ORIENT

Photocoupler

Product Data Sheet

Name:____ORPC-827_____

Customer:_____

Date: _____

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www.orient-opto.com

1. Features

(1). Current conversion ratio (Min 50% Working condition I_F=5mA, V_{CE}=5V)

(2). Insulation Voltage = 5,000Vrms，

(3). Response Time

(tr: TYP. 4μs；tf: TYP. 5μs at V_{CE}=2V, I_C=2mA, R_L=100 Ω)

(4). ORPC-827：2-channel type

ORPC-827M：2-channel type

ORPC-827S：2-channel type

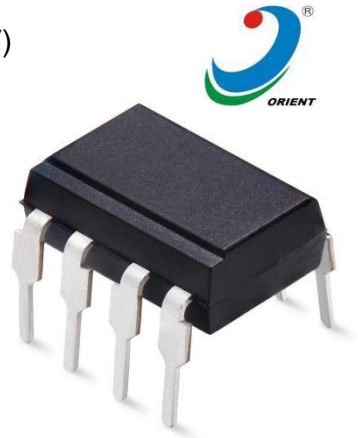
(5). UL approved(No.E323844)

VDE approved (No.40029733)

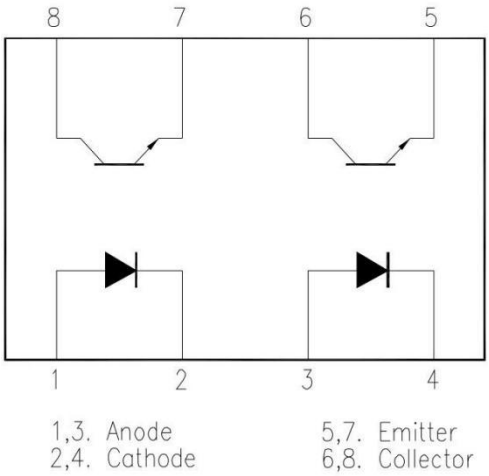
CQC approved (No.CQC09001029446 CQC13001086898)

CE approved (No.AC/0431008)

State Grid approved (No.SGCM013420170152)



Pin No. and Internal connection diagram



2. Instructions

(1). ORPC-827 series optical coupler consists of two GaAs transmitting tubes and two NPN transistors

(2). Pin pitch of ORPC-827 is 2.54mm

3. Application Range

(1). Switching power supply

(2). Ammeter

(3). Computer

(4). Instrumental application, measurement machine

(5). Imbursement equipments, duplicating machine, automat

(6). Family-use electric equipments, such as fans

(7). Signal transforming systems

4、Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Rated Value	Unit
Input	Forward Current	I_F	60	mA
	Peak forward current(1us pulse)	I_{FP}	1	A
	Reverse Voltage	V_R	6	V
	Consume Power	P	70	mW
Output	Collector and emitter Voltage	V_{CEO}	80	V
	Emitter and collector Voltage	V_{ECO}	6	
	Collector Current	I_C	50	mA
	Consume Power	P_C	150	mW
Total Consume Power		P_{tot}	200	mW
*1 Insulation Voltage		V_{iso}	5,000	Vrms
Max Insulation Voltage (Insulating oil test)		V_{IOTM}	10,000	V
Rated Impulse Insulation Voltage		V_{IORM}	630	V
Working Temperature		Topr	-55 to + 110	℃
Deposit Temperature		T_{stg}	-55 to + 125	
*2 Soldering Temperature		T_{sol}	260	

*1. AC Test, 1 minute, humidity = 40~60%

Isolation voltage shall be measured using the following method.

(1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.

(2) The isolation voltage tester with zero-cross circuit shall be used.

(3) The waveform of applied voltage shall be a sine wave.

*2. soldering time is 10 seconds

5、Electrical optical characteristics at TA=25℃

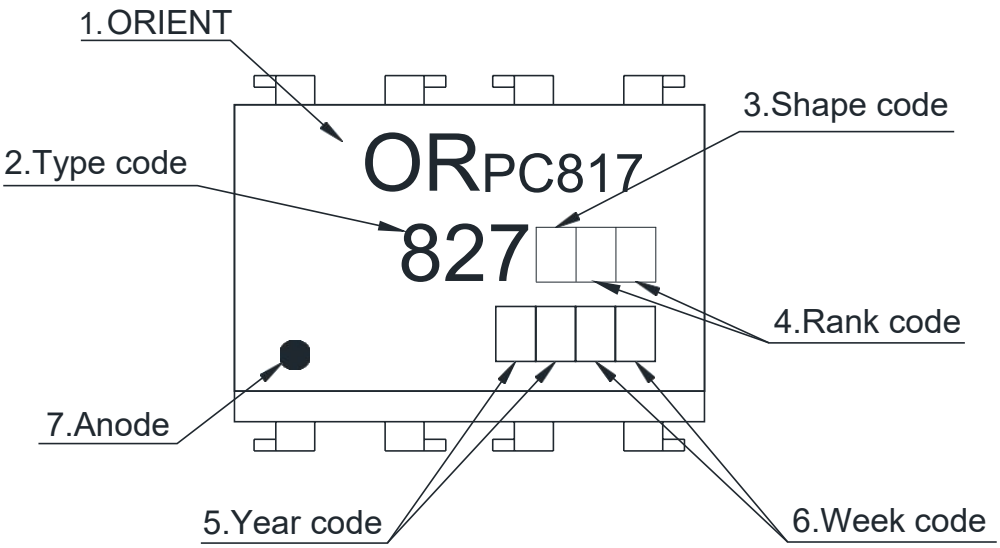
Parameter		Symbol	Condition	Min	Typ.*	Max	Unit
Input	Forward Current	V_F	I_F=20mA	---	1.2	1.4	V
	Reverse Voltage	I_R	V_R=4V	---	---	10	μA
	Collector capacitance	C_t	V=0, f=1KHz	---	30	250	pF
Output	Collector to emitter Current	I_{CEO}	V_{CE}=20V, I_F=0mA	---	---	100	nA
	Collector and Emitter attenuation Voltage	BV_{CEO}	I_C=0.1mA I_F=0mA	80	---	---	V
	Emitter and Collector attenuation Voltage	BV_{ECO}	I_E=0.1mA I_F=0mA	6	---	---	V
Transforming Characteristics	*1Current conversion ratio	CTR	IF=5mA VCE=5V	50	---	600	%
	Collector Current	I_C		2.5	---	50	mA
	Collector and Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=20mA I_C= 1mA	---	0.1	0.2	V
	Insulation Impedance	R_{iso}	DC500V 40~60%R.H.	---	1×10^{12}	---	Ω
	capacitance	C_f	V=0, f=1MHz	---	0.6	1.0	pF
	Transforming Frequency	f_c	V_{CE}=5V, I_C=2mA R_L=100Ω, -3dB	---	80	---	kHz
	Risetime	t_r	V_{CE}=2V, I_C=2mA R_L=100Ω	---	4	18	μs
	Descend Time	t_f		---	3	18	μs

*1 Current Conversion Ratio = I_C / I_F × 100%

6、Rank table of current transfer ratio（CTR）

	CTR Rank	Min (%)	Max (%)	Condition
ORPC-827	NO BIN	50	600	IF=5mA, VCE=5V, Ta=25℃
	A	80	160	
	B	130	260	
	C	200	400	
	D	300	600	
	BC	130	400	
	CD	200	600	

7、Naming Rule



(1) ORIENT

(2) denotes Type Code.

(3)□ denotes Shape Code.

(4)□□ denotes Rank code..

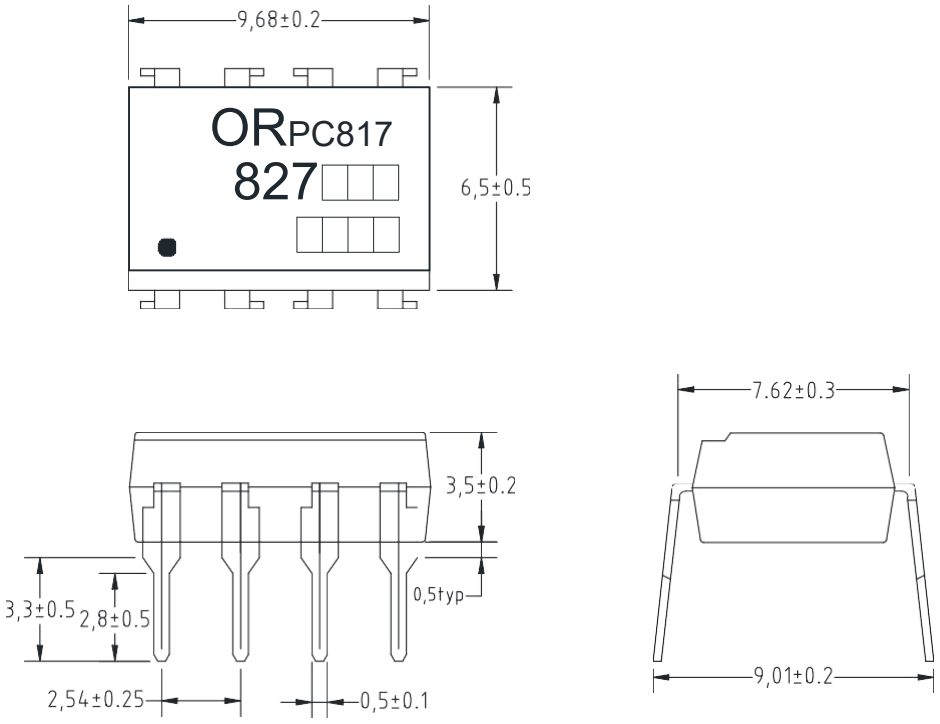
(5)□□ denotes Year Code

(6)□□ denotes Week Code

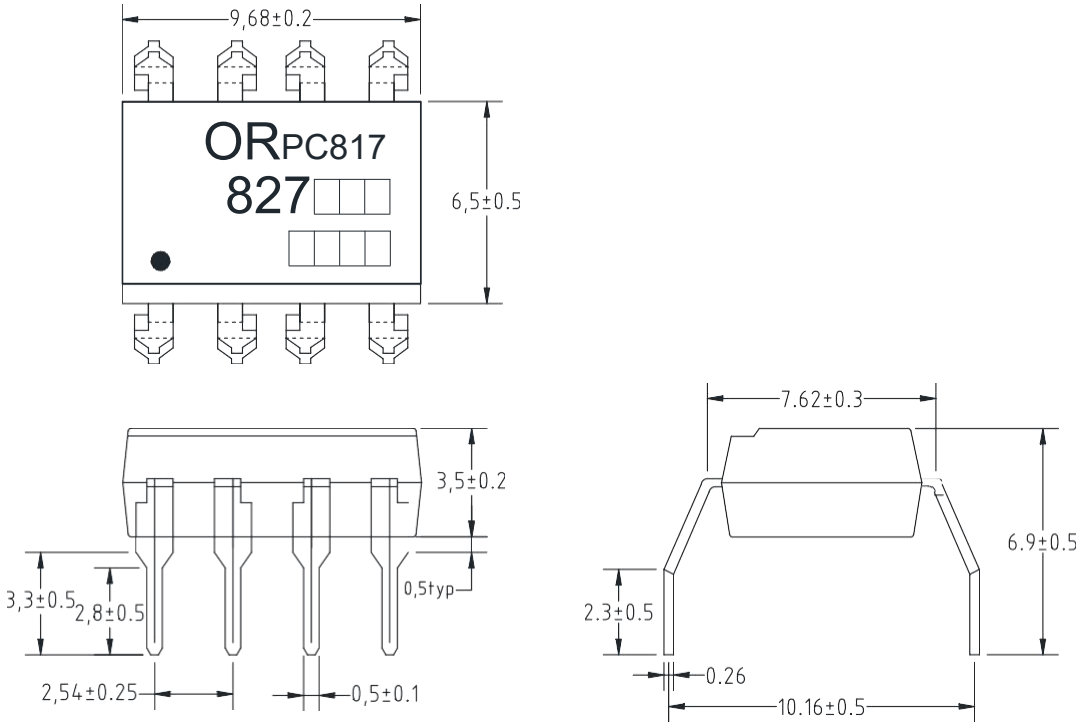
(7) Anode

8、Outer Dimension (Unit：mm)

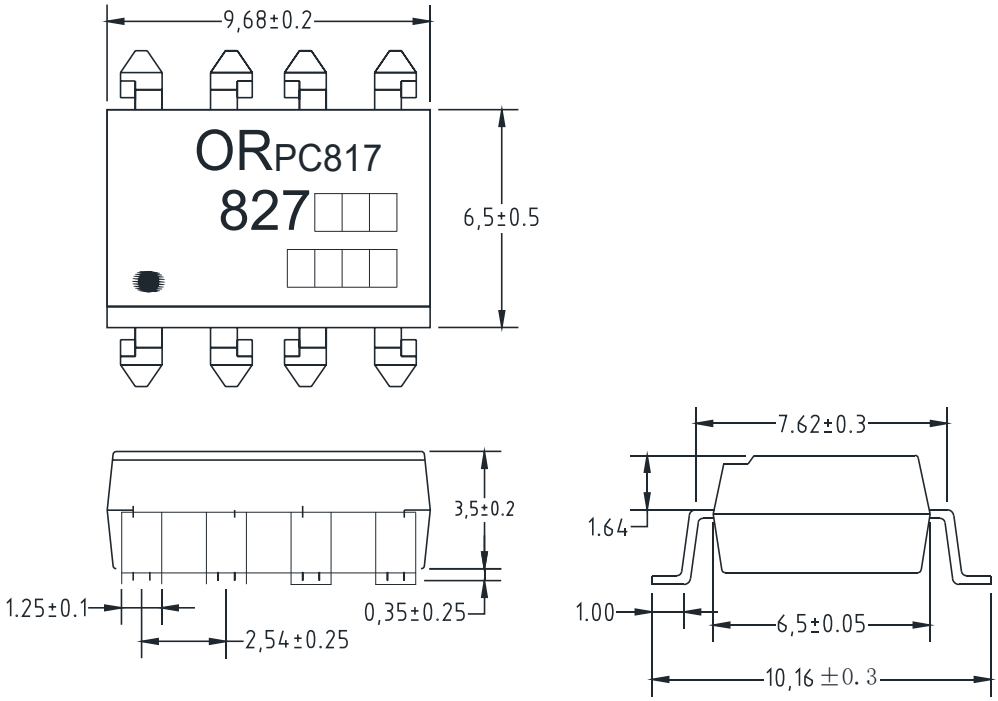
1. ORPC-827



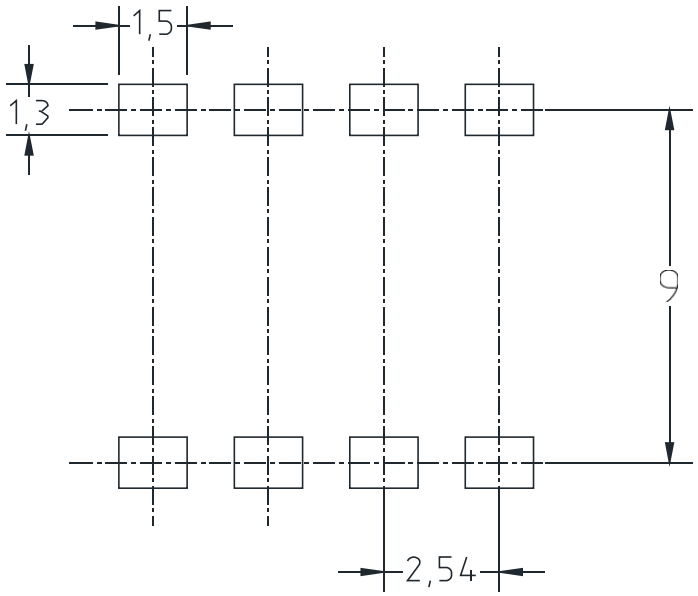
2.ORPC-827M



3.ORPC-827S



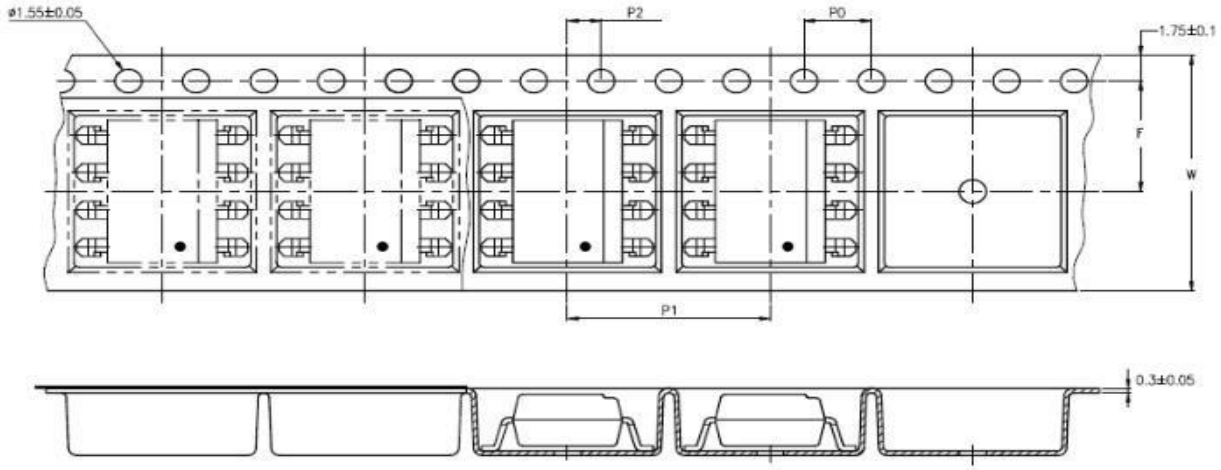
9、RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)



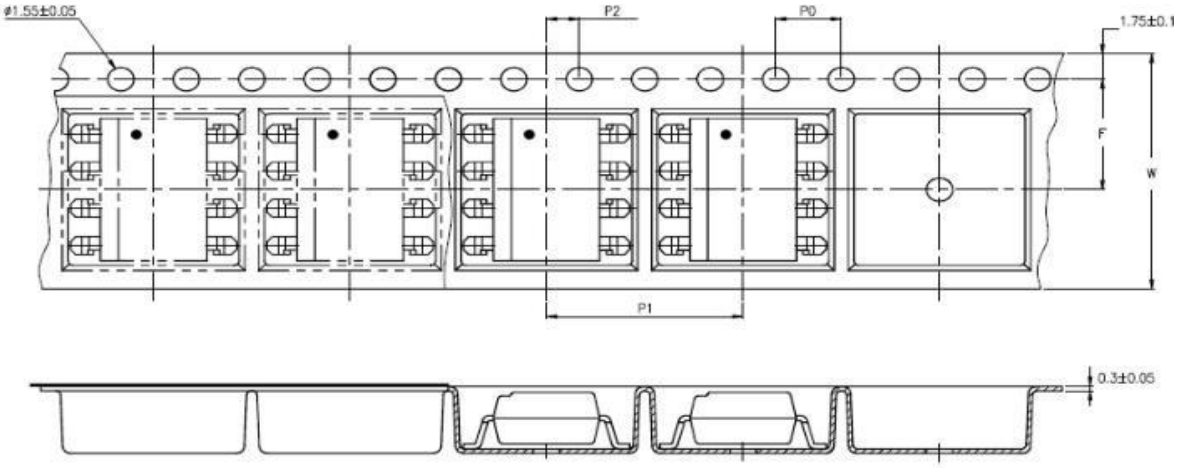
Unit：mm

10、Taping Dimensions

（1） ORPC-827-TA



（2） ORPC-827-TA1



Description	Symbol	Dimension in mm(inch)
Tape wide	W	16±0.3(0.63)
Pitch of sprocket holes	P0	4±0.1(0.15)
Distance of compartment	F	7.5±0.1(0.295)
	P2	2±0.1(0.079)
Distance of compartment to compartment	P1	12±0.1(0.472)

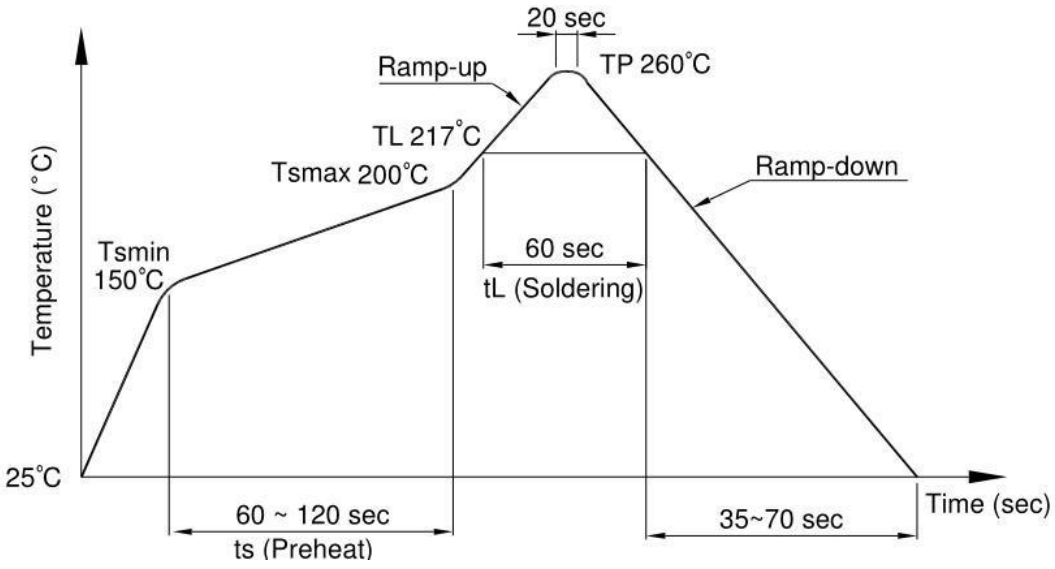
Package Type	ORPC-827 series
Quantities(pcs)	1000

11 、 Temperature Profile Of Soldering

（1） IR Reflow soldering (JEDEC-STD-020C compliant)

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

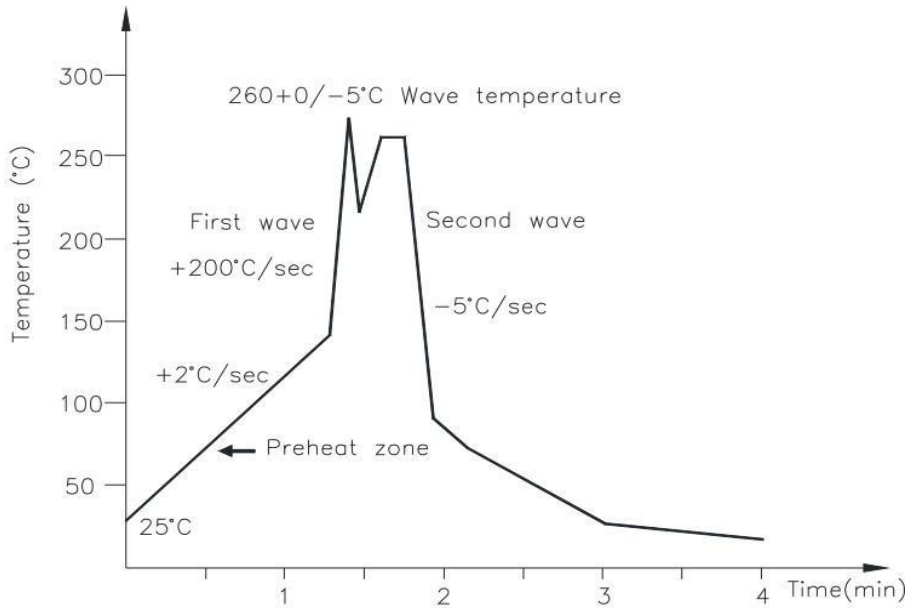
Profile item	Conditions
Preheat - Temperature Min (T Smin) - Temperature Max (T Smax) - Time (min to max) (ts)	 150˚C 200˚C 90±30 sec
Soldering zone - Temperature (TL) - Time (t L)	 217˚C 60 sec
Peak Temperature	260˚C
Ramp-up rate	3˚C / sec max.
3˚C / sec max.	3~6˚C / sec



（2） Wave soldering (JEDEC22A111 compliant

One time soldering is recommended within the condition of temperature.

Temperature Time	260+0/-5˚C 10 sec
Preheat temperature Preheat time	5 to 140˚C 30 to 80 sec



（3） Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.

Temperature Time	380+0/-5˚C 3 sec max

12、Characteristics Curve

Fig.1 Forword Current vs. Ambient Temperatute

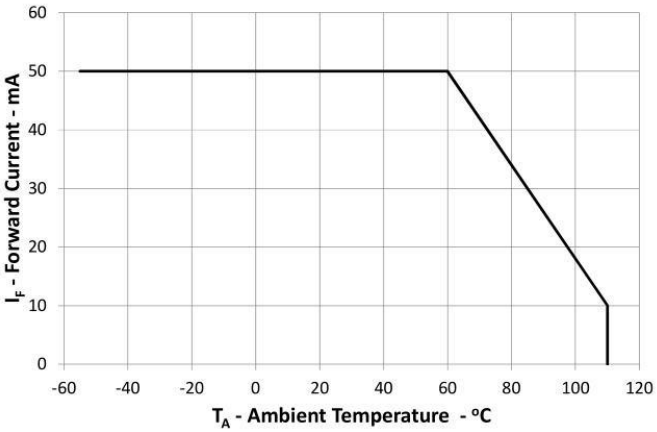


Fig.2 Collector Power Dissipation vs. Ambient Temperature

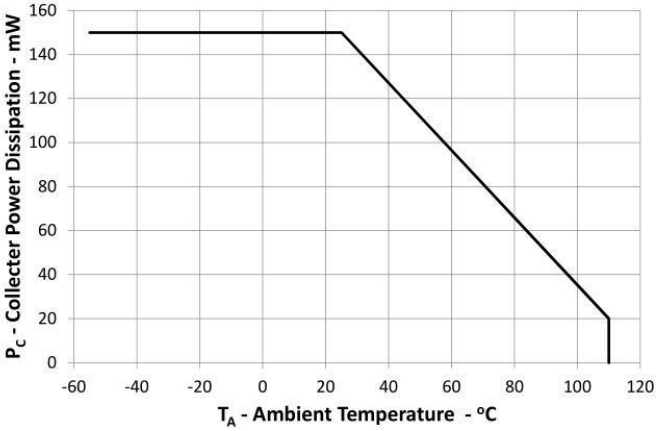


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

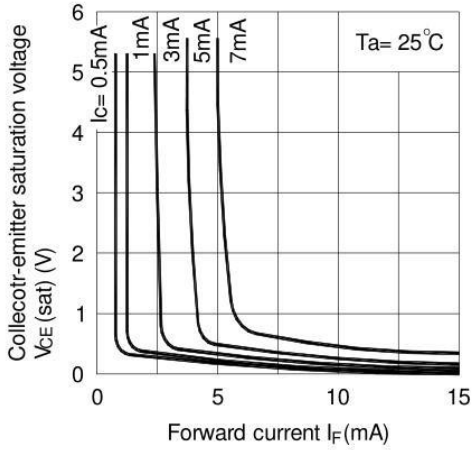


Fig.4 Forward Current vs. Forward Voltage

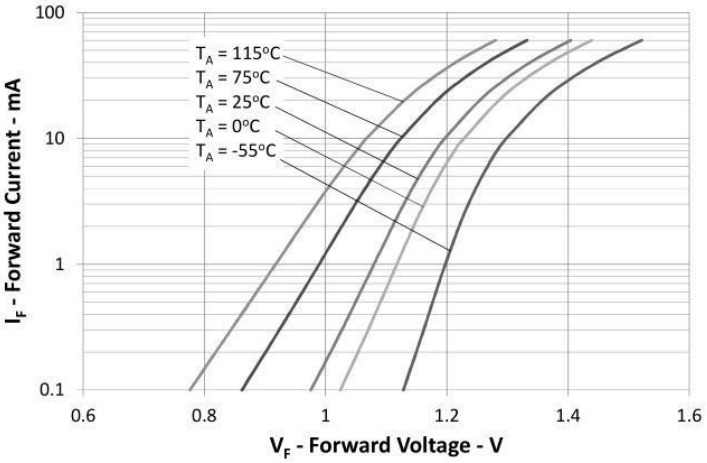


Fig.5 Current Transfer Ratio vs. Forward Current

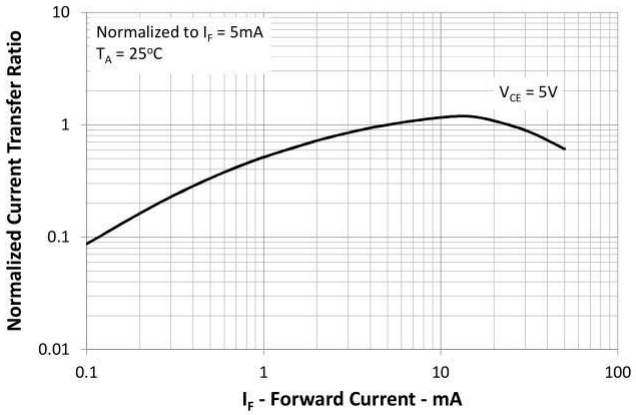


Fig.6 Collector Current vs. Collector-emitter Voltage

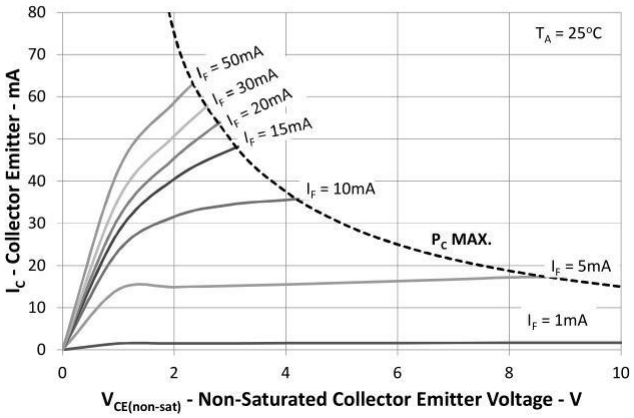


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

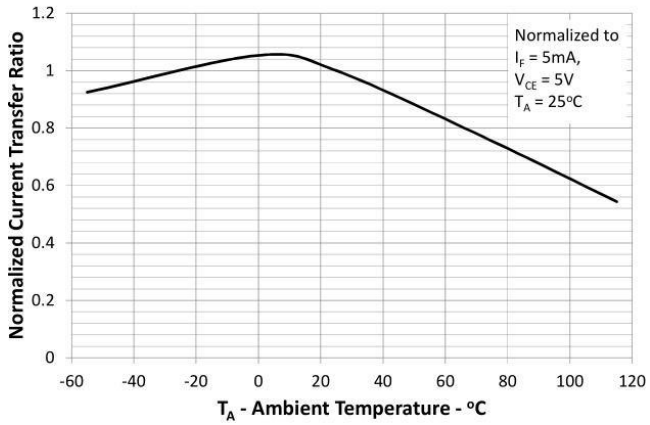


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

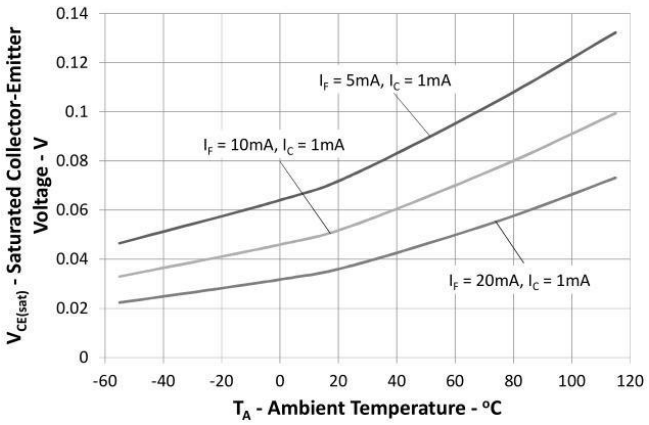


Fig.9 Collector Dark Current vs. Ambient Temperature

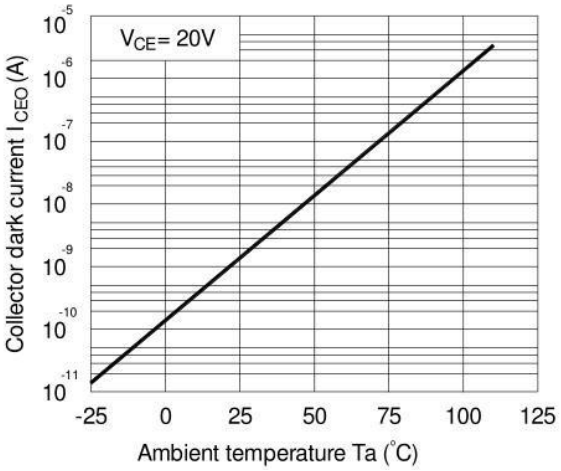


Fig.10 Response Time vs. Load Resistance

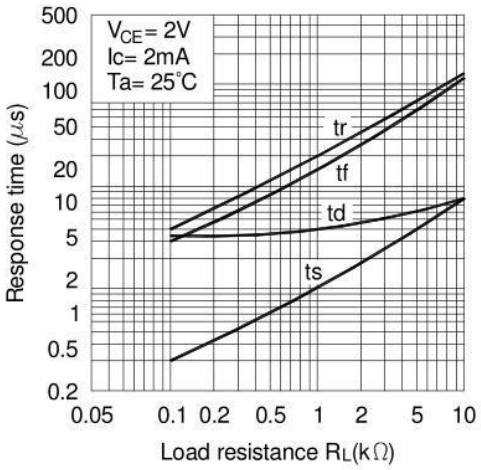
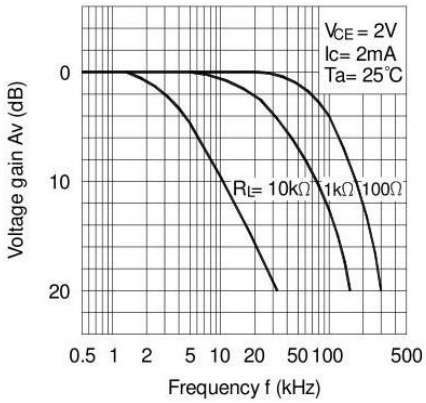
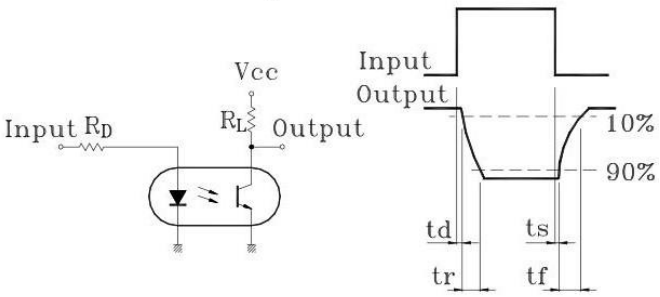


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response