PC817

TRANSISTOR OUTPUT TYPE PHOTO COUPLER

The PC817 Series contains a light emitting diode optically coupled to a phototransistor. Input-output isolation voltage is 5000Vrms. Response time(tr) is typically 4us and minimum CTR is 50% at input current of 5mA.

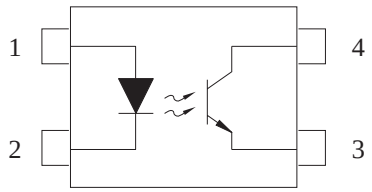
FEATURES

· Collector-Emitter Voltage : Min.80V
· Current Transfer Ratio
(CTR : MIN. 50% at I_F=5mA, V_{CE}=5V).
· High isolation voltage between input and output.
(V_{ISO}=5,000Vrms)

APPLICATIONS

· Feedback circuit in power supply.
· Switching Mode Power Supply.
· System appliances, Measuring instruments.
· Registers, Copiers, Automatic vending machines.
· Electric home applicances such as fan heaters, etc.

BLOCK DIAGRAM AND PIN CONFIGURATIONS (TOP VIEW)

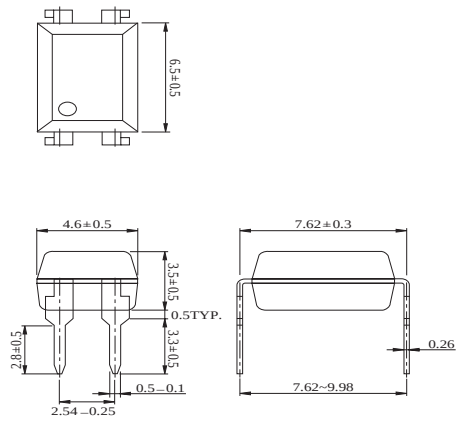


1. ANODE
2. CATHODE
3. EMITTER
4. COLLECTOR

RANK TABLE OF CURRENT TRANSFER RATIO(CTR)

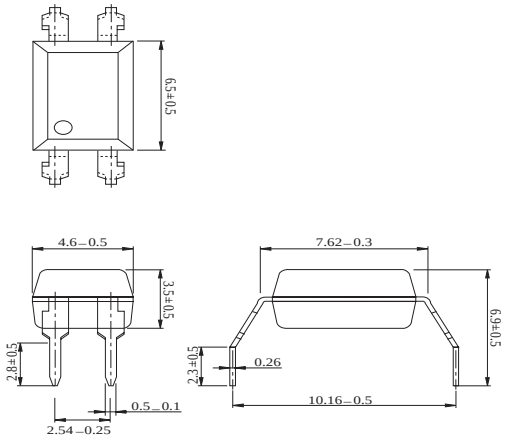
RANK MARK	CTR (%)	TEST CONDITION
(None)	50~600	I_F=5mA, V_{CE}=5V, Ta=25℃
A	80~160	
B	130~260	
C	200~400	
D	300~600	
L	50~100	

PC817



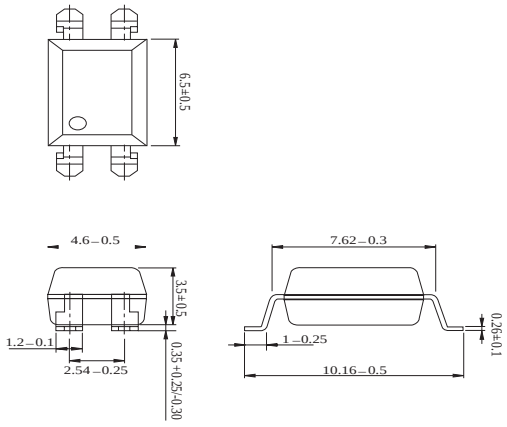
DIP-4

PC817M



DIP-4 (M)

PC817S



SOP-4(S)

MAXIMUM RATING (Ta=25℃)

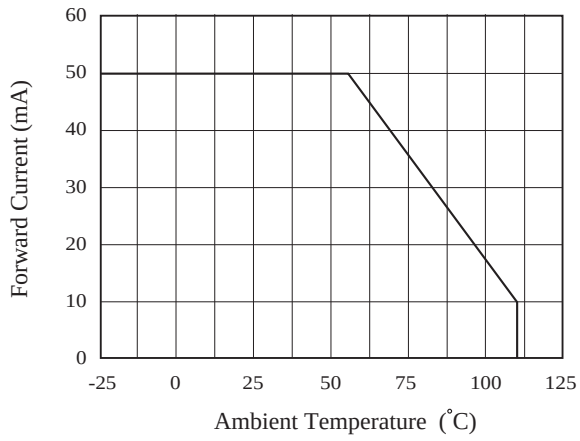
CHARACTERISTIC		SYMBOL	RATING	UNIT
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	70	mW
Output	Collector Power Dissipation	P_C	150	mW
	Collector Current	I_C	50	mA
	Collector-Emitter Voltage	V_{CEO}	80	V
	Emitter-Collector Voltage	V_{ECO}	6	V
Total Power Dissipation		P_{tot}	200	mW
Isolation Voltage		V_{ISO}	5000	Vrms
Operating Temperature		T_{opr}	-50～110	℃
Storage Temperature		T_{stg}	-55~125	℃
Soldering Temperature		T_{sol}	260	℃

ELECTRO-OPTICAL CHARACTERISTICS (Ta=25℃ unless otherwise noted)

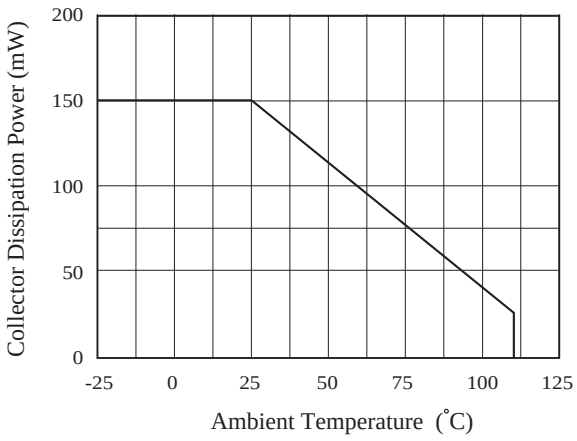
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input	Forward	V_F	I_F=20mA	-	1.2	1.4	V
	Reverse Current	I_R	V_R=4V	-	-	10	uA
	Terminal Capacitance	C_t	V=0, f=1kHz	-	30	250	pF
Output	Collector Dark Current	I_{CEO}	V_{CE}=20V, I_F=0	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=0.1mA, I_F=0	80	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	10uA, I_F=0	6	-	-	V
Transfer Characteristics	*Current Transfer Ratio	CTR	I_F=5mA, V_{CE}=5V	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=20mA, I_C=1mA	-	0.1	0.2	V
	Isolation Resistance	R_{ISO}	DC500V, 40~60% R.H.	5×10^{10}	1×10^{11}	-	Ω
	Floating Capacitance	C_f	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off Frequency	F_C	V_{CE}=5V, I_C=2mA, R_L=100Ω, -3dB	-	80	-	kHz
	Rise Time	T_r	V_{CE}=2V, I_C=2mA, R_L=100Ω	-	4	18	us
	Fall Time	T_f	V_{CE}=2V, I_C=2mA, R_L=100Ω	-	3	18	us

$$* \text{CTR} = \frac{I_C}{I_F} \times 100\%$$

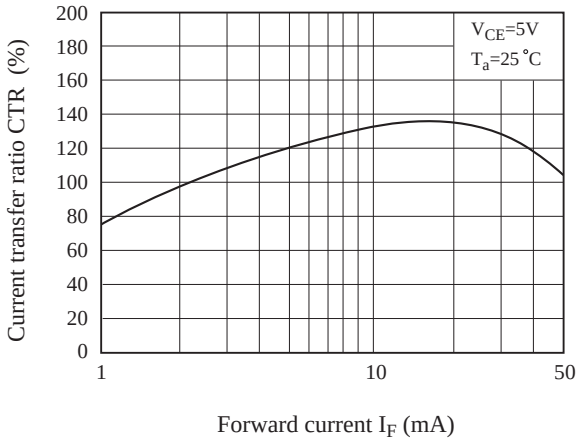
Forward Current vs. Ambien Temperature



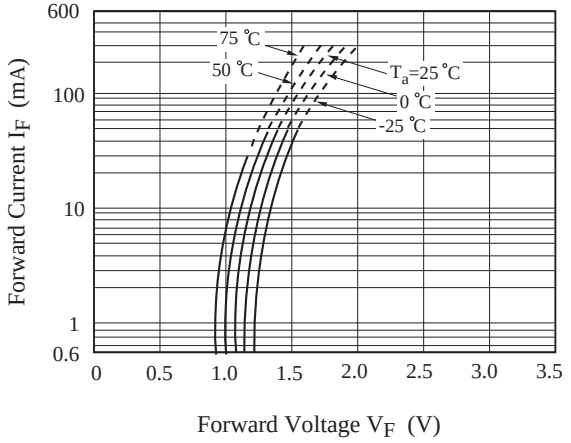
Collector Power Dissipation vs. Ambien Temperature



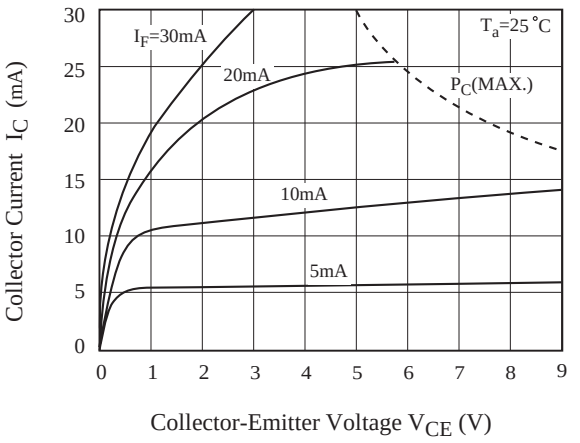
Current Transfer Ratio vs. Forward Current



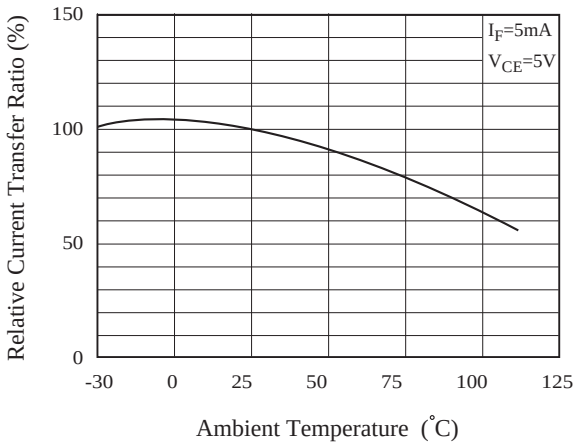
Forward Current vs. Forward Voltage



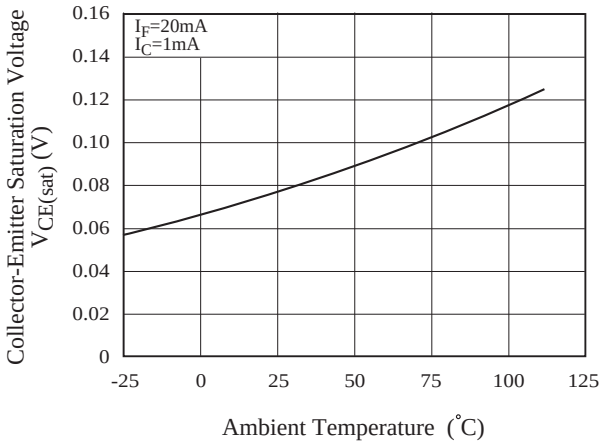
Collector Current vs. Collector-Emitter Voltage



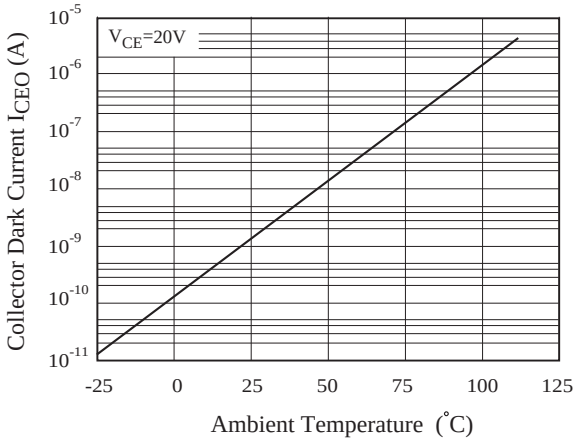
Relative Current Transfer Ratio vs. Ambient Temperature



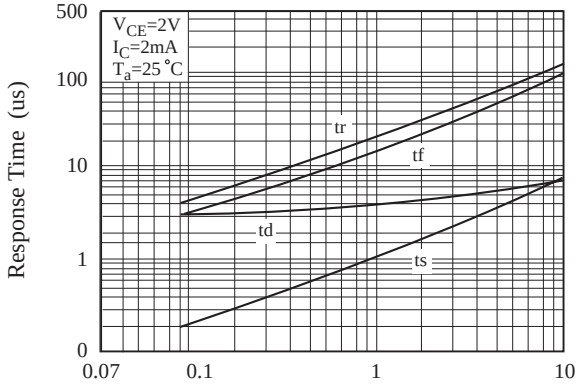
Collector-Emitter Saturation Voltage vs. Ambient Temperature



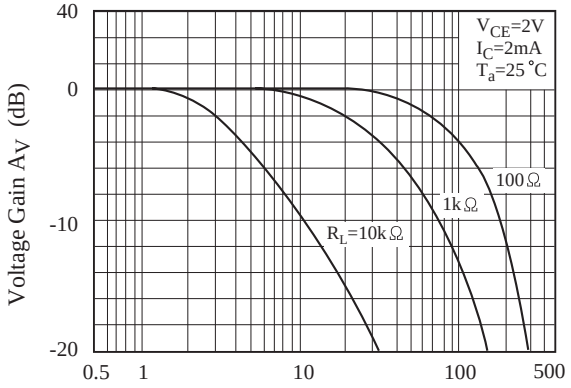
Collector Dark Current vs. Ambient Temperature



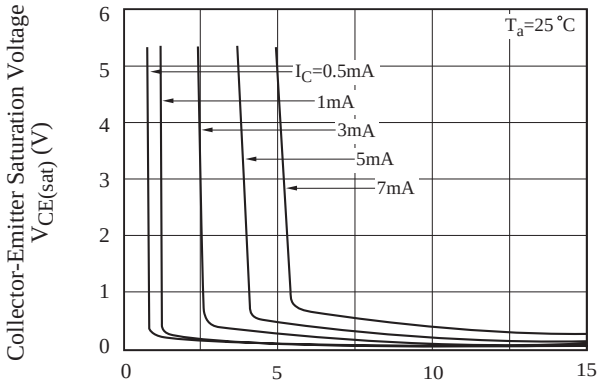
Response Time vs. Load Resistance



Frequency Response



Collector-Emitter Saturation Voltage vs. Forward Current



TEST Circuit for Response Time

