option (T1(default)/T2)
G	Green Option
V	VDE Option

Ordering Information:

TD214X(T1)-GV						
<u>X</u> = Selection: CTR (X=none, or A~C)						
Part Number	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
TD214(T1)-GV	CTR	20	---	400	%	I _F =1mA, V _{CE} =5V
TD214A(T1)-GV		50	---	150		
TD214B(T1)-GV		80	---	400		
TD214C(T1)-GV		120	---	360		

Version No.	Original Release Date
Rev: A00	10/10/2024

SCHEMATIC DIAGRAM & MARKING:

Schematic Diagram:

PIN Definition	
1	Anode/Cathode
2	Cathode/Anode
3	Emitter
4	Collector

Marking Information:

Marking Definition	
TD	Manufacturer Code
214	Part Number
X	CTR Rank
V	VDE Applicable
Y	Fiscal Year
A	Manufacturing Code
WW	Work Week

Labelling Information:

 福建天电光电有限公司 FUJIAN LIGHTNING OPTOELECTRONIC CO., LTD Part No.:XXXXXXXXXX Bin Code: X Lot No.: XXXXXXXXXXXX Date Code: XXXX QTY: XXX PCS MSL: 1 Made in Quanzhou Fujian	This product is manufactured, tested, and packed by
	

ABSOLUTE CHARACTERISTICS:

Absolute Maximum Ratings:

Parameter	Symbol	Ratings	Unit
INPUT			
Forward Current	I_F	± 60	mA
Peak Forward Current	I_{FP}	± 1 * ¹	A
Input Power Dissipation	P_i	100	mW
OUTPUT			
Collector - Emitter Voltage	V_{CEO}	80	V
Emitter - Collector Voltage	V_{ECO}	6	V
Collector Current	I_C	50	mA
Output Power Dissipation	P_O	150	mW
COMMON			
Total Power Dissipation	P_{tot}	200	mW
Isolation Voltage	V_{iso}	3750 * ²	V _{rms}
Operating Temperature	T_{opr}	-55~+110	°C
Storage Temperature	T_{stg}	-55~+125	°C
Soldering Temperature	T_{sol}	260 * ³	°C

*1. 100μs pulse, 100Hz frequency

*2. AC for 1 minute, R.H.=40~60%

*3. For 10 seconds max.

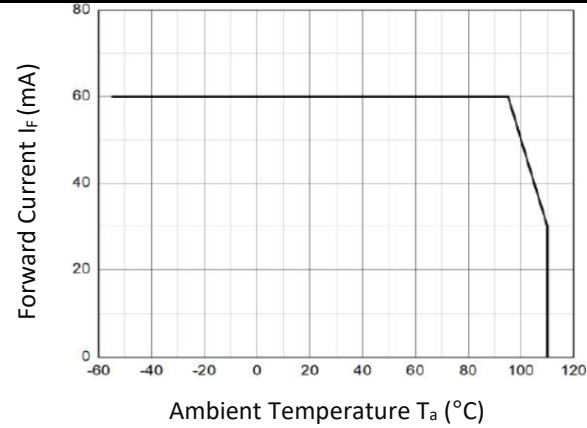
ELECTRICAL CHARACTERISTICS:

Electrical Optical Characteristics at Ta=25°C:

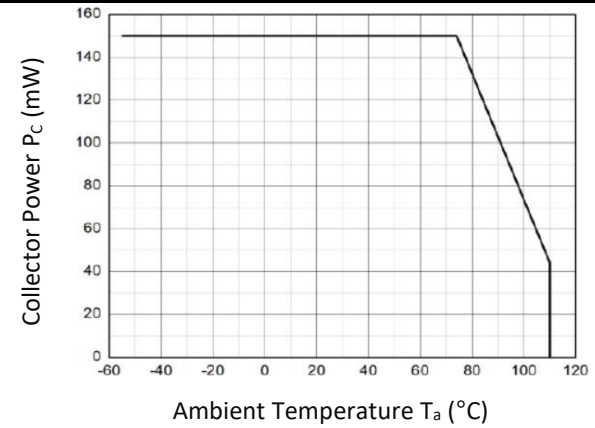
Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
INPUT							
Forward Voltage		V _F	---	---	1.4	V	I _F =10mA
Input Capacitance		C _{IN}	---	10	---	pF	V=0, f=1kHz
OUTPUT							
Collector Dark Current		I _{CEO}	---	---	100	nA	I _F =0mA, V _{CE} =20V
Collector - Emitter Breakdown Voltage		BV _{CEO}	80	---	---	V	I _C =0.1mA, I _F =0mA
Emitter - Collector Breakdown Voltage		BV _{ECO}	6	---	---	V	I _E =0.1mA, I _F =0mA
TRANSFER CHARACTERISTICS							
Current Transfer Rate	TD214	CTR	20	---	400	%	I _F =1mA, V _{CE} =5V
	TD214A		50	---	150		
	TD214B		80	---	400		
	TD214C		120	---	360		
CTR Symmetry		---	0.7	---	1.3	---	I _F =±1mA, V _{CE} =5V
Collector-Emitter Saturation Voltage		V _{CE(sat)}	---	0.07	0.2	V	I _F =20mA, I _C =1mA
Isolation Resistance		R _{ISO}	10^12	10^14	---	Ω	DC=500V, 40~60% R.H.
Floating Capacitance		C _{IO}	---	0.4	1	pF	V=0, f=1MHz
Response Time (Rise)		t _r	---	7	18	μs	V _{CE} =2V, I _C =2mA R _L =100Ω
Response Time (Fall)		t _f	---	9	18	μs	

CHARACTERISTIC CURVES:

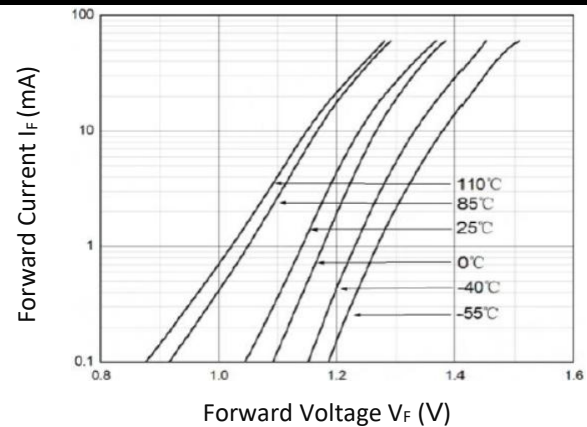
Forward Current v.s. Ambient Temperature



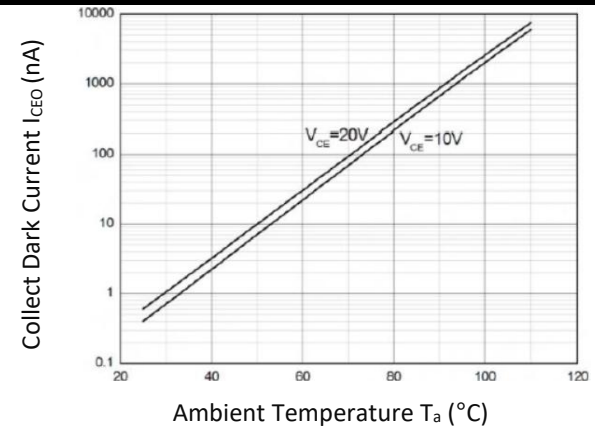
Collector Power Dissipation v.s. Ambient Temp.



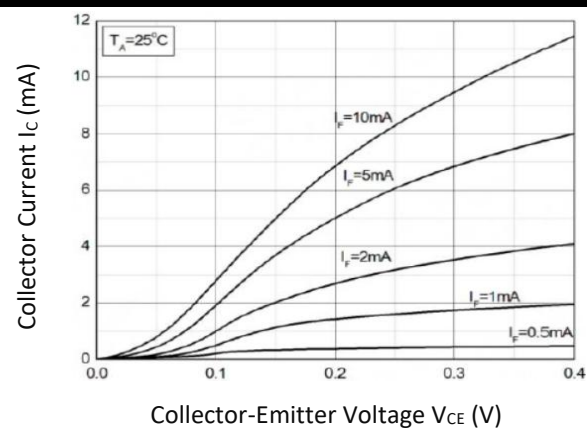
Forward Current v.s. Forward Voltage



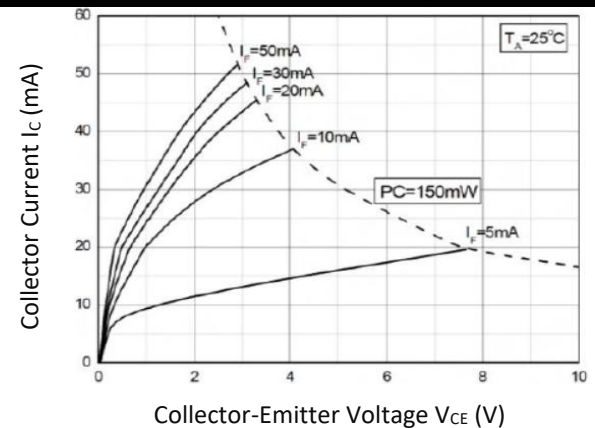
Collector Dark Current v.s. Ambient Temperature



Collector Current v.s. Collector-Emitter Voltage

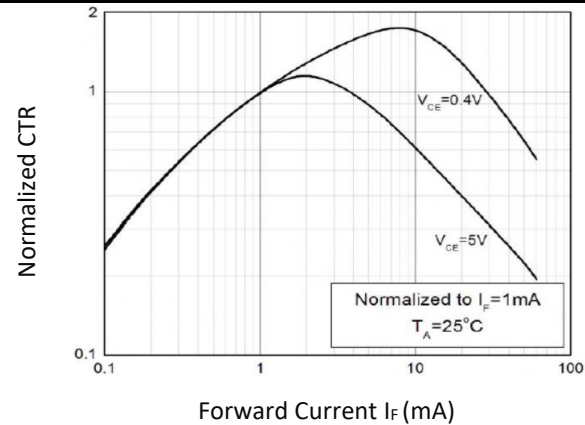


Collector Current v.s. Collector-Emitter Voltage

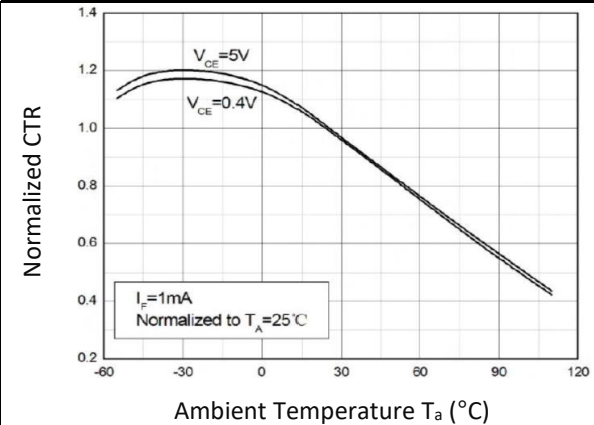


CHARACTERISTIC CURVES:

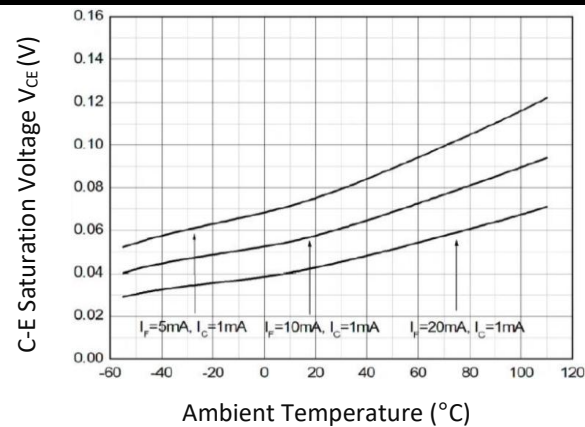
Normalized Current Transfer Ratio v.s. Forward Current



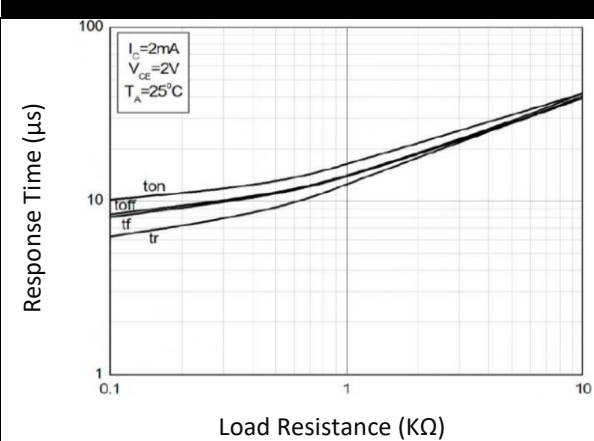
Normalized Current Transfer Ratio v.s. Ambient Temperature



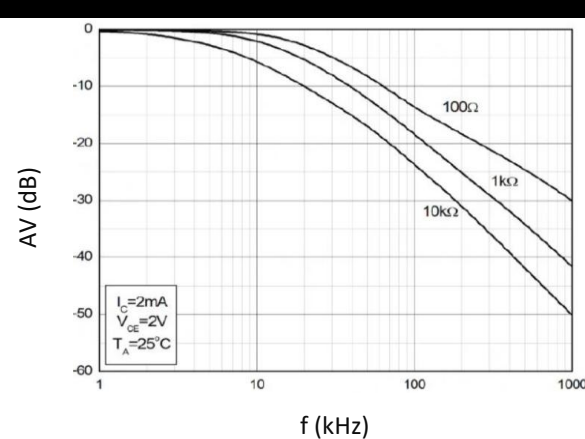
Collector-Emitter Saturation Voltage v.s. Ambient Temperature



Switching Time v.s. Load Resistance

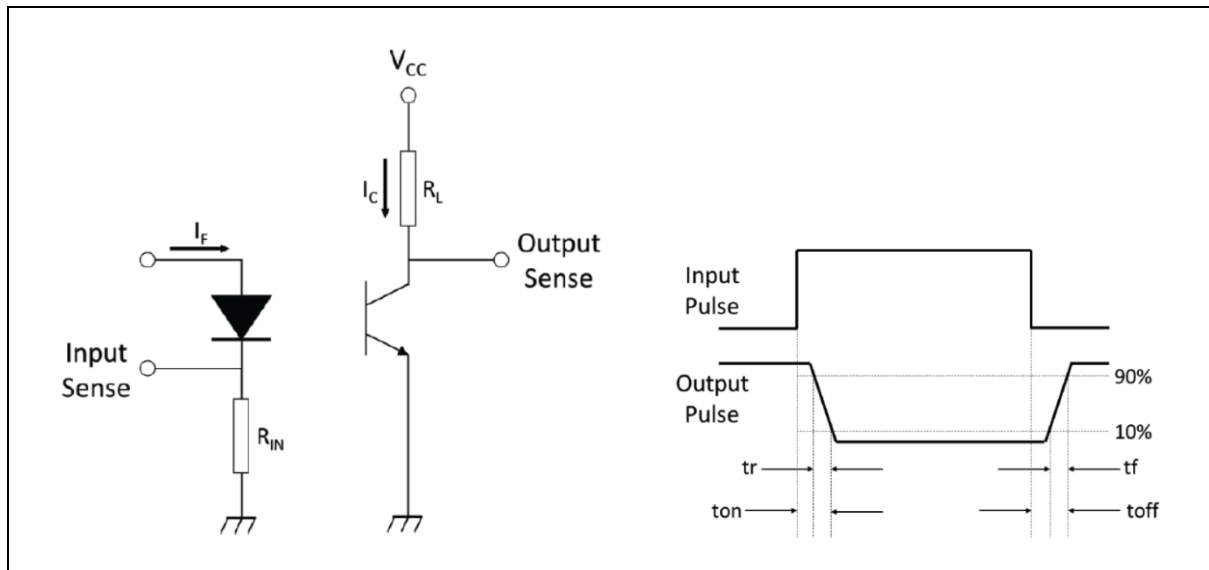


Frequency Response

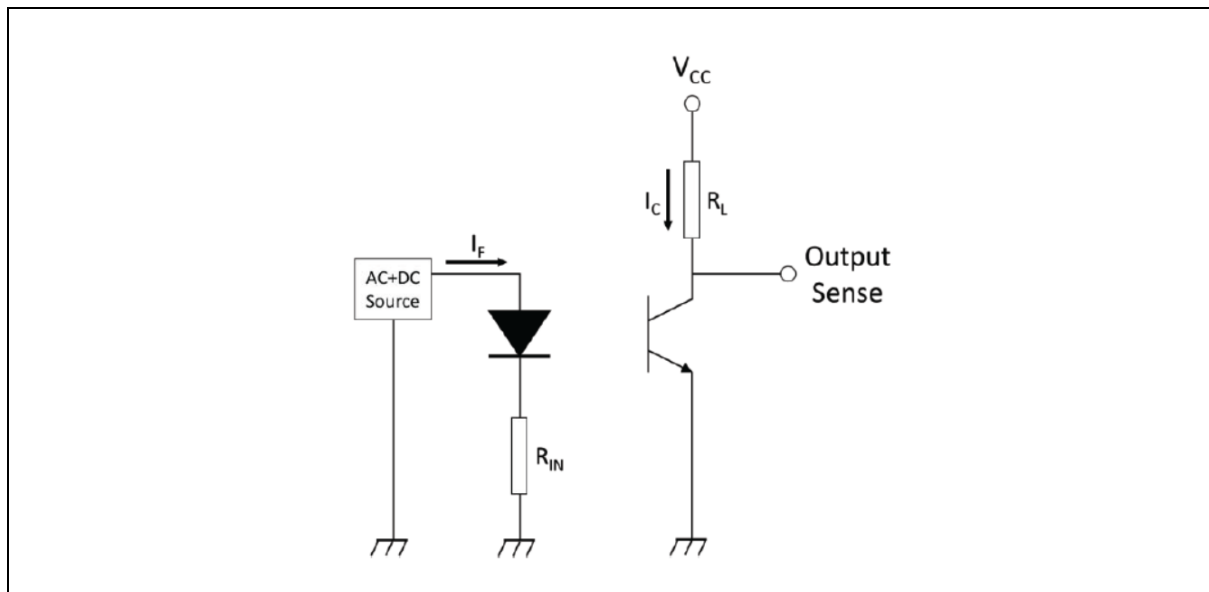


TEST CIRCUIT:

Test Circuit of Response Time:

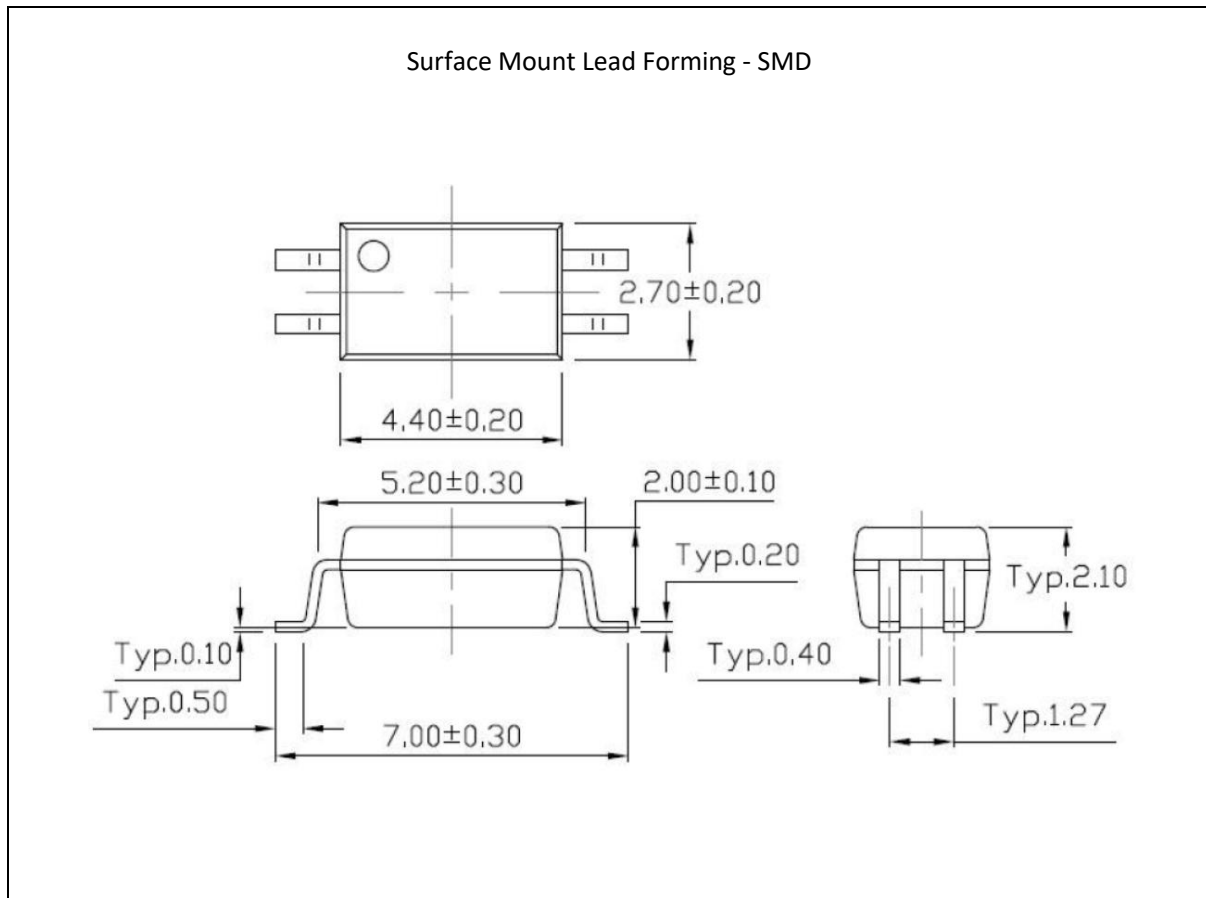


Test Circuit of Frequency Response:



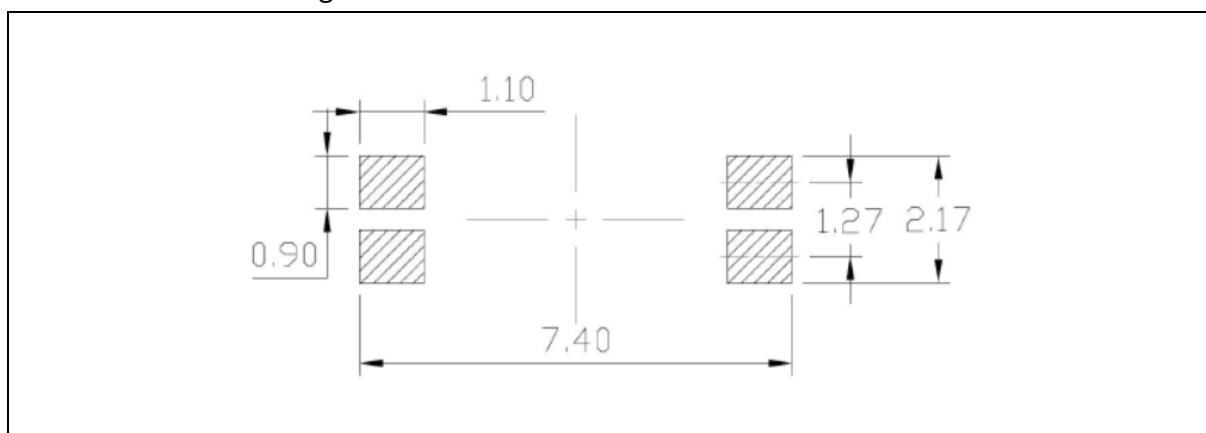
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).

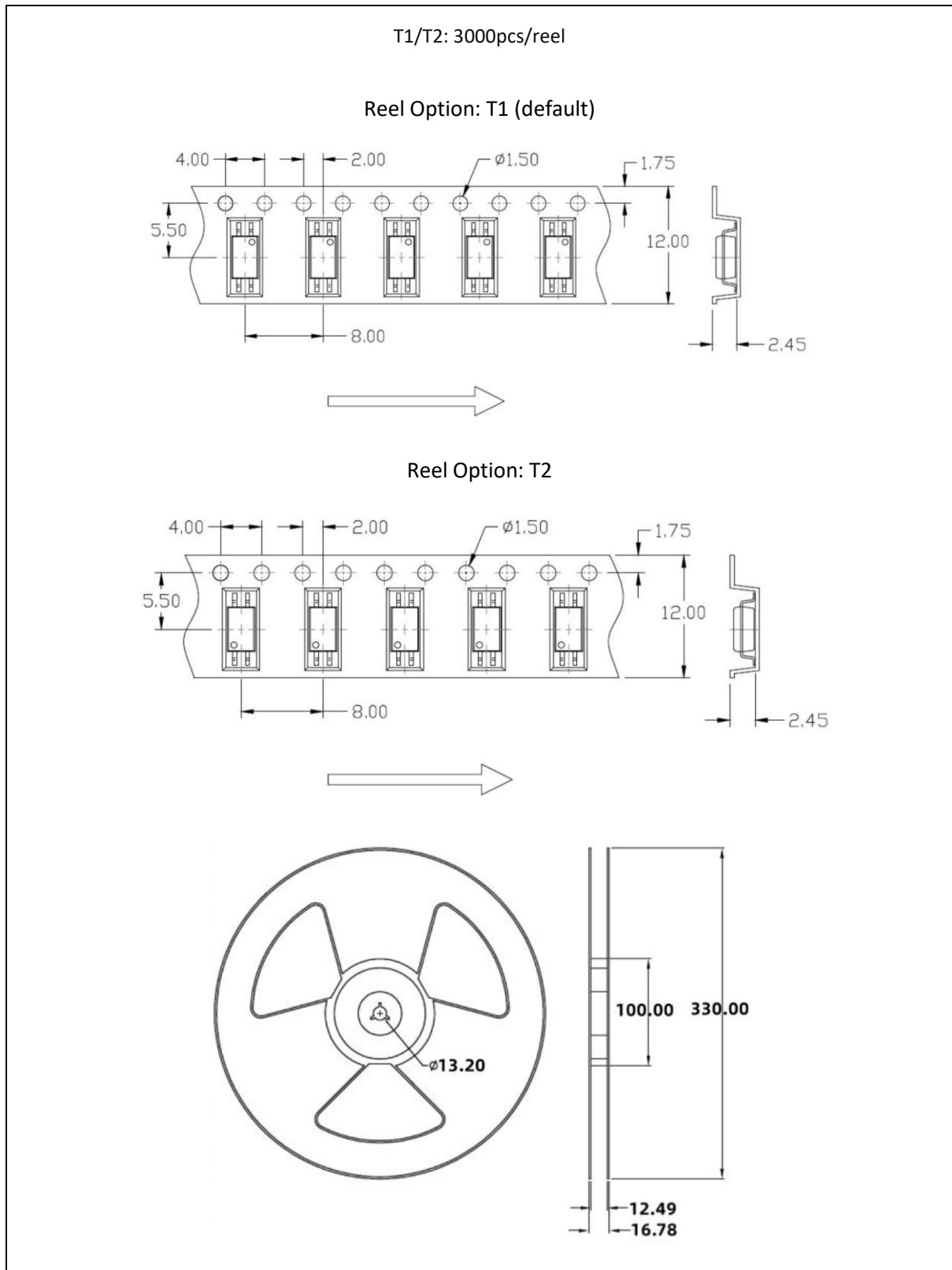
Recommended Soldering Mask:



1. Dimensions are in millimetre (mm).

PACKING SPECIFICATION:

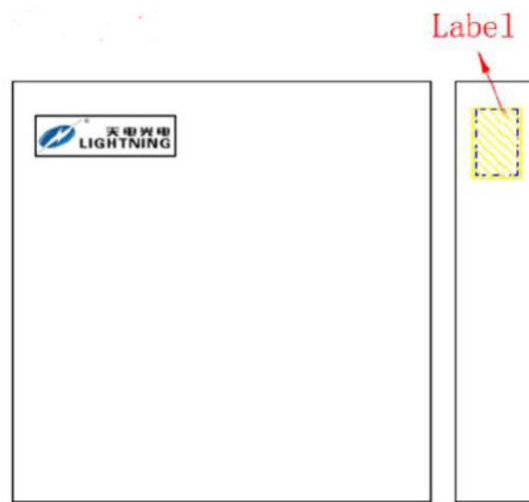
Reel Dimension:



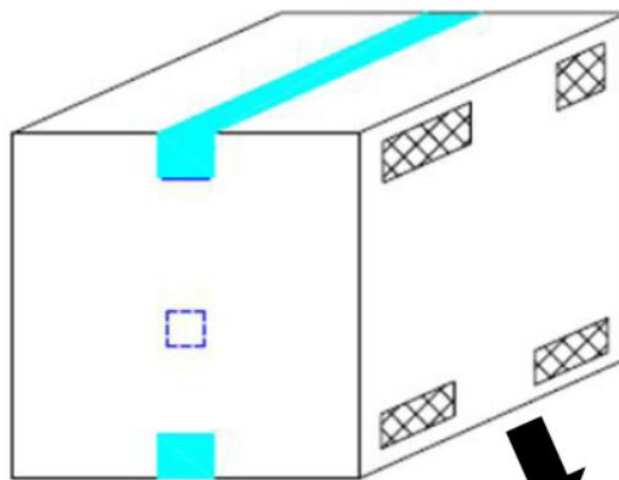
PACKING SPECIFICATION:

Box Dimension:

3 reel (9Kpcs)/inner box, 5 inner box (45Kpcs)/carton



- L x W x H = 36cm x 36cm x 6.9cm

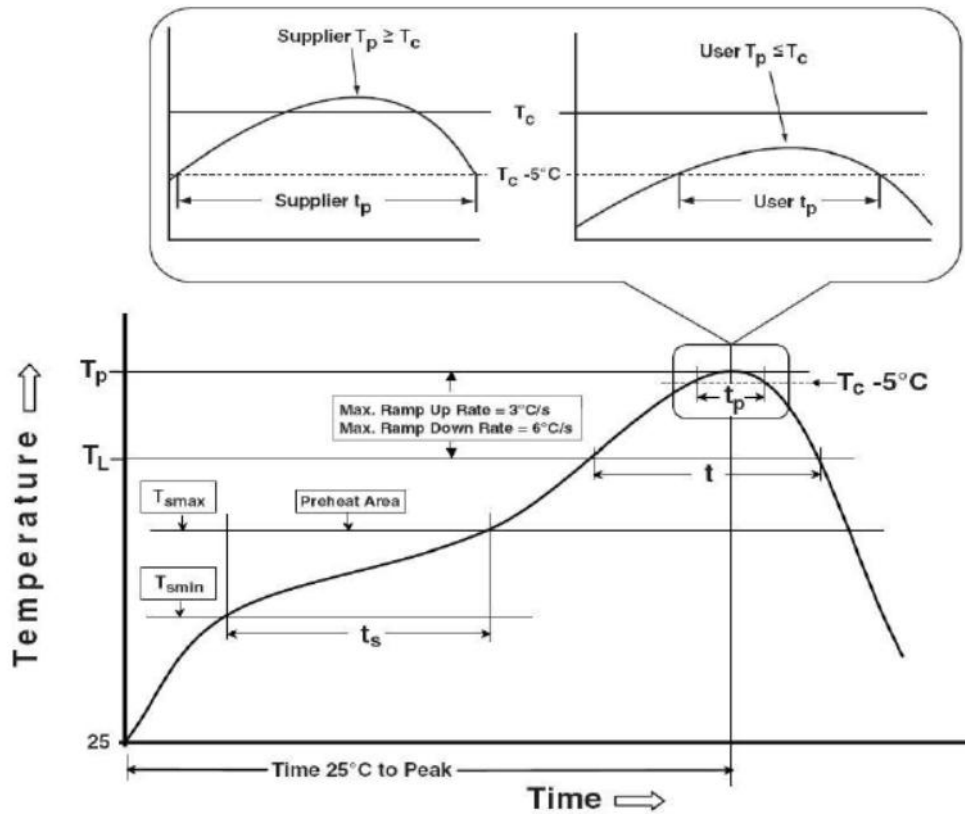


- L x W x H = 45cm x 38cm x 38cm



RECOMMENDED SOLDERING PROFILE:

Reflow Information:



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	100°C	150°C
Temperature Max. (T_{smax})	150°C	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.	3°C/second max.
Liquidous Temperature (T_L)	183°C	217°C
Time (t_L) Maintained Above (T_L)	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (t_P) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max.	6°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.