

## 1、Description

817 photocoupler consist of one piece of GaAs emitter and one piece of NPN transistor

## 2、Features

- Current Transfer ratio (Min 100% Working condition  $I_F=5\text{mA}$ ,  $V_{CE}=5\text{V}$ )
- Insulation Voltage = 5,000Vrms
- Response Time (tr: TYP. 6 $\mu\text{s}$ ; tf: TYP. 5 $\mu\text{s}$ )  
working condition  $V_{CE}=2\text{V}$ ,  $I_C=2\text{mA}$ ,  $R_L=100\ \Omega$ )
- ESD: HBM8000V&MM2000V

## 3、Application Range

- Switching power supply
- Ammeter
- Computer
- Instrumental application, measurement machine
- Imbursement equipments, duplicating machine, automat
- Family-use electric equipments, such as fans
- Signal transforming systems

## 4、Pinning information

PIN	Description	Simplified outline	Symbol
1	Anode (A)		
2	Cathode (K)		
3	Emitter (E)		
4	Collector(C)		

## 5、Current Transfer Ratio= $I_C / I_F \times 100\%$

Grade Sign	Min.(%)	Max.(%)
A	100	160
B	130	260
C	200	400
D	300	600
A or B or C or D	50	600

## 6、Limiting value

( $T_a = 25^{\circ}\text{C}$  unless otherwise noted).

SYMBOL	PARAMETER		Limit	UNIT
$I_F$	Forward Current	Input	50	mA
$V_r$	Reverse Voltage		6	V
$P$	Consume Power		70	mW
$V_{ceo}$	Collector-Emitter Voltage	Output	35	V
$V_{eco}$	Emitter –Collector Voltage		6	V
$I_c$	Collector Current		50	mA
$P_c$	Consume Power		150	mW
$P_{tot}$	Total Consume Power		200	mW
$V_{iso}$	Insulation Voltage *1		5000	V <sub>rms</sub>
$V_{iotm}$	Max Insulation Voltage		6000	V
$V_{iorm}$	Rated Impulse Insulation Voltage		630	V
$T_{opr}$	Working Temperature		-55 to +110	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature		-55 to +125	$^{\circ}\text{C}$
$T_{sol}$	Soldering Temperature *2		260	$^{\circ}\text{C}$

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

Insulation test method as below:

- (1) Short circuit both terminals of photocoupler
- (2) No Current when testing insulation voltage
- (3) Adding sine wave voltage when testing

\*2. soldering time is 10 seconds

## 7、Electrical Characteristics ( $T_a = 25^{\circ}\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER		Condition	Min	Type	Max	UNIT
$V_F$	Forward Voltage	Input	$I_F=20\text{mA}$	---	1.20	1.40	V
$I_r$	Reverse Current		$V_R=5\text{V}$	---	---	5	$\mu\text{A}$
$C_t$	Collector Capacitance		$V=0, f=1\text{MHz}$	---	30	250	pF
$BV_{ceo}$	Collector-Emitter Voltage	Output	$I_C=0.1\text{mA}$ $I_F=0\text{mA}$	35	---	---	V
$BV_{eco}$	Emitter –Collector Voltage		$I_E=10\mu\text{A}$ $I_F=0\text{mA}$	6	---	---	V
$I_{ceo}$	Collector to Emitter Current		$V_{CE}=20\text{V}$ $I_F=0\text{mA}$	---	---	100	nA
$CTR$	Current Transfer Ratio		$V_{CE}=5\text{V}$ $I_F=5\text{mA}$	50	---	600	%
$V_{cesat}$	Collector-Emitter Saturation Voltage		$I_C=1\text{mA}$ $I_F=20\text{mA}$	---	0.1	0.2	V
$R_{iso}$	Insulation Impedance		DC500V 40~60%R.H.	$5 \times 10^{10}$	$1 \times 10^{10}$	---	$\Omega$
$C_f$	Capacitance		$V=0$ $f=1\text{MHz}$	---	0.6	1	pF
$f_c$	Transforming Frequency		$V_{CE}=5\text{V}$ $I_C=2\text{mA}$ $R_L=100\Omega$	---	80	---	kHz
$t_r$	Risetime		$V_{CE}=2\text{V}$ $I_C=2\text{mA}$ $R_L=100\Omega$	---	6	18	$\mu\text{s}$
$t_f$	Descend Time			---	5	18	$\mu\text{s}$

## 8. Electrical Characteristics Curve

Fig.1 Forward Current vs. Ambient Temperature

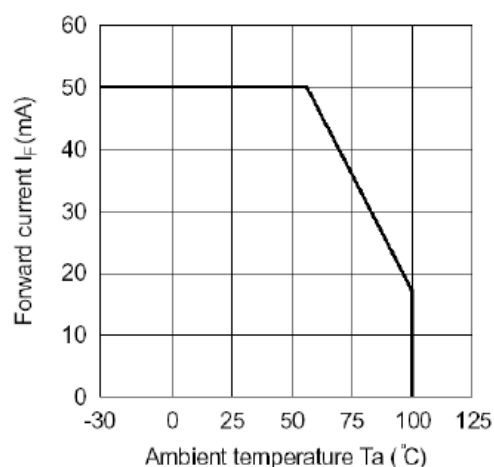


Fig.2 Collector Power Dissipation vs. Ambient Temperature

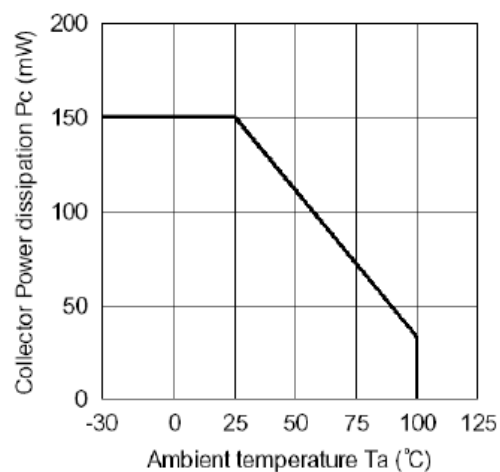


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

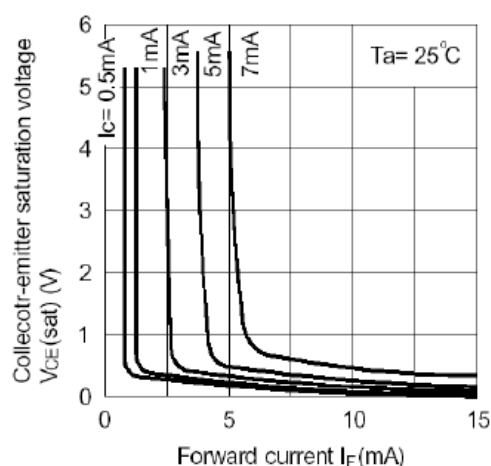


Fig.4 Forward Current vs. Forward Voltage

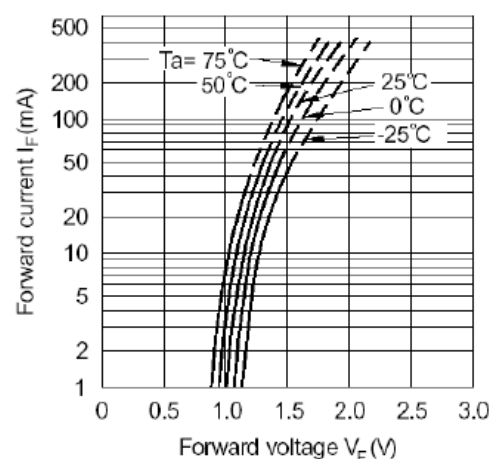


Fig.5 Current Transfer Ratio vs. Forward Current

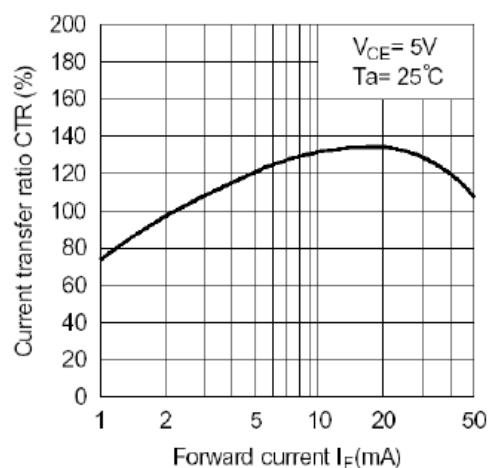


Fig.6 Collector Current vs. Collector-emitter Voltage

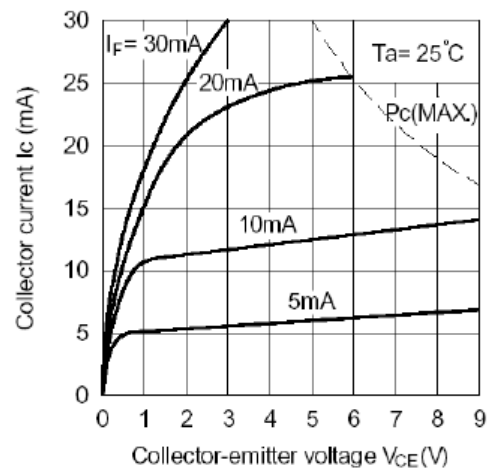


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

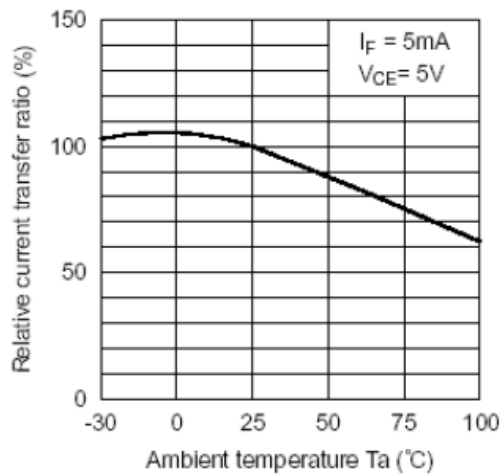


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

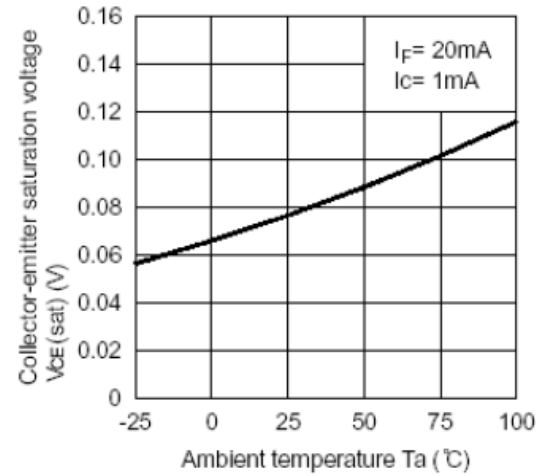


Fig.9 Collector Dark Current vs. Ambient Temperature

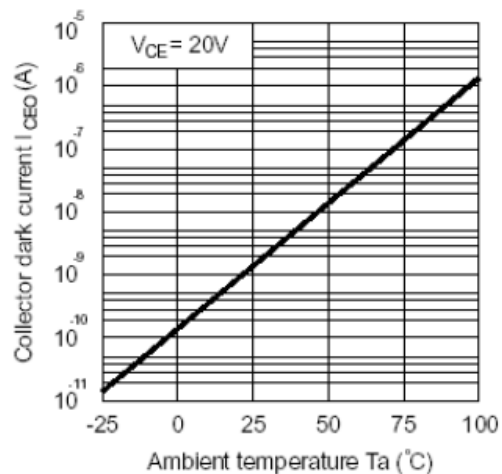


Fig.10 Response Time vs. Load Resistance

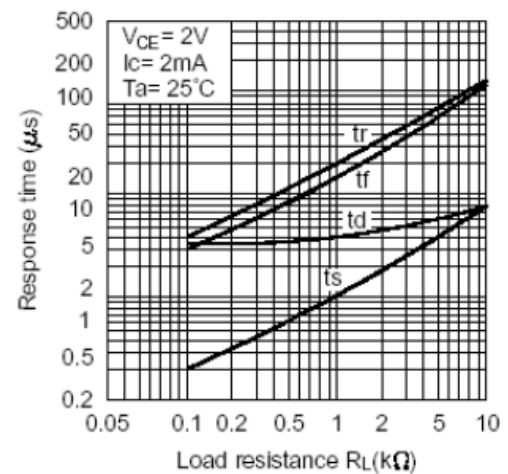
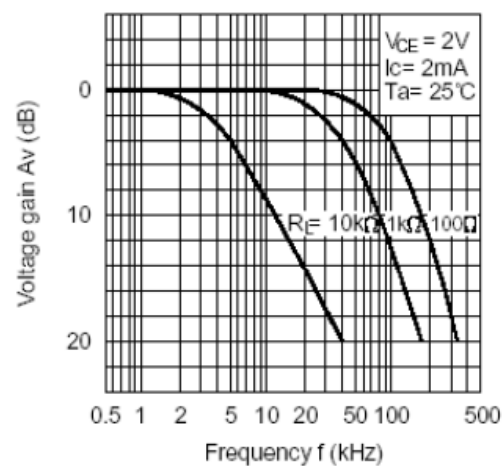
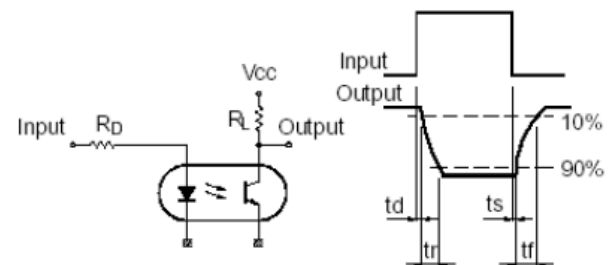


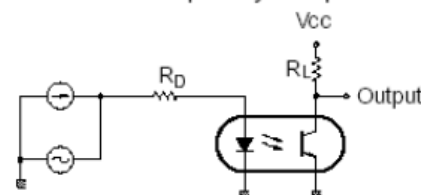
Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response



## 9、Package outline(DIP4)

