

PC511 Long Creepage Distance Type Photocoupler

T-41-83

■ Features

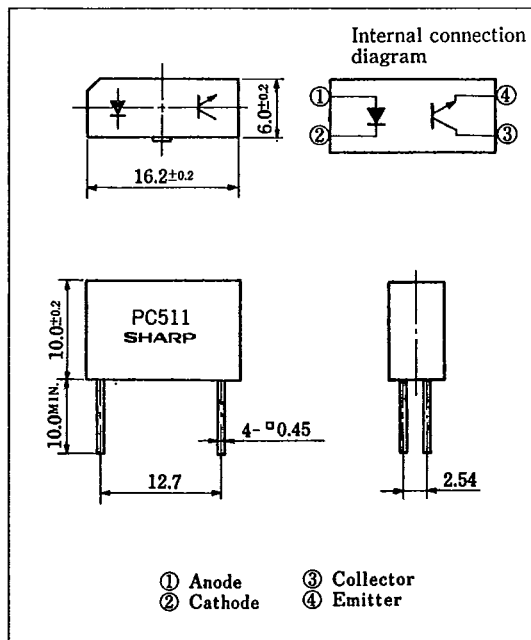
1. Long creepage distance (12.3mm)
2. Current transfer ratio
CTR: MIN. 10% at $I_F=20\text{mA}$, $V_{CE}=5\text{V}$
3. Low collector dark current
(I_{CEO} : MAX. 10^{-7}A at $V_{CE}=20\text{V}$)
4. High isolation voltage between input and output (V_{iso} : 5,000Vrms)
5. Easy mounting on PWB
6. UL recognized, file No. E64380
TÜV approved, No. R20044

■ Applications

1. Switching power supplies
2. Programmable controllers
3. Electronic sewing machines, copiers, automatic vending machines
4. Electric home appliances, audio equipment

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	35	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	20	mA
	Collector power dissipation	P_C	75	mW
	*2 Isolation voltage	V_{iso}	5,000	Vrms
	Operating temperature	T_{opr}	-25 ~ +95	°C
	Storage temperature	T_{stg}	-40 ~ +105	°C
	*3 Soldering temperature	T_{sol}	260	°C

*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio = 0.001

*2 RH = 40 ~ 60%, AC for 1 minute

*3 For 5 seconds

SHARP

T-41-83

■ Electro-optical Characteristics

(Ta=25°C)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F=20\text{mA}$	—	1.2	1.4	V
	Peak forward voltage	V_{FM}	$I_{FM}=0.5\text{A}$	—	3.0	4.0	V
	Reverse current	I_R	$V_R=3\text{V}$	—	—	10	μA
	Terminal capacitance	C_t	$V=0, f=1\text{kHz}$	—	50	250	pF
Output	Collector dark current	I_{CE0}	$V_{CE}=20\text{V}, I_F=0$	—	—	10^{-7}	A
	Current transfer ratio	CTR	$I_F=20\text{mA}, V_{CE}=5\text{V}$	10	—	100	%
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=40\text{mA}, I_C=1\text{mA}$	—	0.1	0.4	V
	Isolation resistance	R_{ISO}	DC500V, RH=40~60%	10^{10}	10^{11}	—	Ω
	Floating capacitance	C_f	$V=0, f=1\text{MHz}$	—	0.5	—	pF
	Cut-off frequency	f_c	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	12	80	—	kHz
	Response time (Rise)	t_r	$V_{CE}=2\text{V}, I_C=2\text{mA}$	—	3	20	μs
	Response time (Fall)	t_f	$R_L=100\Omega$	—	4	30	μs

Fig. 1 Forward Current vs. Ambient Temperature

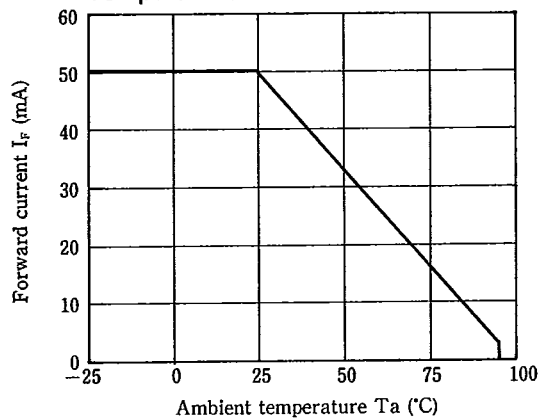


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

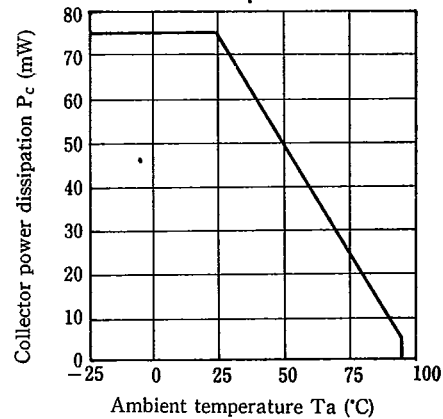


Fig. 3 Peak Forward Current vs. Duty Ratio

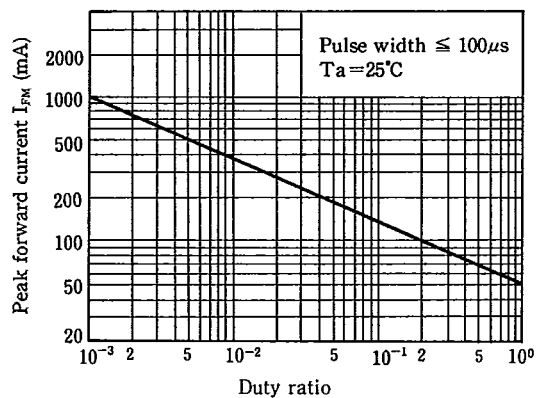


Fig. 4 Forward Current vs. Forward Voltage

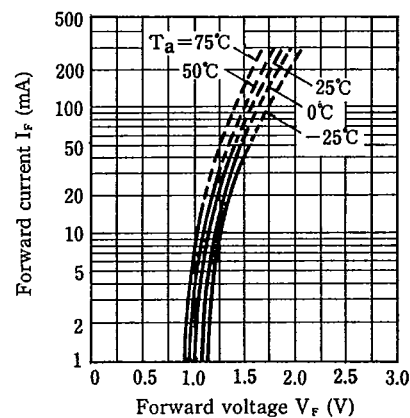


Fig. 5 Current Transfer Ratio vs. Forward Current

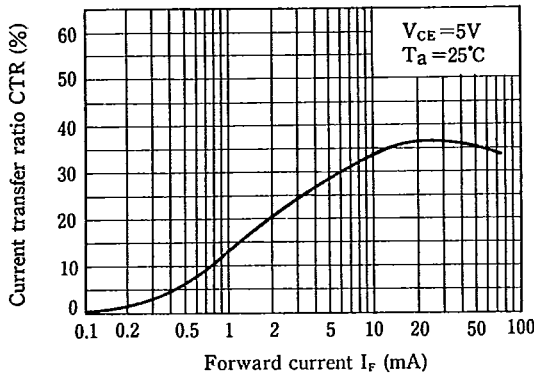


Fig. 6 Collector Current vs. Collector-emitter Voltage

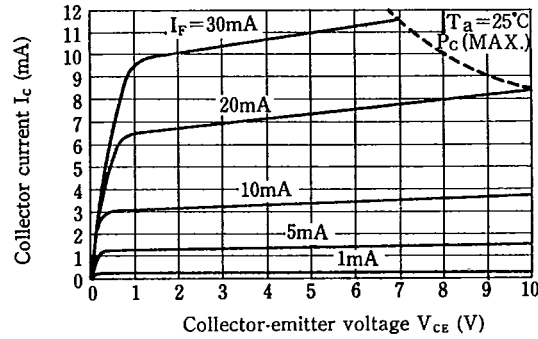


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

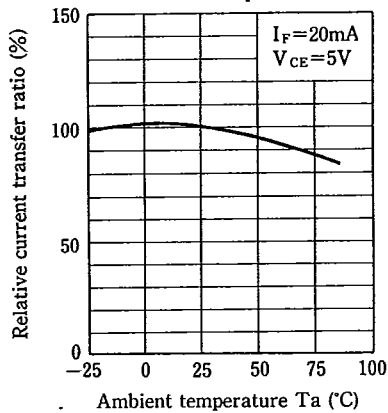


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

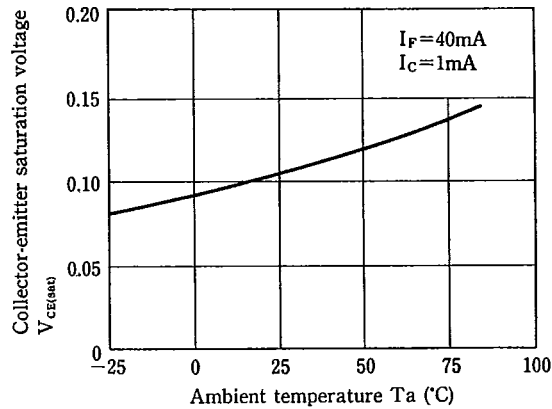


Fig. 9 Collector Dark Current vs. Ambient Temperature

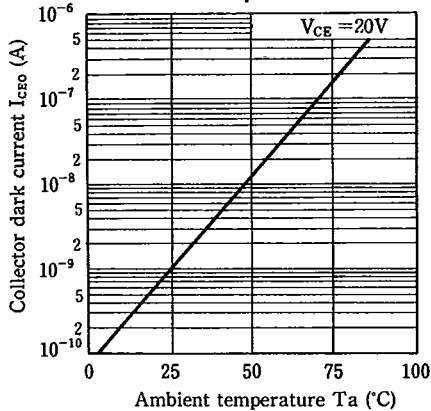
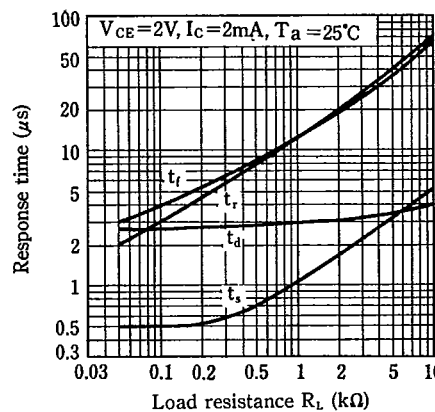


Fig. 10 Response Time vs. Load Resistance



Test Circuit for Response Time

Fig. 11 Frequency Response

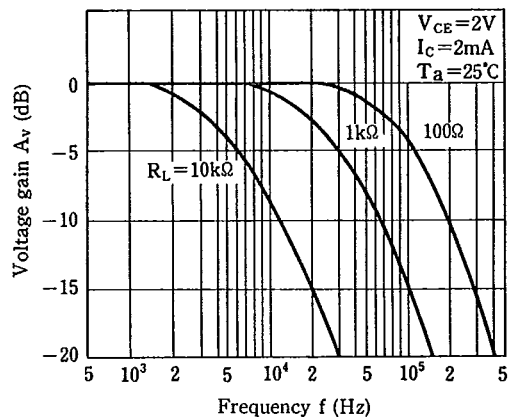
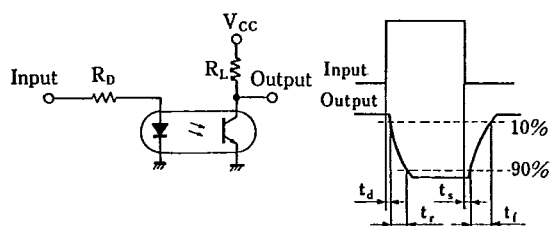
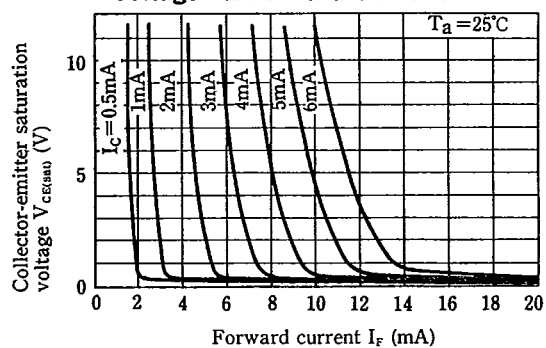
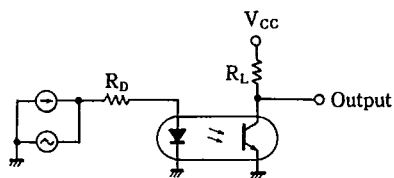


Fig. 12 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Frequency Response



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