Elektronische Bauelemente

BL817S

0.05A , 70V , 150mW

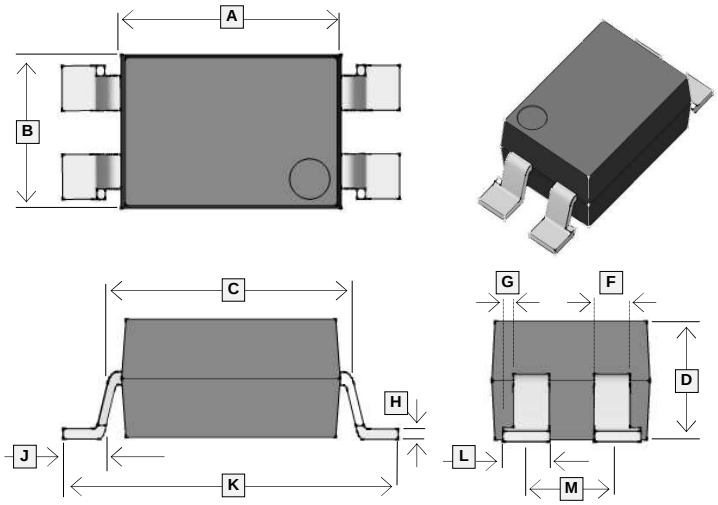
High Density Mounting Type Photocoupler

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The BL817 Series of devices each consist of an infrared Emitting diodes, optically coupled to a phototransistor detector. They are packaged in a 4-pin DIP package and available in Wide-lead spacing and SMD option.

DIP4L



FEATURES

- Current transfer ratio
  (CTR：50%~600% @ I_F=5mA, V_{CE}=5V)
- High isolation voltage between input and output (Viso = 5000V rms)
- Creepage distance > 7.62mm
- Pb free and ROHS compliant

APPLICATIONS

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as fan heaters, etc.
- Signal transmission between circuits of different potentials and impedances

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min..	Max
A	6.40	6.60	G	0.25 TYP	
B	4.50	4.70	H	0.3 TYP	
C	7.39	7.59	J	1.1	1.3
D	3.28	3.68	K	9.8	10.3
F	1.25 TYP.		M	2.49	2.69

RANK TABLE OF CURRENT TRANSFER RATIO CTR

Product-Rank	BL817S-L	BL817S-A	BL817S-B	BL817S-C	BL817S-D	BL817S
Range(%)	50~100	80~160	130~260	200~400	300~600	50~600

Note：

1. Conditions：I_F=5mA, V_{CE}=5V, T_A=25℃

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	70	mW
Output	Collector-Emitter Voltage	V_{CEO}	70	V
	Emitter-Collector Voltage	V_{ECO}	6	
	Collector Current	I_C	50	mA
	Collector Power Dissipation	P_C	150	mW
Total Power Dissipation		P_{tot}	200	mW
Isolation Voltage [1]		V_{iso}	5000	V rms
Rated impulse isolation voltage		V_{IOTM}	6000	V
Rated repetitive peak isolation voltage		V_{IORM}	630	V
Operating Temperature		T_{opr}	-30~100	℃
Storage Temperature		T_{stg}	-55~125	
Soldering Temperature [2]		T_{sol}	260	

Note：

1. AC For minute, R.H.=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. For 10 Seconds.

ELECTRICAL CHARACTERISTICS (T_A = 25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Input	Forward Voltage	V_F	-	1.2	1.4	V	I_F=20mA
	Reverse Current	I_R	-	-	10	μA	V_R=4V
	Terminal Capacitance	C_t	-	30	250	pF	V=0, f=1KHz
Output	Collector Dark Current	I_{CEO}	-	-	100	nA	V_{CE}=20V, I_F=0
	Collector-Emitter Breakdown Voltage	BV_{CEO}	35	-	-	V	I_C=0.1mA, I_F=0
	Emitter-Collector Breakdown Voltage	BV_{ECO}	6	-	-	V	I_E=10μA, I_F=0
TRANSFER CHARACTERISTICS	Collector Current	I_C	2.5	-	30	mA	V_{CE}=5V, I_F=5mA
	Current Transfer Ratio [1]	CTR	50	-	600	%	
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	0.1	0.2	V	I_F=20mA, I_C=1mA
	Isolation Resistance	R_{ISO}	$5x10^{10}$	$1x10^{11}$	-	Ω	DC500V, 40~60%R.H.
	Floating Capacitance	C_F	-	0.6	1	pF	V=0, f=1MHz
	Cut-Off Frequency	f_C	-	80	-	KHz	V_{CE}=5V, I_C=2mA, R_L=100Ω, -3dB
	Response Time(Rise)	t_r	-	4	18	μs	V_{CE}=2V, I_C=2mA R_L=100Ω
	Response Time(Fall)	t_f	-	3	18	μs	

Note：

1. CTR = I_C / I_F x 100%

CHARACTERISTIC CURVE

Fig.1 Forword Current vs. Ambient Temperatute

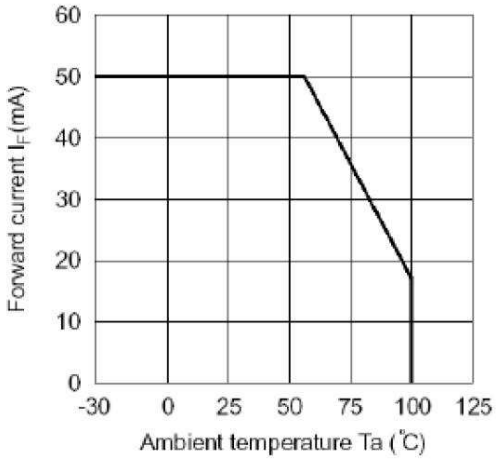


Fig.2 Collector Power Dissiption vs. Ambient Temperature

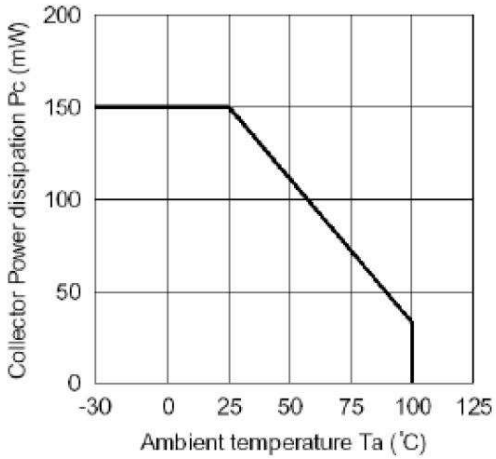


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

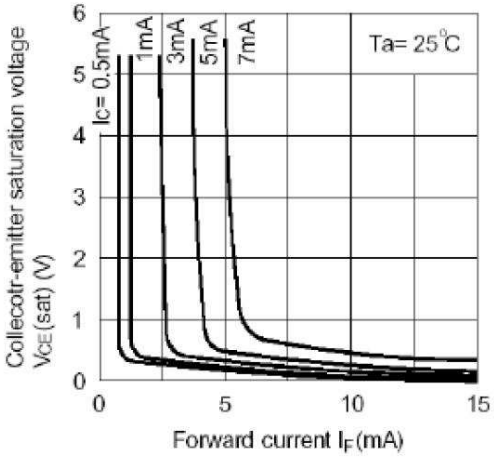


Fig.4 Forward Current vs. Forward Voltage

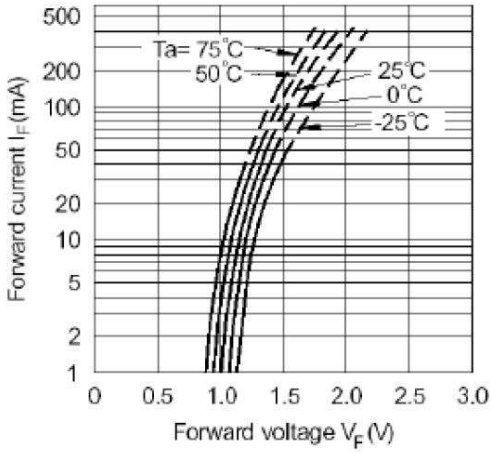


Fig.5 Current Transfer Ratio vs. Forward Current

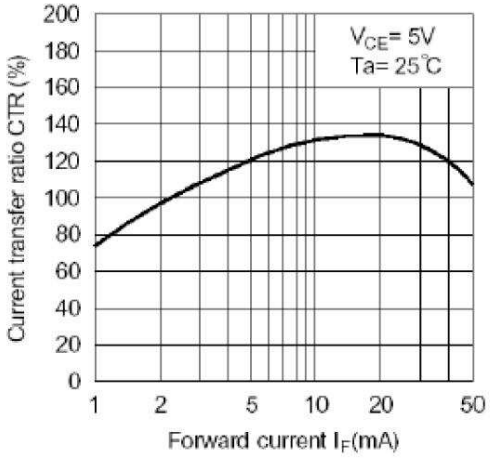
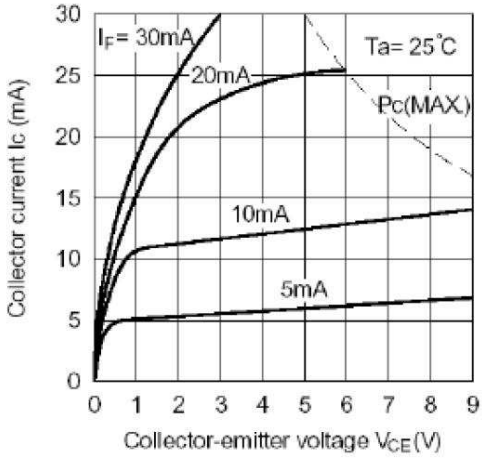


Fig.6 Collector Current vs. Collector-emitter Voltage



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CHARACTERISTIC CURVE

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

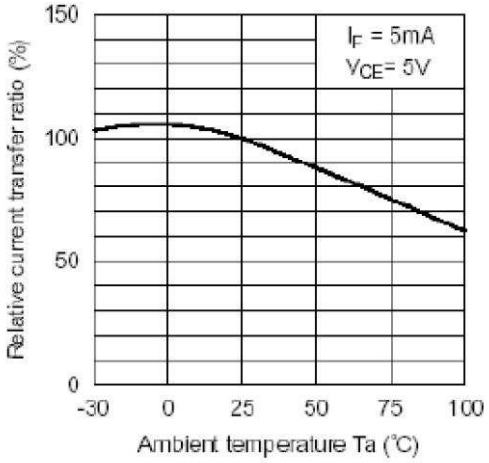


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

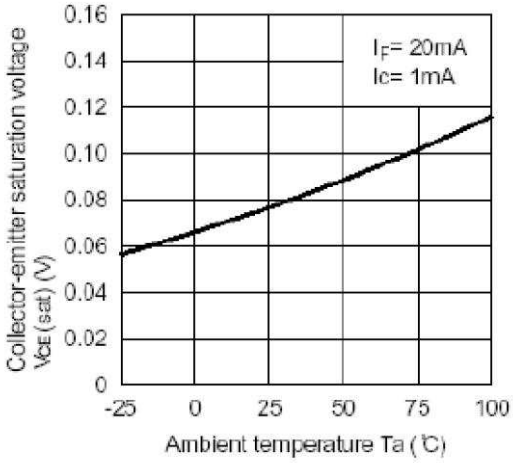


Fig.9 Collector Dark Current vs. Ambient Temperature

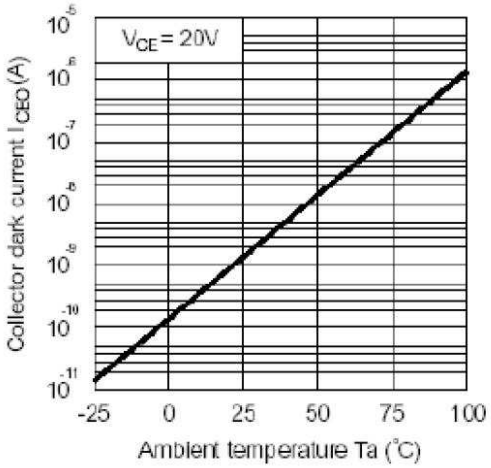


Fig.10 Response Time vs. Load Resistance

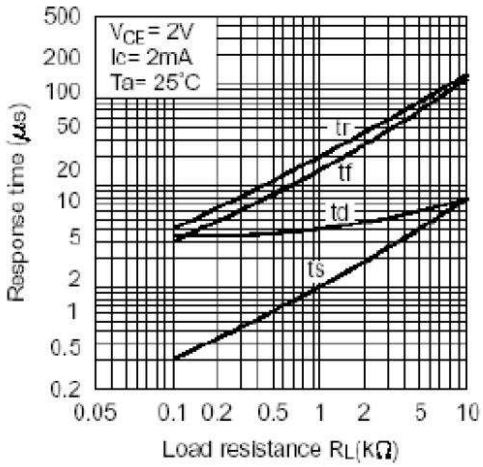
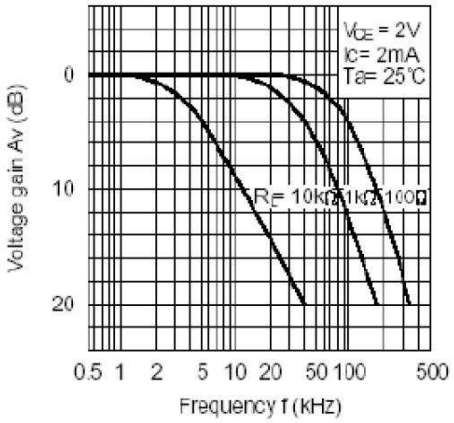
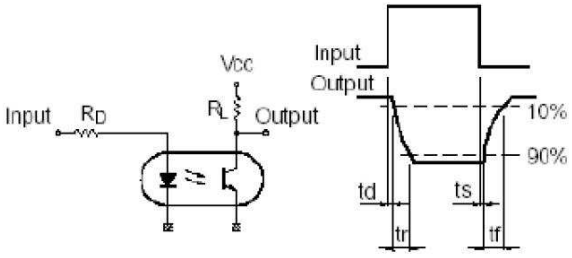


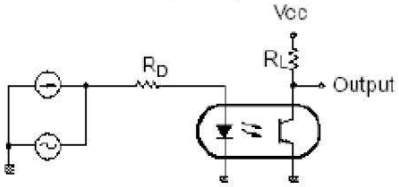
Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response



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