TR2DfTRF4-BS01-RTA

SMD Reflective Type OPTO INTERRUPTER

Description

TheTR2DfTRF4-BS01-RTA is a light reflection switch which includes a GaAs IR-LED Transmitter and a NPN photo-transistor with a high photosensitive receiver for short distance，operating in the infrared range.Both components are mounted side-by-side in a plastic package.

Features

- Fast response time
- High sensitivity
- Cut-Off visible wavelength
- Thin
- Compact

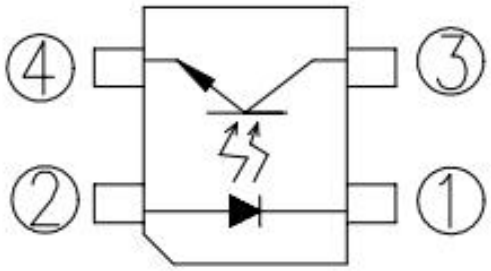
Applications

- Camera
- VCR
- Floppy disk driver
- Cassette type recorder
- Various microcomputer control equipment

Device Selection Guide

Device No.	Chip Material
IR	GaAs
PT	Silicon

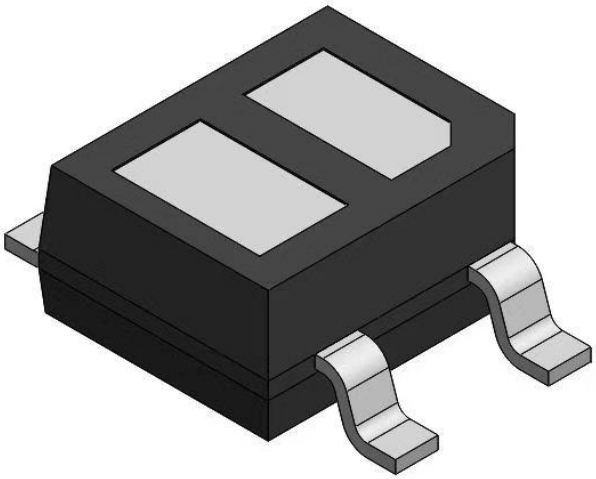
Package Outline



PIN DEFINITION

1. Cathode
2. Anode
3. Collector
4. Emitter

PACKAGE OUTLINE



TR2DfTRF4-BS01-RTA

SMD Reflective Type OPTO INTERRUPTER

Absolute Maximum Rating TA=25⁰C					
Parameters		***Symbol***	***Ratings***	***Units***	***Notes***
Input	Power Dissipation at（or below）25℃ Free Air temperature	Pd	75	mW	
	Reverse Voltage	V_R	5	v	
	Forward Current	I_F	50	mA	
	Peak Forward Current * Pulse width ≤100us，Duty cycle=1%	I_{FP}	1	A	1
Output	Collector Power Dissipation	Pc	75	mW	
	Collector Current	I_C	50	mA	
	Collector -Emitter Voltage	BV_{CEO}	30	V	
	Emitter-Collector Voltage	BV_{ECO}	5	V	
Operating Temperature		T_{opr}	-20~+70	℃	
Storage Temperature		T_{stg}	-30~+80	℃	
Lead Soldering Temperature *		T_{sol}	260	℃	2

*Remark：

1. tw = 100 u sec ， T=10 m sec
2. T=5 sec

Optical Characteristics TA = 25°C								
Parameters		***Test Conditions***	***Symbol***	***Min***	***Typ***	***Max***	***Units***	***Notes***
Input	Forward Voltage	I_F=20mA	V_F	-	1.2	1.6	V	
	Reverse Current	V_R=5V	I_R	-	-	10	uA	
	Peak Wavelength	---	λ_P	-	940	-	nm	
Output	Dark Current	V_{CE}=10V	I_{CEO}	-	-	100	nA	
	C-E Saturation Voltage	I_F=10mA Ic=20uA	$V_{CE(sat)}$	-	-	0.4	V	
Transfer Characteristics	Light Current（I_C(ON)）	V_{CE}=5V I_F=10mA	NA	180	-	440	uA	
			B1 Bin	180	-	250	uA	
			B2 Bin	230	-	300	uA	
			B Bin	180	-	300	uA	
			C Bin	250	-	440	uA	
	Leakage Current	V_{CE}=5V,I_F=0mA	I_{CEOD}	-	-	1	dge	
	Rise time	V_{CE}=2mA、I_C=100uA R_L=1KΩ	t_r	-	20	-	uSec	
	Fall time		t_f	-	20	-	uSec	

CHARACTERISTIC CURVES FOR IR

Fig.1 Forward Current vs. Ambient Temperature

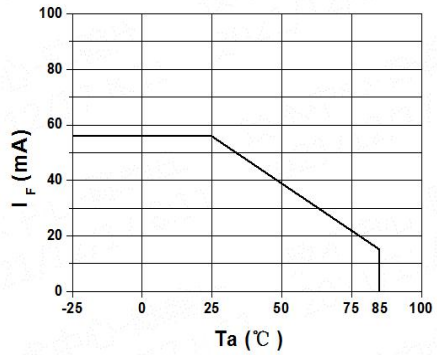


Fig.2 Spectral Distribution

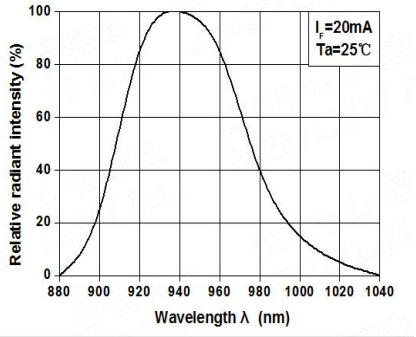


Fig.3 . Forward Voltage vs.Ambient Temperature

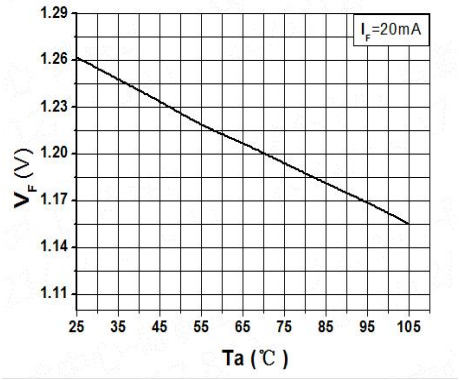


Fig.4 Forward Current vs. Forward Voltage

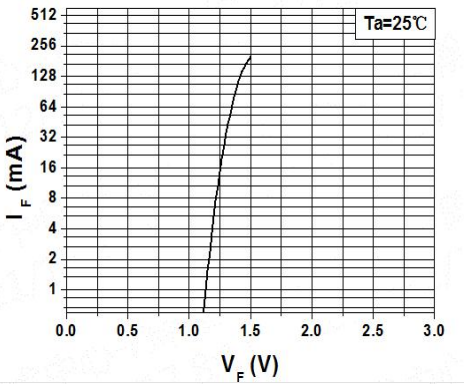
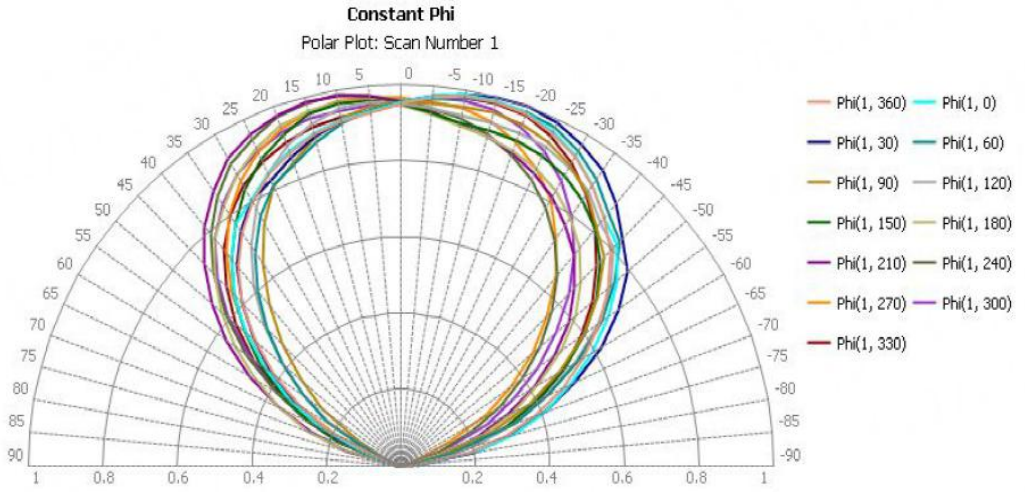


Fig.5 Relative Radiant Intensity vs. Angular Displacement



CHARACTERISTIC CURVES FOR PT

Fig.6 Collector Power Dissipation vs. Ambient Temperature

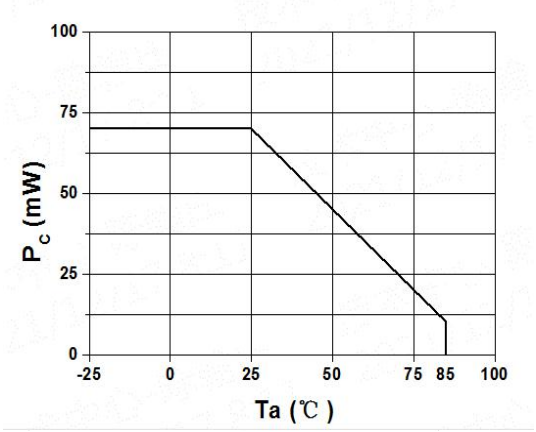


Fig.7 Collector Dark Current vs. Ambient Temperature

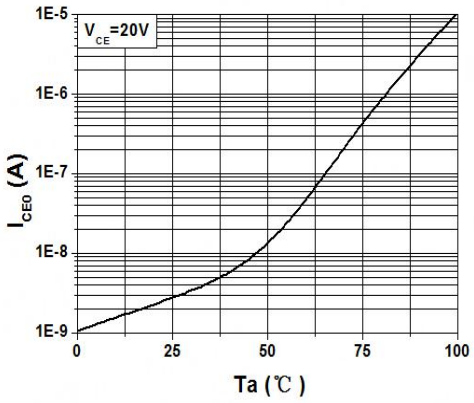


Fig.8 Current transfer ratio vs. Ambient Temperature

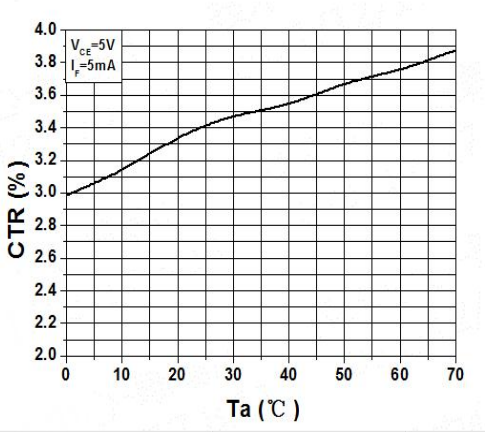


Fig.9 Collector Current vs. Irradiance

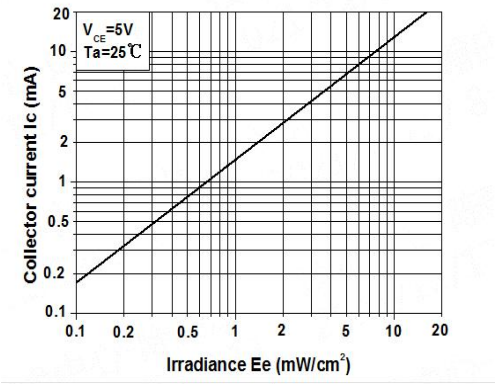


Fig.10 Spectral Sensitivity

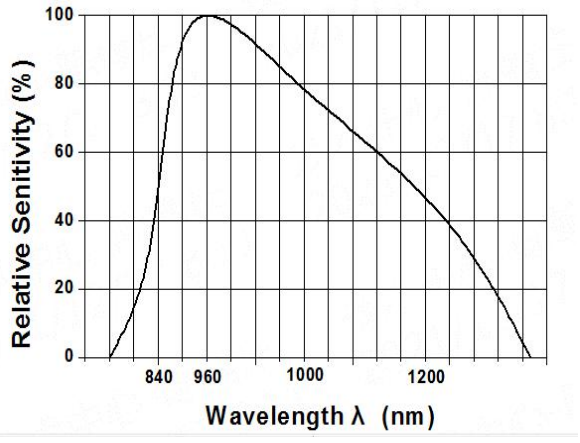
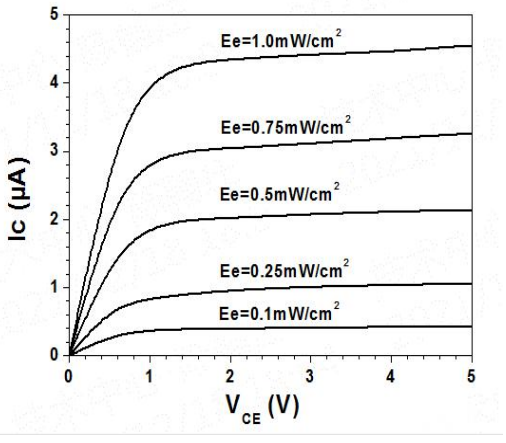
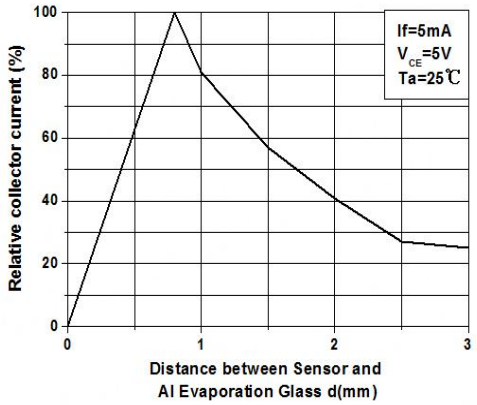


Fig.11 Collector Current vs. Collector-Emitter Voltage



TEST CIRCUITS FOR ITR

Fig.12 Relative Collector Current vs. Distance between Sensor and AL Evaporation Glass



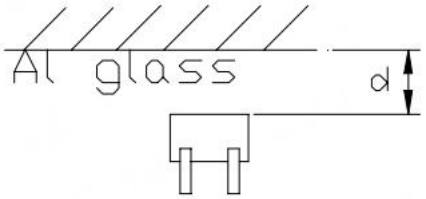
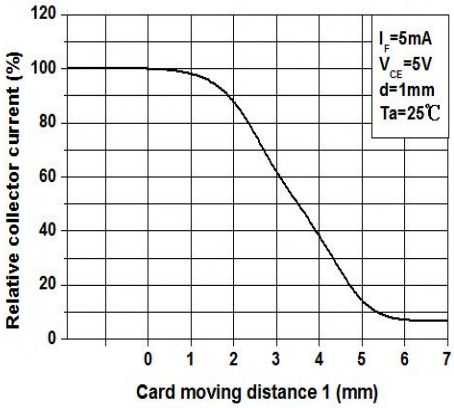


Fig.13 Relative Collector Current vs. Card Moving Distance



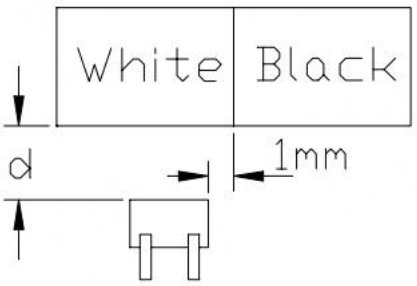
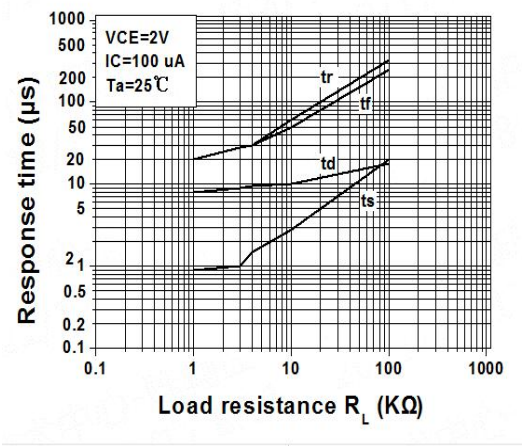
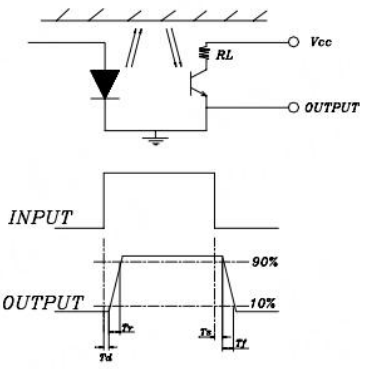


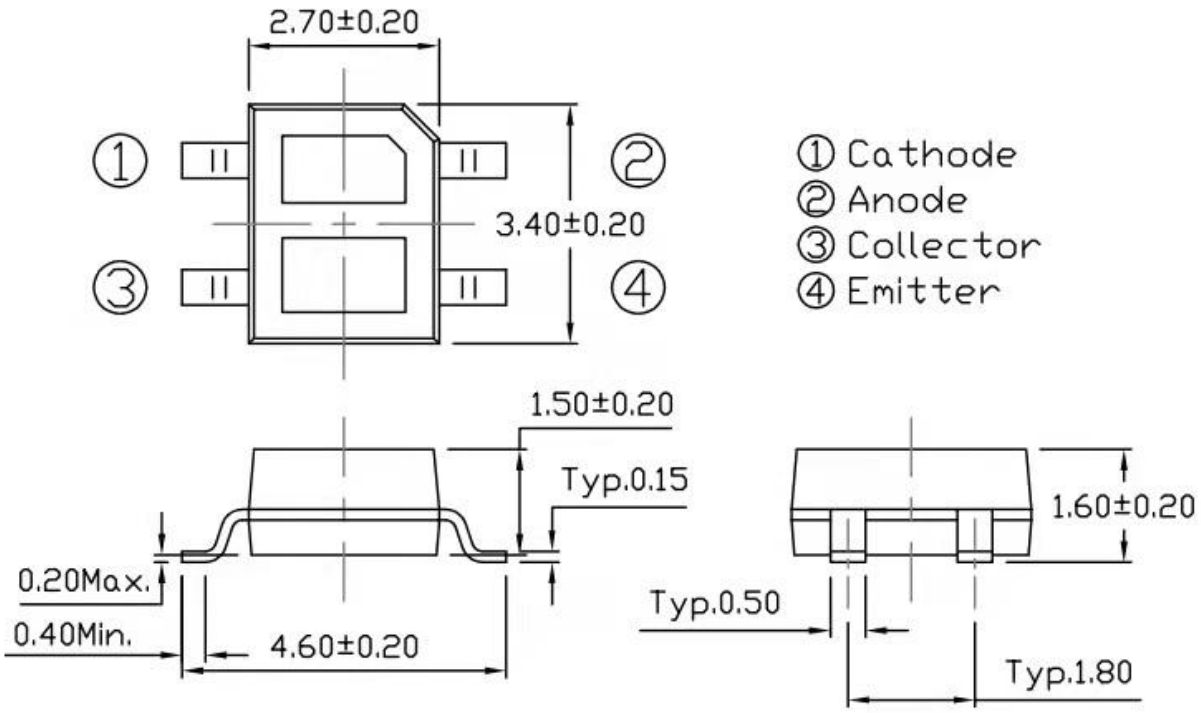
Fig.14 Response Time vs. Load Resistance



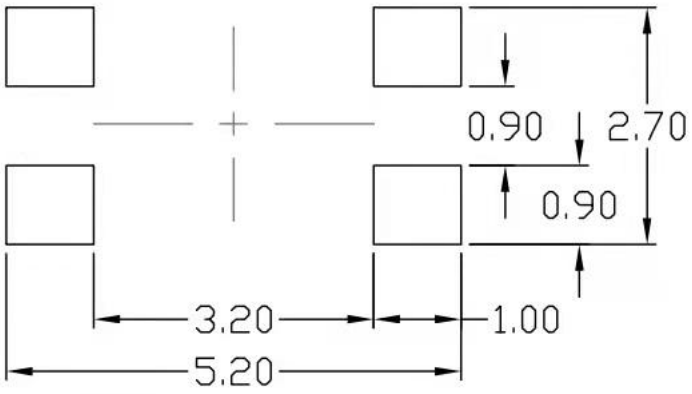


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

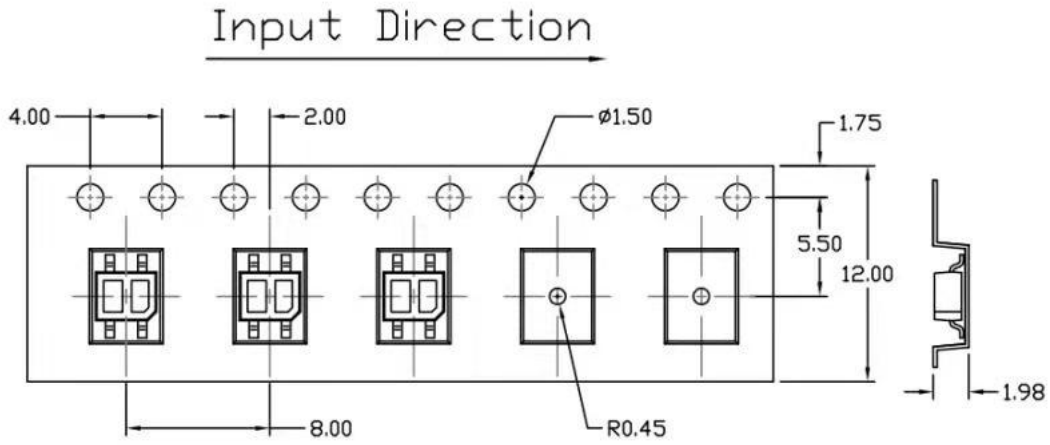
SMD Type



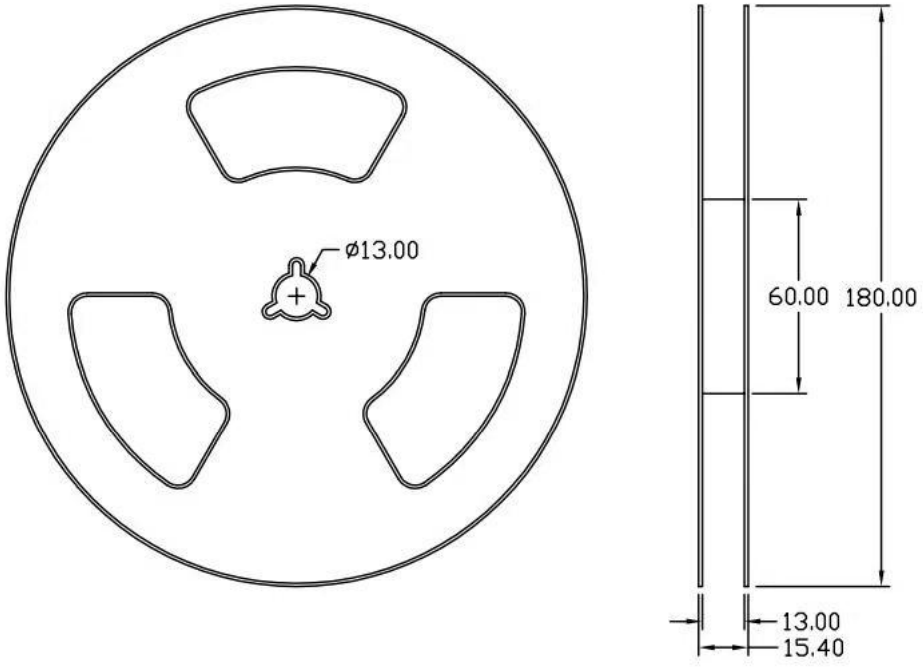
RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



Tape Dimension (Dimensions in mm unless otherwise stated)



REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

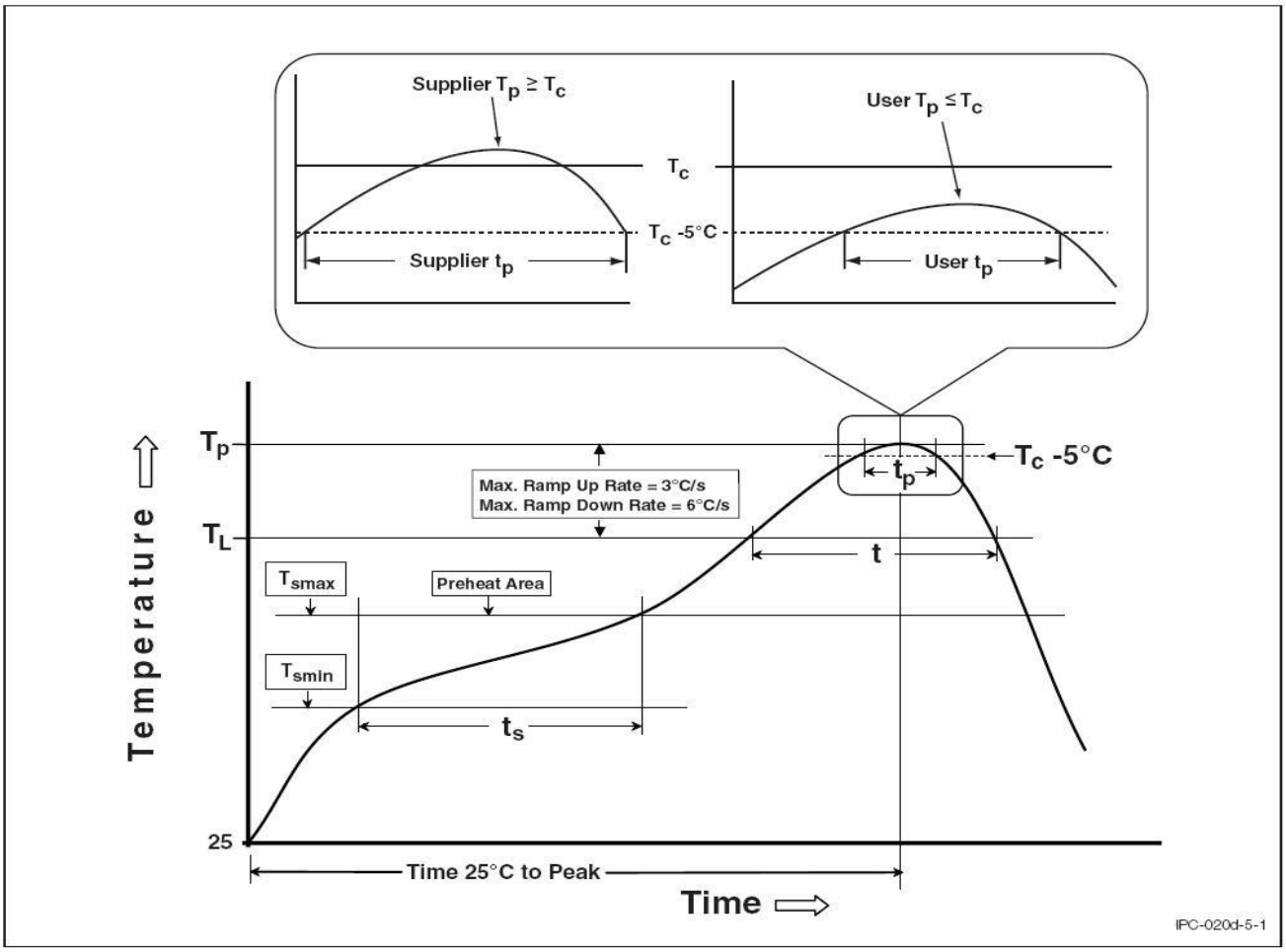


Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity – Outer box
None	3000 Units/Reel	10Reels/Inner box	6 Inner box/Outer box = 180k Units

REFLOW INFORMATION

REFLOW PROFILE



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

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