T-41-83

PC511 Long Creepage Distance Type Photocoupler

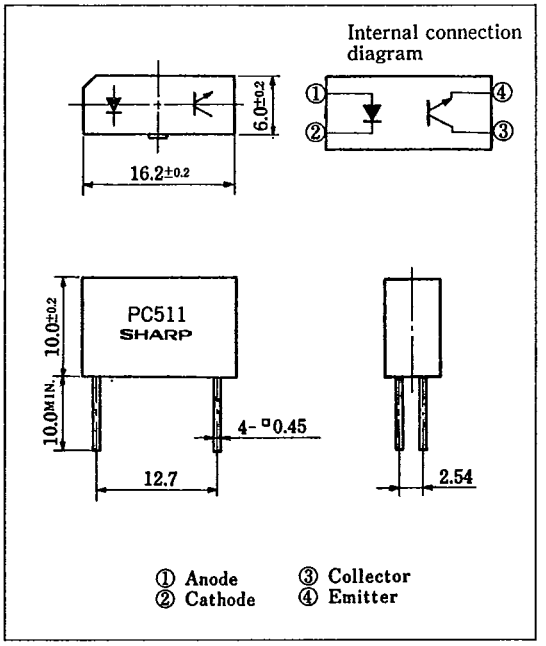
■ Features

1. Long creepage distance (12.3mm)
2. Current transfer ratio
   CTR: MIN. 10% at I_F=20mA, V_{CE}=5V
3. Low collector dark current
   (I_{CEO}: MAX. 10^{-7}A at V_{CE}=20V)
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
	*1Peak 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
*2Isolation voltage		V_{iso}	5,000	Vrms
Operating temperature		T_{opr}	−25～+95	°C
Storage temperature		T_{stg}	−40～+105	°C
*3Soldering temperature		T_{sol}	260	°C

*1 Pulse width≦100μs, Duty ratio=0.001
*2 RH=40～60%, AC for 1 minute
*3 For 5 seconds

■ Electro-optical Characteristics

(Ta=25°C)

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

Fig. 1 Forward Current vs. Ambient Temperature

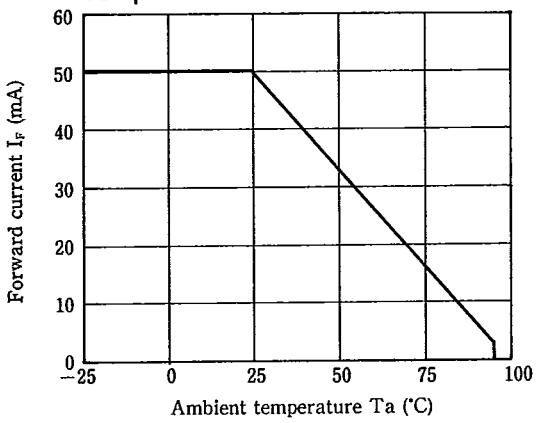


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

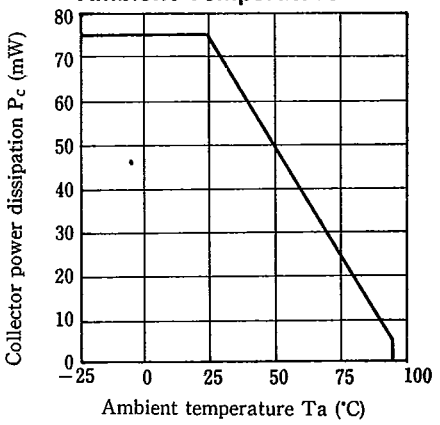


Fig. 3 Peak Forward Current vs. Duty Ratio

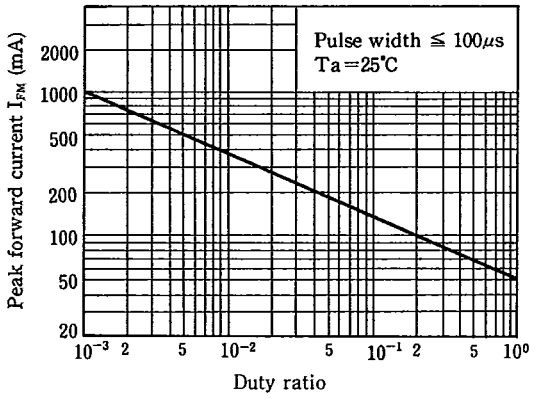


Fig. 4 Forward Current vs. Forward Voltage

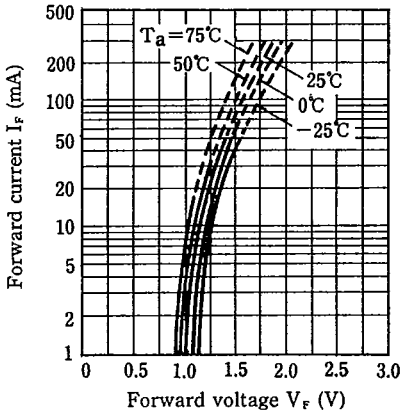


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Fig. 5 Current Transfer Ratio vs. Forward Current

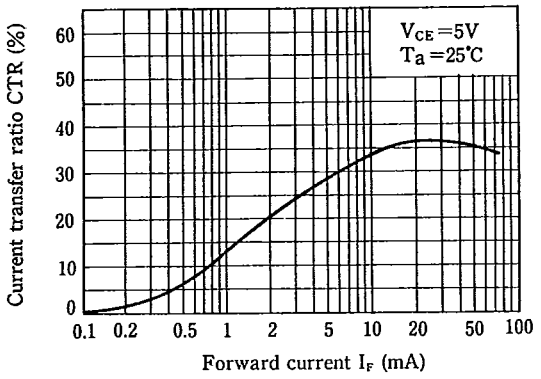


Fig. 6 Collector Current vs. Collector-emitter Voltage

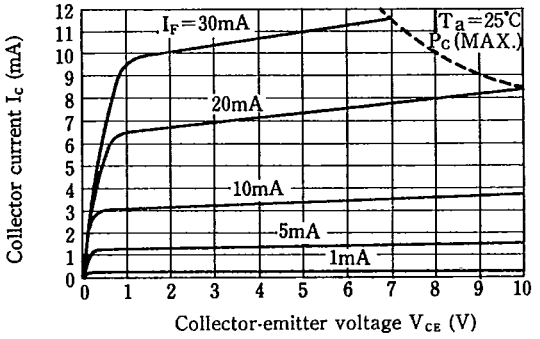


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

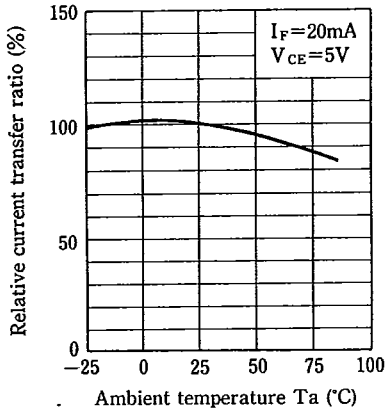


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

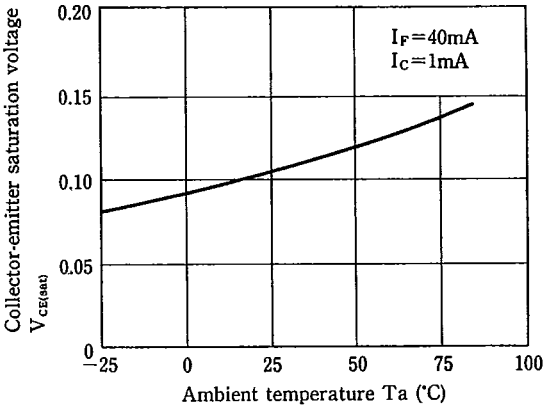


Fig. 9 Collector Dark Current vs. Ambient Temperature

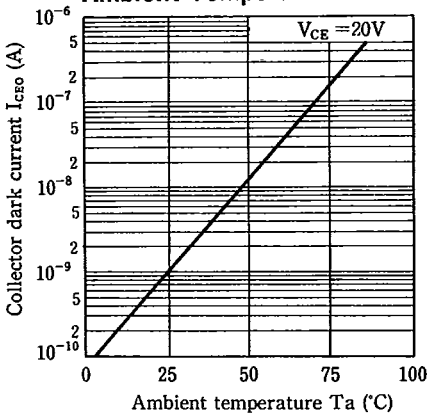
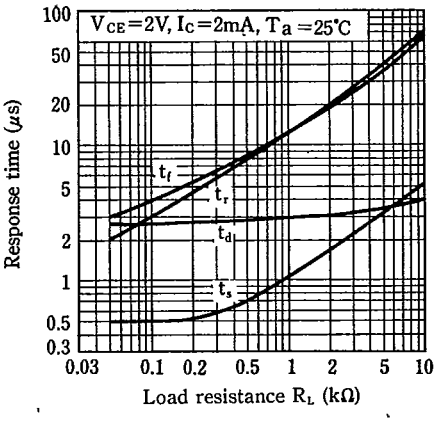


Fig. 10 Response Time vs. Load Resistance



Test Circuit for Response Time

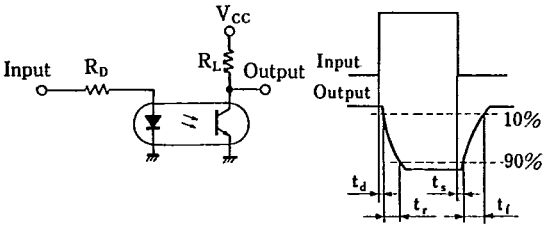


Fig. 11 Frequency Response

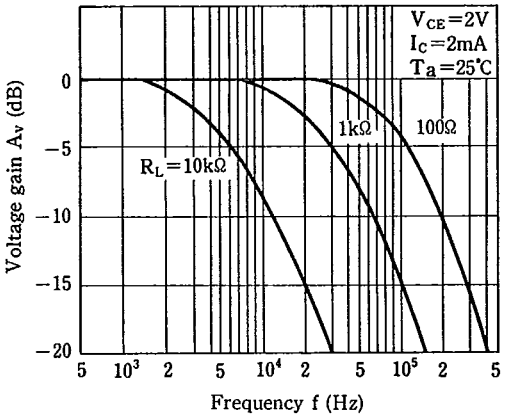
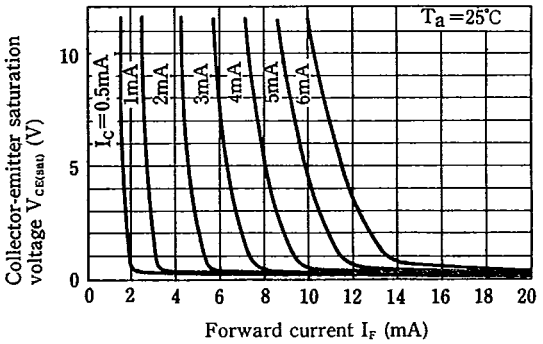
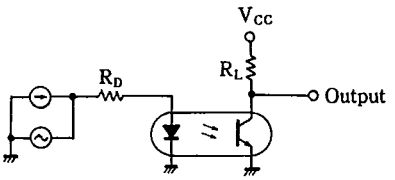


Fig. 12 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Frequency Response



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