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TR2DfTRF4-BS01-RTA

SMD Reflective Type OPTO INTERRUPTER

产品承认书

型号

ITR 2835

料号

TR2DfTRF4-BS01-RTA

客户名称

日期

2023 / April

版本

01

天电			客户		
业务	市场	研发	研发/工程	审核	核准

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Description

The TR2DfTRF4-BS01-RWR 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

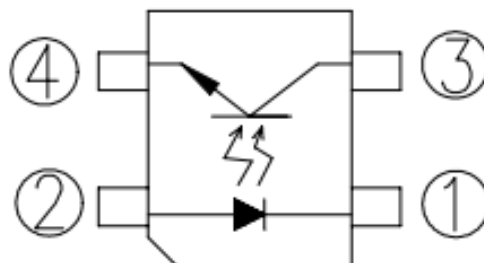
Applications

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

Device Selection Guide

Device No.	Chip Material
IR	GaAs
PT	Silicon

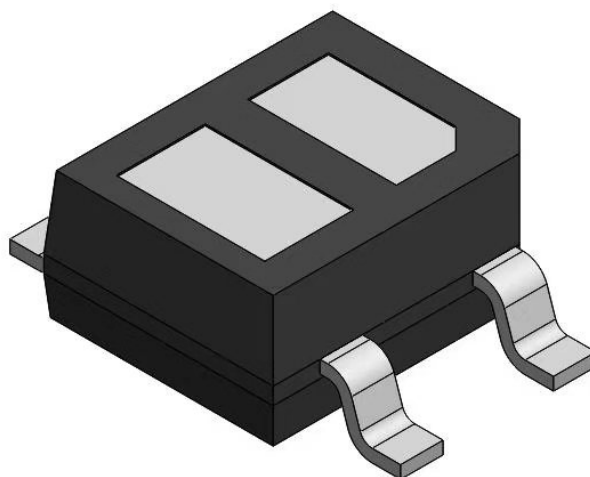
Package Outline



PIN DEFINITION

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

PACKAGE OUTLINE





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Absolute Maximum Rating TA=25°C

Parameters		Symbol	Ratings	Units	Notes
Input	Power Dissipation at (or below) 25°C Free Air temperature	Pd	75	mW	
	Reverse Voltage	V _R	5	v	
	Forward Current	I _F	50	mA	
Output	Collector Power Dissipation	P _C	75	mW	
	Collector Current	I _C	50	mA	
	Collector -Emitter Voltage	BV _{CEO}	70	V	
	Emitter-Collector Voltage	BV _{ECO}	6	V	
Operating Temperature		T _{opr}	-20~+85	°C	
Storage Temperature		T _{stg}	-40~+85	°C	
Lead Soldering Temperature *		T _{sol}	260	°C	1

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 _C =2mA Ee=1mW/cm	V _{CE(sat)}		-	-	0.4	V	
Transfer Characteristics	Light Current (I _{C(ON)})	V _{CE} =5V I _F =10mA	A	A1 Bin	110		140	uA	2
				A2 Bin	140		170	uA	
				A3 Bin	170		200	uA	
			B	B1 Bin	200	-	230	uA	
				B2 Bin	230	-	300	uA	
			C	C1 Bin	300	-	380	uA	
				C2 Bin	380	-	440	uA	
				C3 Bin	440	-	530	uA	
	Leakage Current			I _{CEOD}	-	-	1	uA	
	Rise time	V _{CE} =2mA、I _C =100uA		t _r	-	20	-	uSec	
	Fall time	R _L =1K Ω		t _f	-	20	-	uSec	

*Remark:

1. T=5 sec
2. Test with a mirror distance of 1 mm with 100% reflective index

CHARACTERISTIC CURVES FOR IR

Fig.1 Forward Current vs. Ambient Temperature

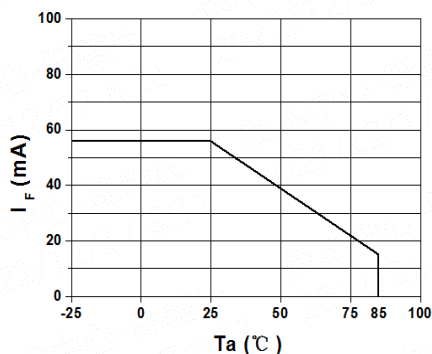


Fig.2 Spectral Distribution

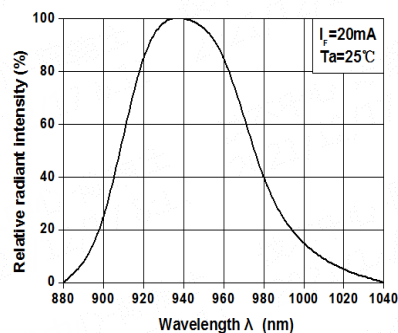


Fig.3 Forward Current vs. Forward Voltage

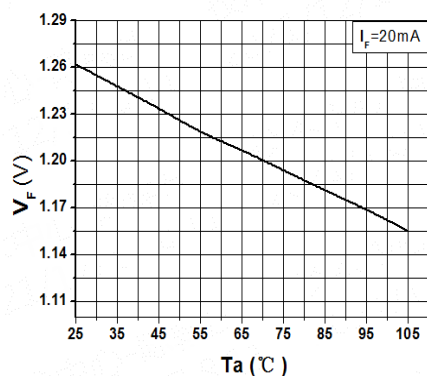


Fig.4 Collector Dark Current vs. Ambient Temperature

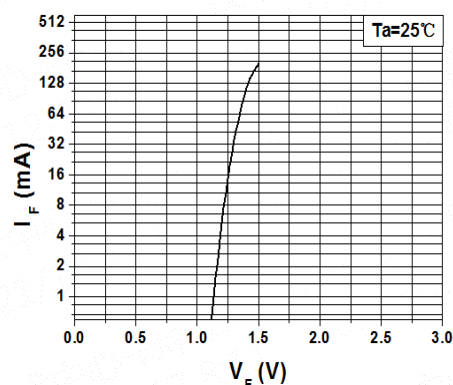
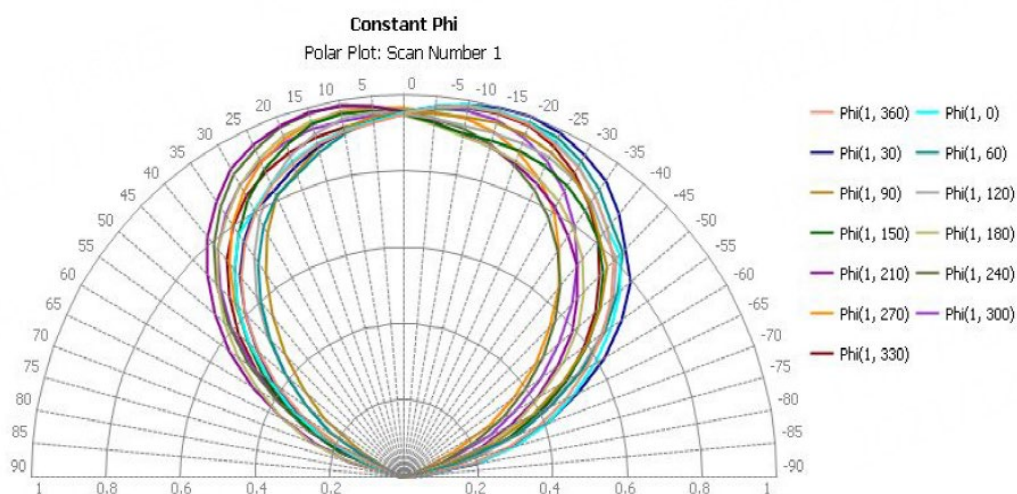


Fig.5 Relative Radiant Intensity vs. Angular Displacement



CHARACTERISTIC CURVES FOR PT

Fig.6 Collector Power Dissipation vs. Ambient Temperature

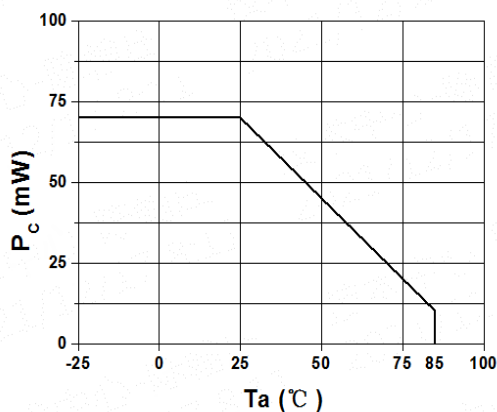


Fig.7 Collector Dark Current vs. Ambient Temperature

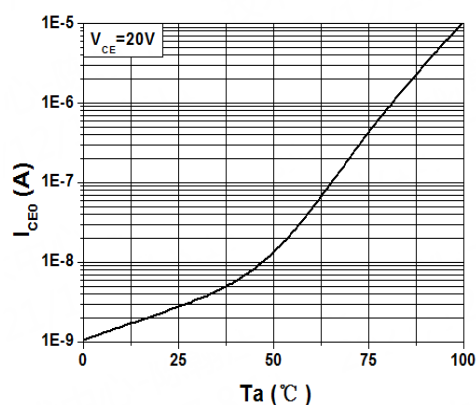


Fig.8 Current transfer ratio vs. Ambient Temperature

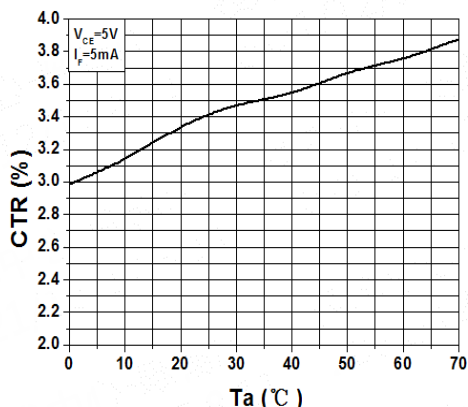


Fig.9 Spectral Sensitivity

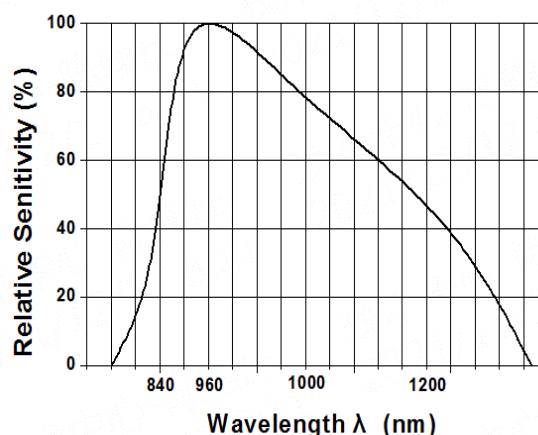
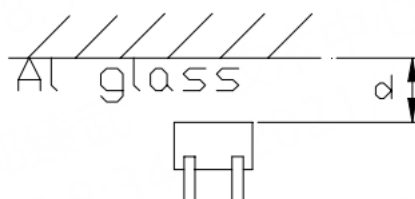
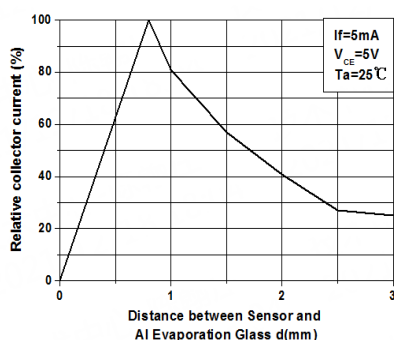


Fig.10 Relative Collector Current vs. Distance between Sensor and AL Evaporation Glass



TEST CIRCUITS FOR ITR

Fig.11 Relative Collector Current vs. Card Moving Distance

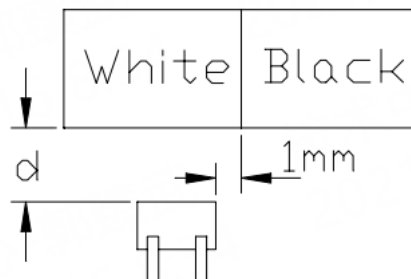
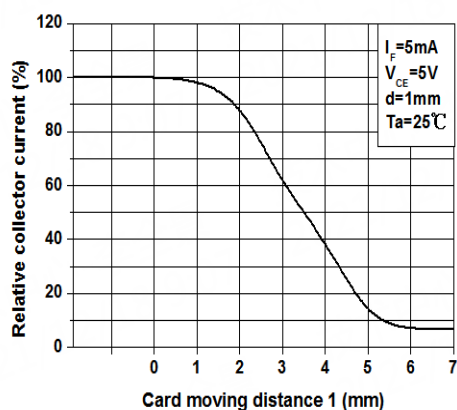
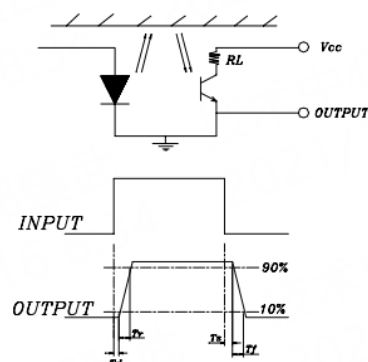
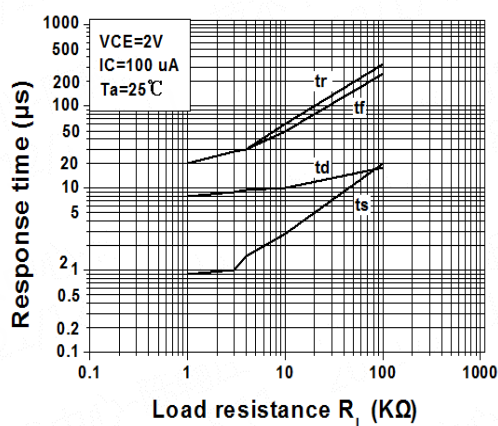
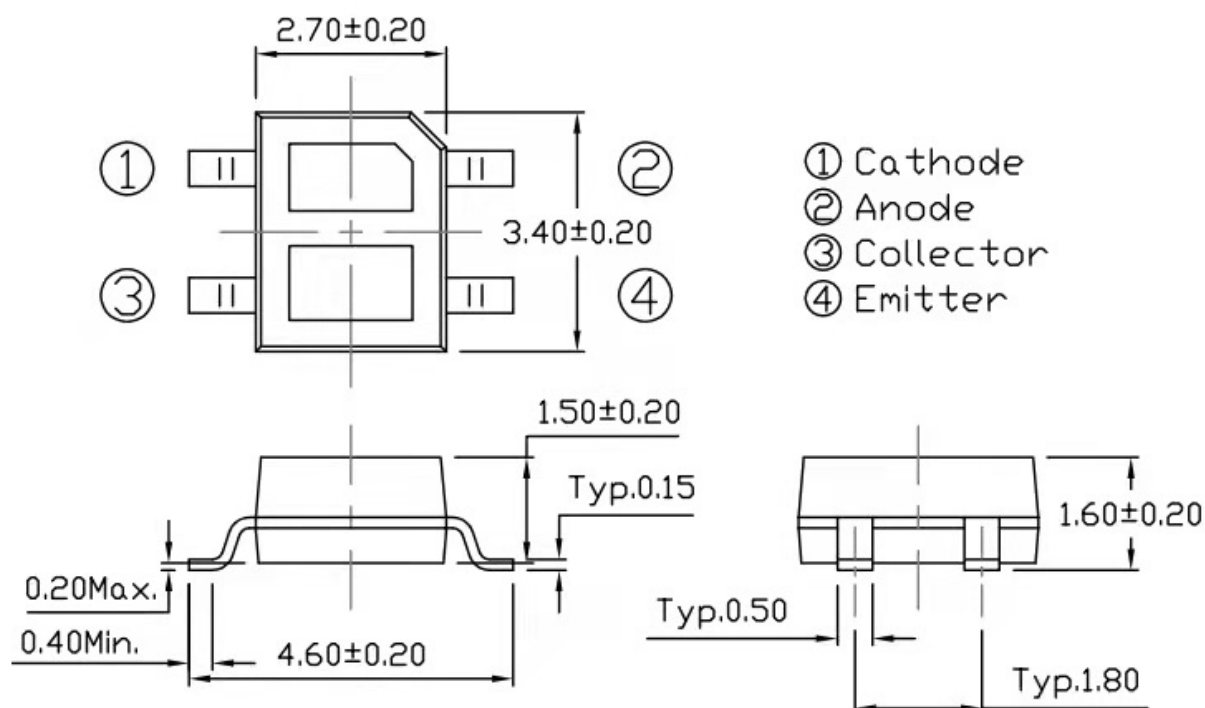


Fig.12 Response Time vs. Load Resistance

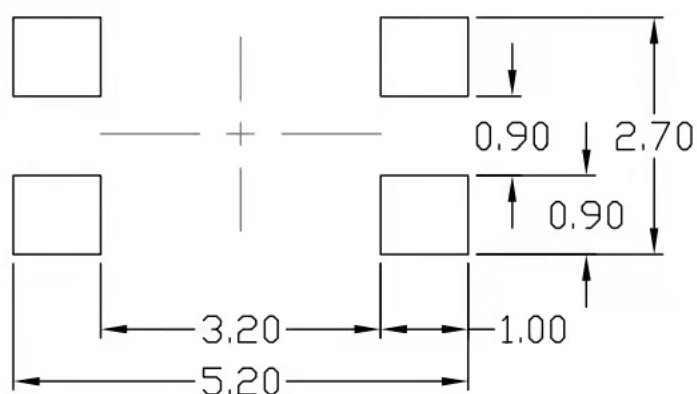


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

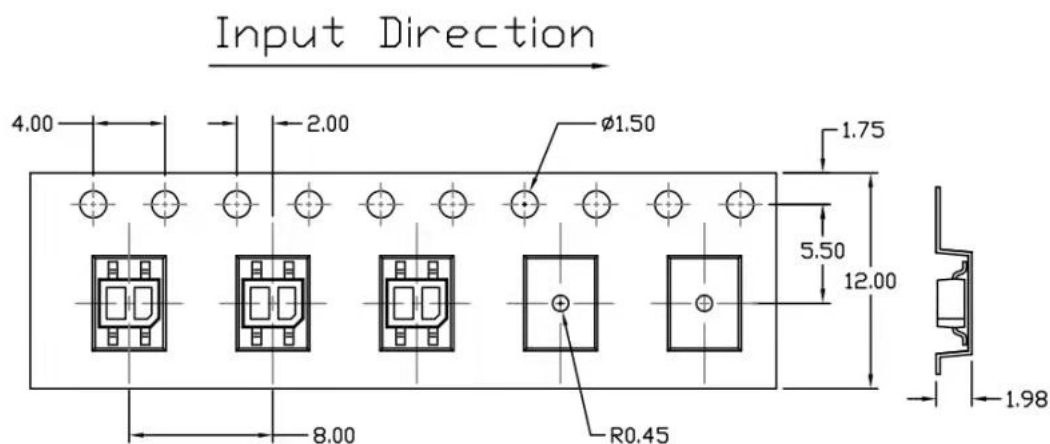
SMD Type



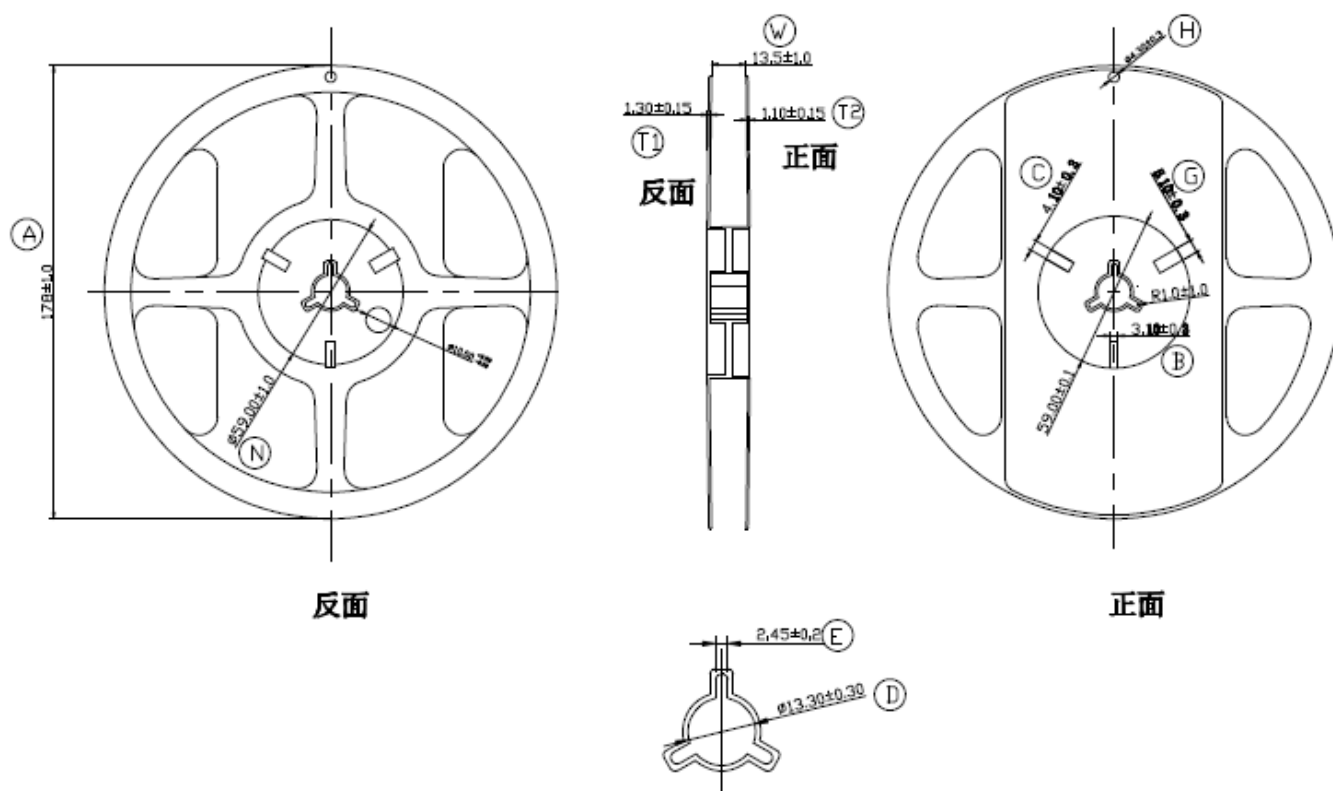
RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



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Tape Dimension (Dimensions in mm unless otherwise stated)

REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

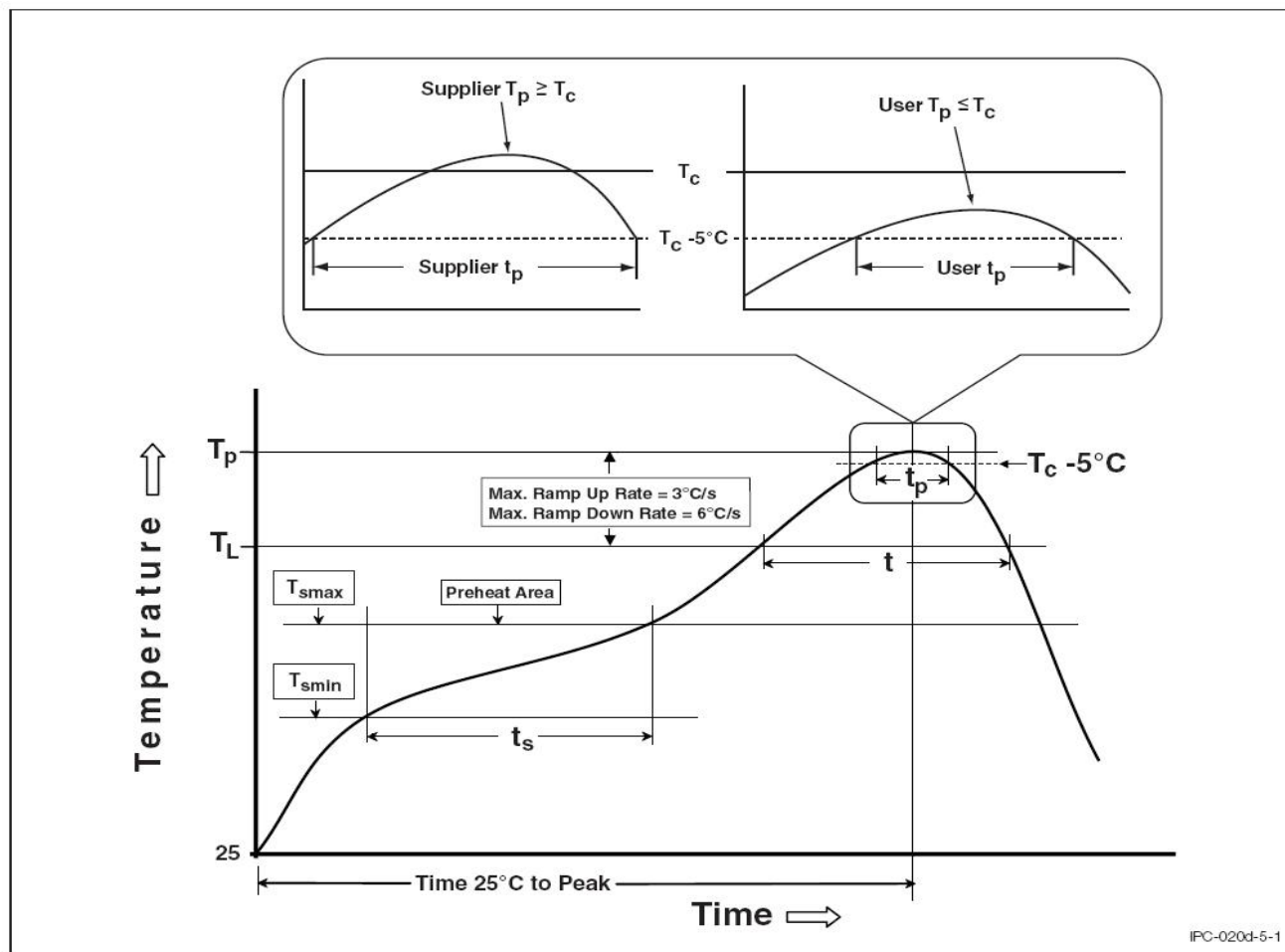


Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity – Outer box
None	1000 Units/Reel	8Reels/Inner box	6 Inner box/Outer box = 48k 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.

DISCLAIMER



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- LIGHTNING is continually improving the quality, reliability, function and design. LIGHTNING reserves the right to make changes without further notices.
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- This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death.
- Please contact LIGHTNING sales agent for special application request.
- Immerge unit's body in solder paste is not recommended.
- Parameters provided in datasheets may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated in each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify LIGHTNING's terms and conditions of purchase, including but not limited to the warranty expressed therein.