



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten Up The World With LED!*



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

## PRODUCT DATASHEET



- ▶ DC Input Photo Coupler
- ▶ Standard DIP8
- ▶ Photo Transistor

# TD827-GV(B)



Release Date: 13 December 2024 Version: A00



## TD827(B) Series



### DESCRIPTION:

The TD827(B) series provide two channel operation, and each combines an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic DIP8 package with different lead forming options.

With the robust coplanar double mold structure, TD827(B) series provide the most stable isolation feature.

### FEATURES:

- High isolation 5000 Vrms
- DC 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

### APPLICATIONS:

- Computer peripheral interface
- Microprocessor system interface



Partner with: LIGHTNING

## NAMING & ORDERING INFORMATION:

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Naming Information:

<b>TD827 - G V (B)</b>	
<b>TD827</b>	Part Number
<b>G</b>	Green Option
<b>V</b>	VDE Option
<b>B</b>	Black Housing

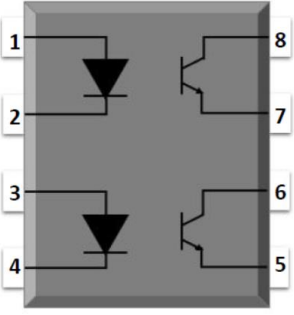
Ordering Information:

<b>TD827-GV(B)</b>						
Part Number	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
TD827-GV(B)	CTR	130	---	400	%	I <sub>F</sub> =5mA, V <sub>CE</sub> =5V

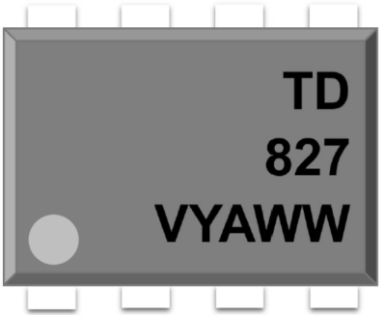
Version No.	Original Release Date
Rev: A00	29/08/2024

## SCHEMATIC DIAGRAM & MARKING:

Schematic Diagram:

	PIN Definition	
	1	Anode
	2	Cathode
	3	Anode
	4	Cathode
	5	Emitter
	6	Collector
	7	Emitter
	8	Collector

Marking Information:

	Marking Definition	
	TD	Manufacturer Code
	827	Part Number
	V	VDE Applicable
	Y	Fiscal Year
	A	Manufacturing Code
	WW	Work Week

Labelling Information:

	<p>This product is manufactured, tested, and packed by</p> 
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## ABSOLUTE CHARACTERISTICS:

### Absolute Maximum Ratings:

Parameter	Symbol	Ratings	Unit
INPUT			
Forward Current	$I_F$	60	mA
Peak Forward Current	$I_{FP}$	1 * <sup>1</sup>	A
Reverse Voltage	$V_R$	6	V
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	$V_{iso}$	5000 * <sup>2</sup>	V <sub>rms</sub>
Operating Temperature	$T_{opr}$	-55~+110	°C
Storage Temperature	$T_{stg}$	-55~+125	°C
Soldering Temperature	$T_{sol}$	260 * <sup>3</sup>	°C

\*1. 100µs pulse, 100Hz frequency

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

\*3. For 10 seconds max.

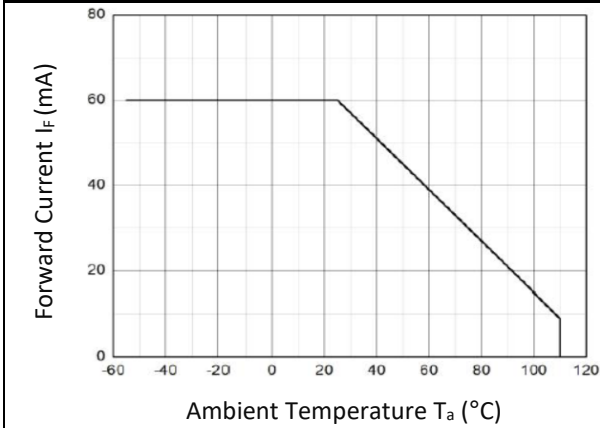
## ELECTRICAL CHARACTERISTICS:

Electrical Optical Characteristics at Ta=25°C:

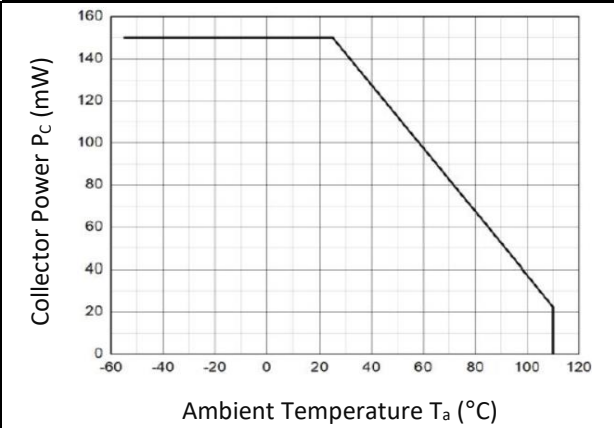
Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
<b>INPUT</b>						
Forward Voltage	V <sub>F</sub>	---	1.24	1.4	V	I <sub>F</sub> =10mA
Reverse Current	I <sub>R</sub>	---	---	10	μA	V <sub>R</sub> =6V
Input Capacitance	C <sub>IN</sub>	---	10	---	pF	V=0, f=1kHz
<b>OUTPUT</b>						
Collector Dark Current	I <sub>CEO</sub>	---	---	100	nA	I <sub>F</sub> =0mA, V <sub>CE</sub> =20V
Collector - Emitter Breakdown Voltage	BV <sub>CEO</sub>	80	---	---	V	I <sub>C</sub> =0.1mA, I <sub>F</sub> =0mA
Emitter - Collector Breakdown Voltage	BV <sub>ECO</sub>	6	---	---	V	I <sub>E</sub> =0.1mA, I <sub>F</sub> =0mA
<b>TRANSFER CHARACTERISTICS</b>						
Current Transfer Rate	TD827	CTR	130	---	400	% I <sub>F</sub> =5mA, V <sub>CE</sub> =5V
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	---	0.06	0.2	V I <sub>F</sub> =20mA, I <sub>C</sub> =1mA
Isolation Resistance		R <sub>ISO</sub>	10 <sup>12</sup>	10 <sup>14</sup>	---	Ω DC=500V, 40~60% R.H.
Floating Capacitance		C <sub>IO</sub>	---	0.4	1	pF V=0, f=1MHz
Response Time (Rise)		t <sub>r</sub>	---	3	18	μs V <sub>CE</sub> =2V, I <sub>C</sub> =2mA R <sub>L</sub> =100Ω
Response Time (Fall)		t <sub>f</sub>	---	4	18	μs
Cut-off Frequency		f <sub>c</sub>	---	80	---	kHz V <sub>CE</sub> =2V, I <sub>C</sub> =2mA R <sub>L</sub> =100Ω, -3dB

### CHARACTERISTIC CURVES:

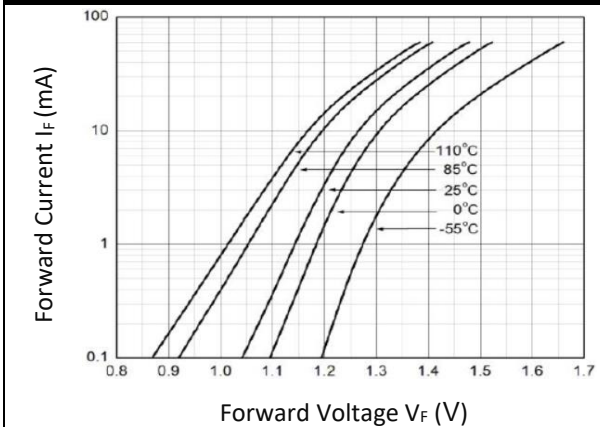
Forward Current v.s. Ambient Temperature



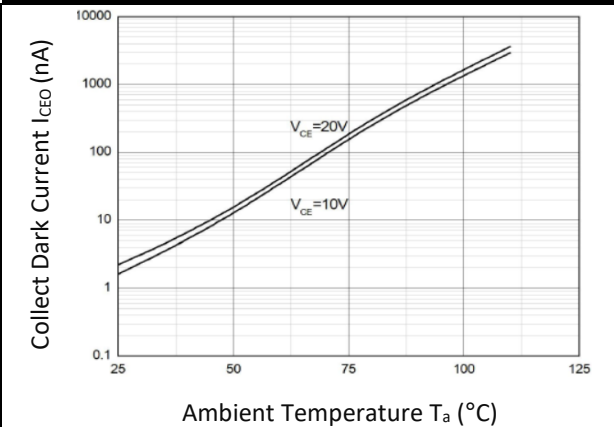
Collector Power Dissipation v.s. Ambient Temp.



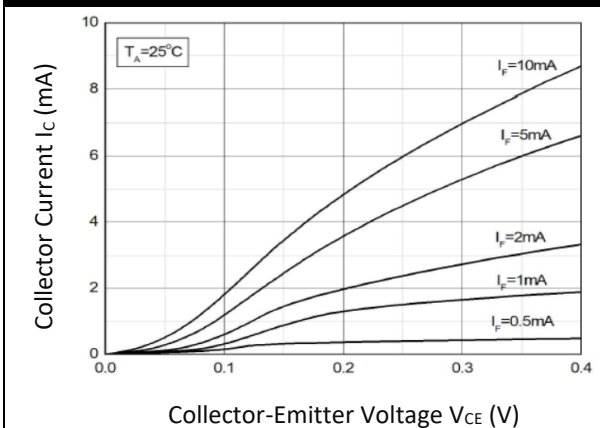
Forward Current v.s. Forward Voltage



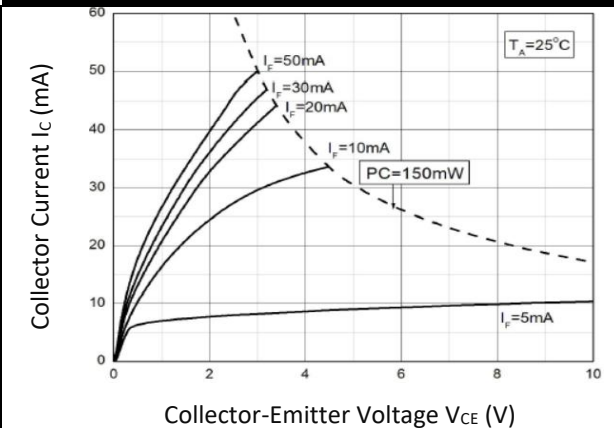
Collector Dark Current v.s. Ambient Temperature



Collector Current v.s. Collector-Emitter Voltage

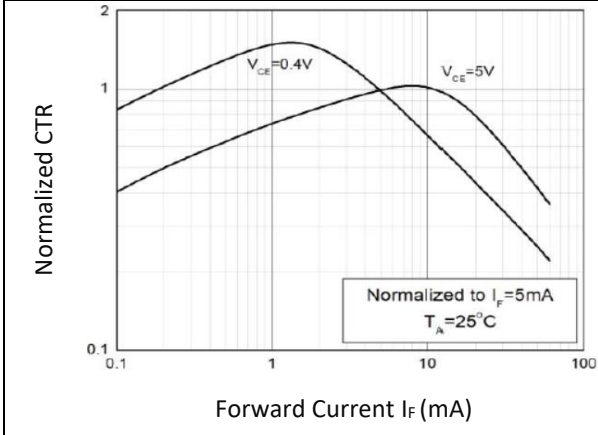


Collector Current v.s. Collector-Emitter Voltage

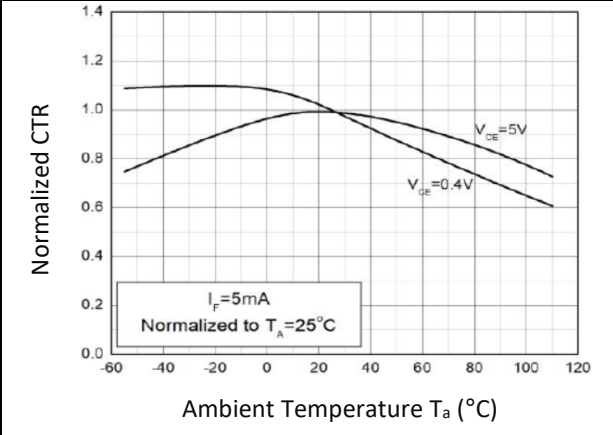


## CHARACTERISTIC CURVES:

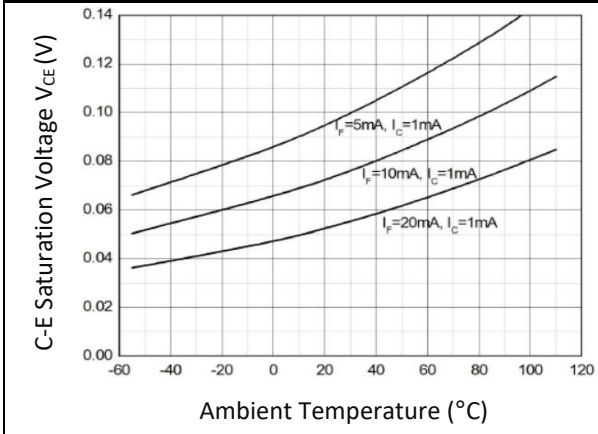
Normalized Current Transfer Ratio v.s. Forward Current



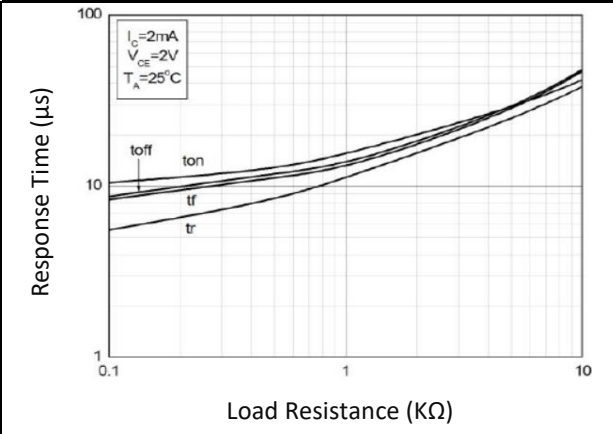
Normalized Current Transfer Ratio v.s. Ambient Temperature



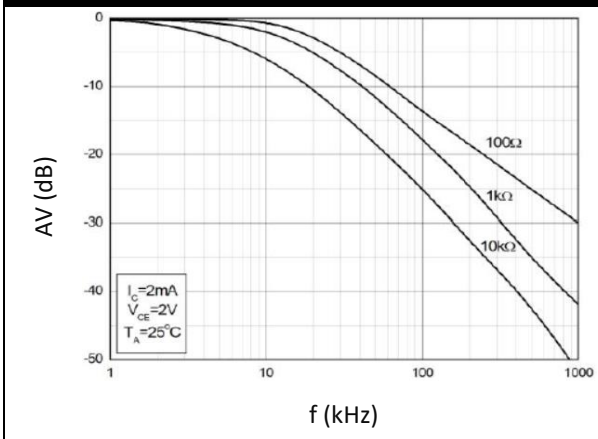
Collector-Emitter Saturation Voltage v.s. Ambient Temperature



Switching Time v.s. Load Resistance

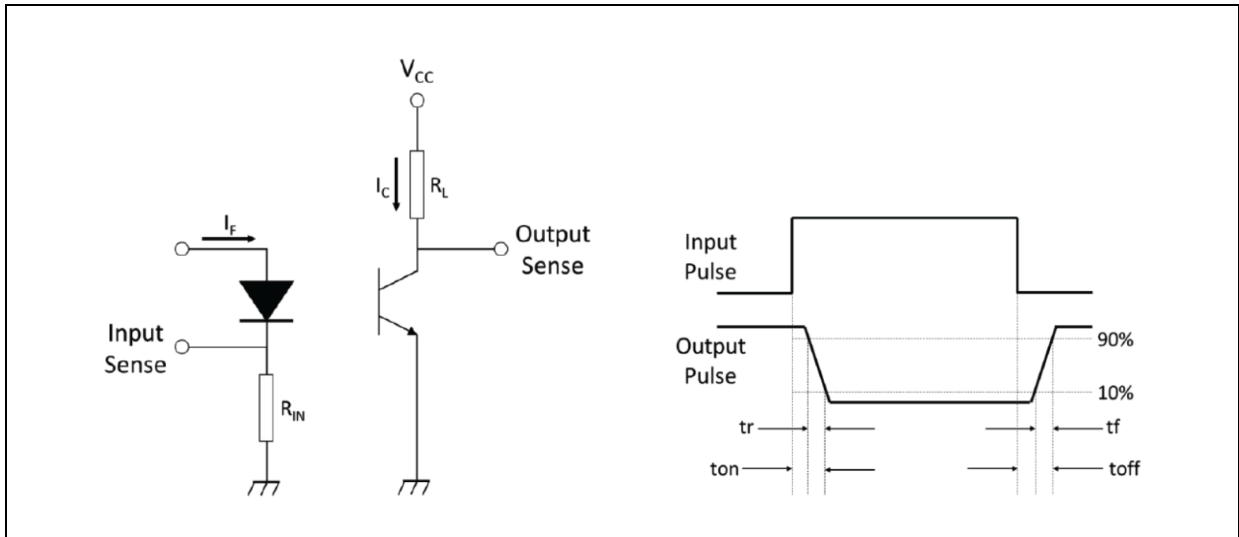


Frequency Response

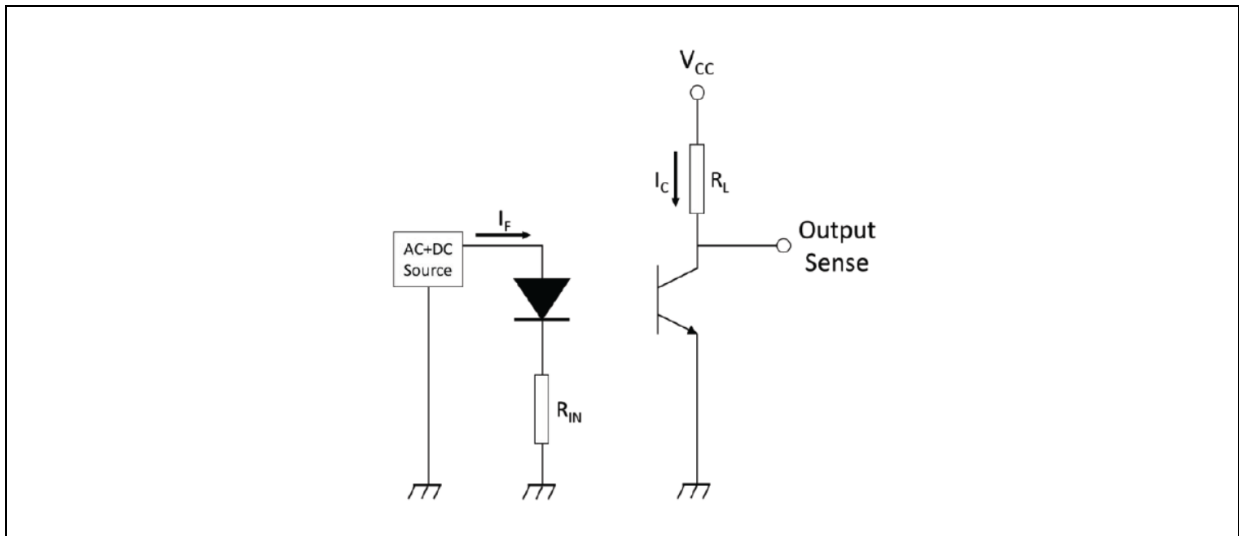


## TEST CIRCUIT:

### Test Circuit of Response Time:



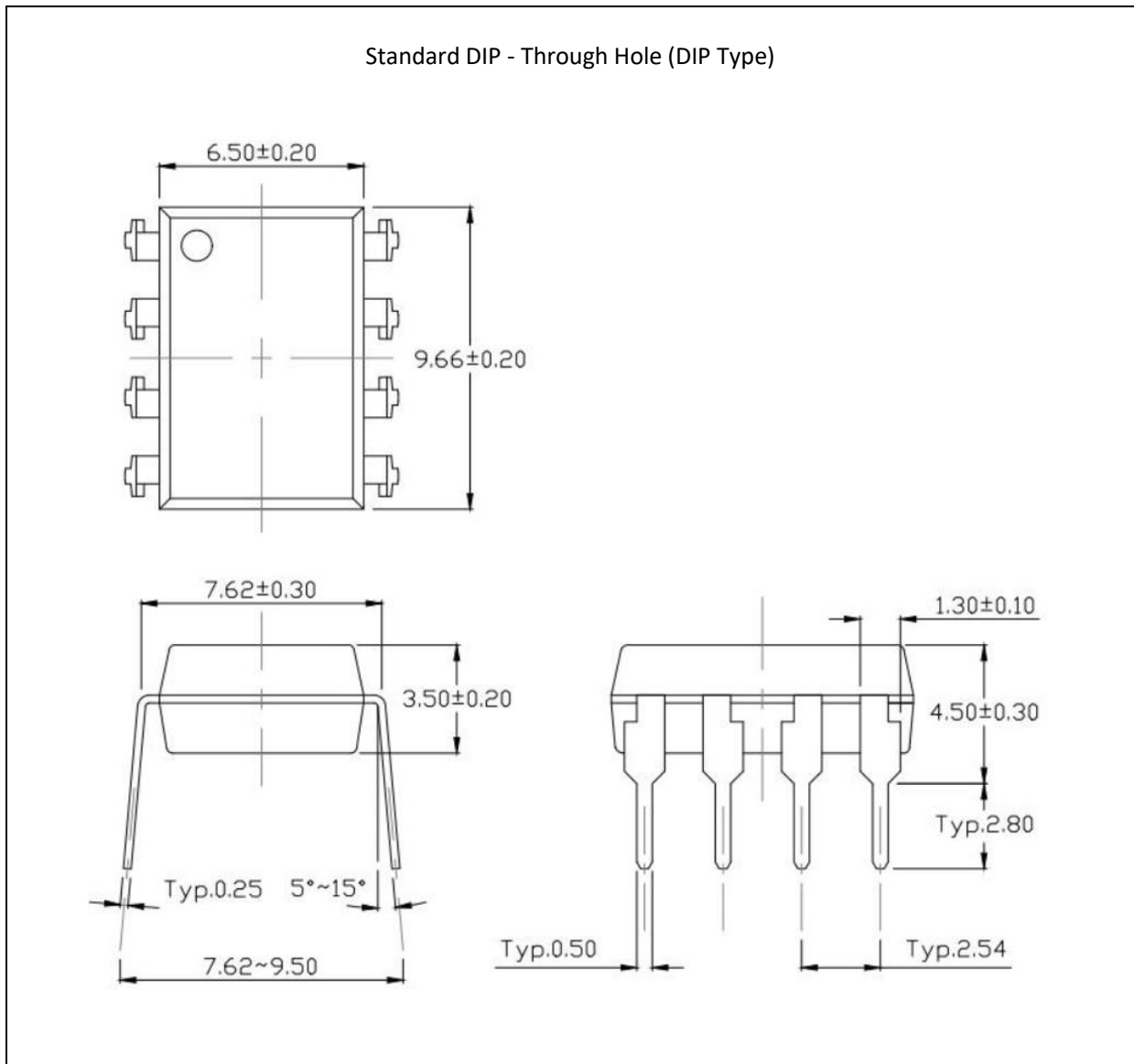
### Test Circuit of Frequency Response:





## OUTLINE DIMENSION:

Package Dimension:

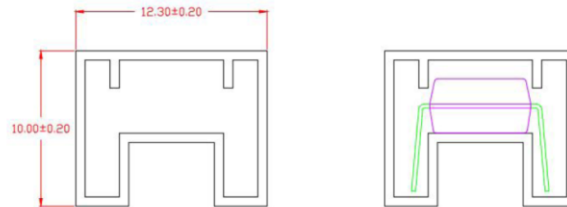


1. All dimensions are in millimetre (mm).

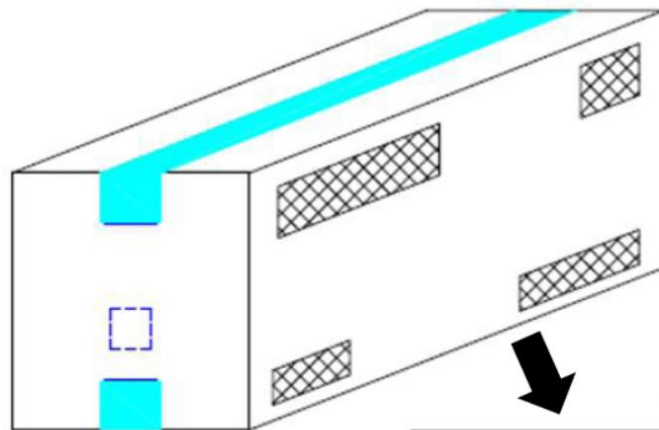
**PACKING SPECIFICATION:**

Tube Dimension:

45pcs/tube, 32 tube/inner box, 10 inner box (14.4Kpcs)/carton



● L x W x H = 52.5cm x 10.7cm x 4.7cm

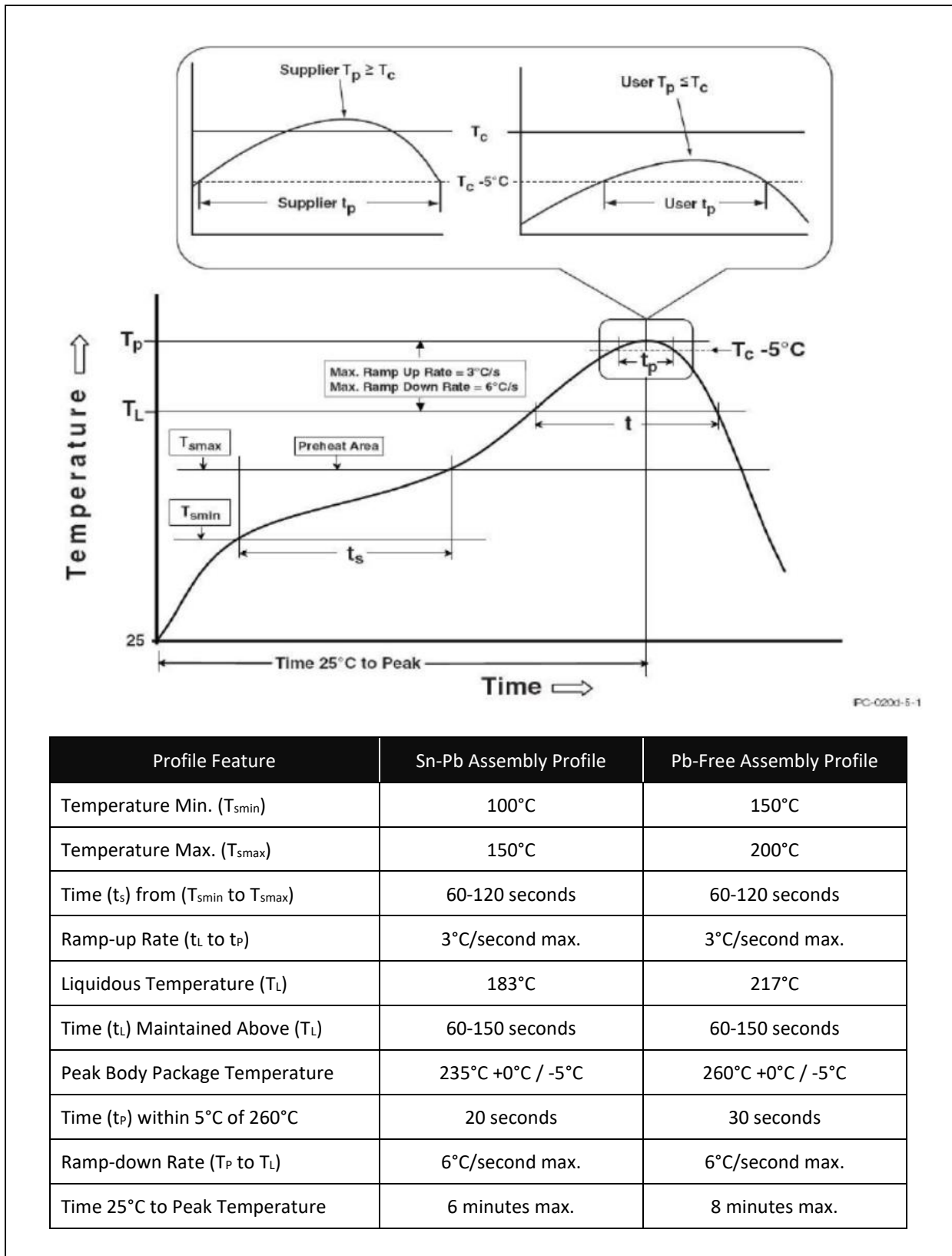


● L x W x H = 53.5cm x 23.5cm x 25.5cm

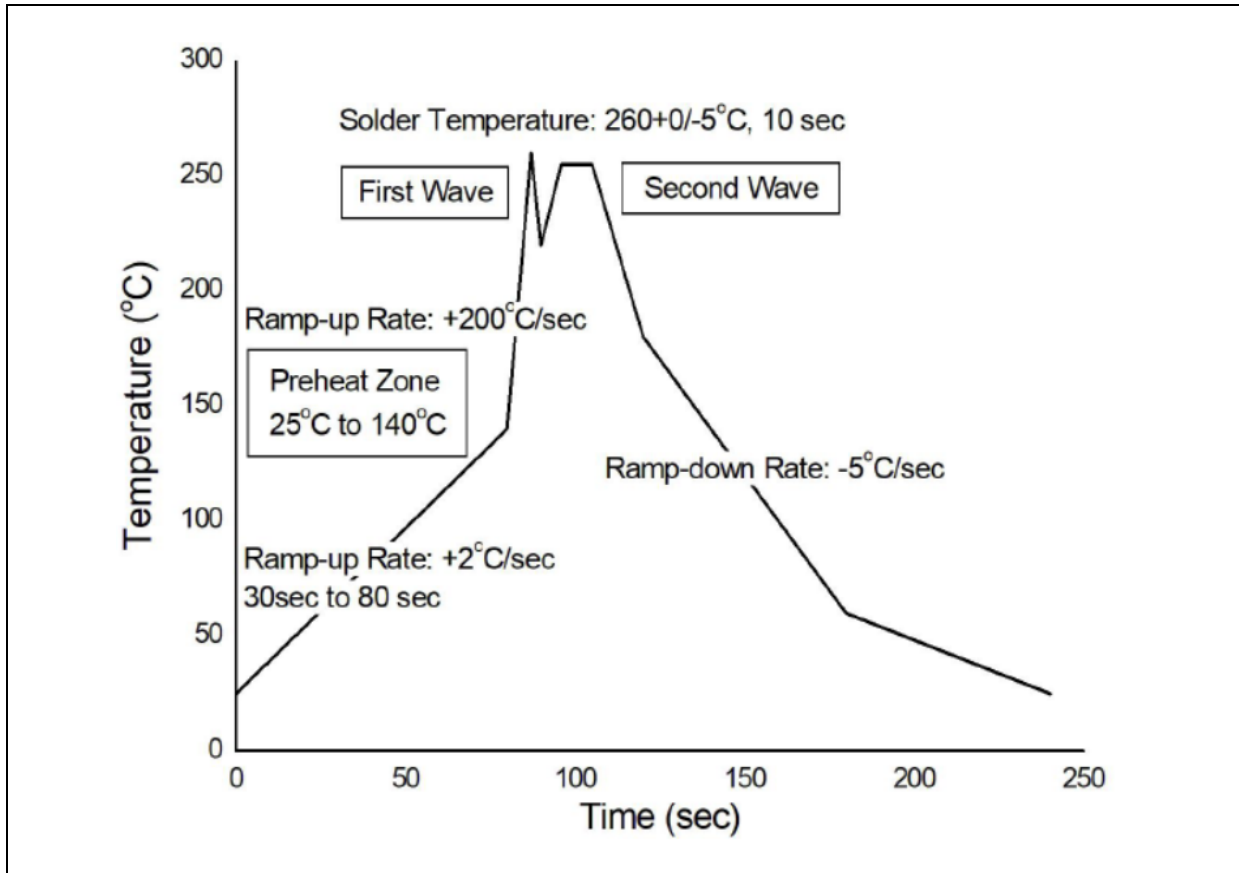


## RECOMMENDED SOLDERING PROFILE:

Reflow Information:



Wave Soldering (JESD22-A111 Compliant):



Hand Soldering:

Soldering Temperature	$380\pm 5^{\circ}\text{C}$
Soldering Time	3 sec max.

Note:

- One time soldering is recommended for all soldering methods.
- Do not solder more than three times for IR reflow soldering.