

PC123/PC123F

* DIN-VDE0884 approved type (PC123Y/PC123FY) is also available as an option.

■ Features

1. Conform to European Safety Standard
2. Internal isolation distance: 0.4mm or more
3. High collector-emitter voltage (V_{CEO} : 70V)
4. Long creepage distance type
5. Recognized by UL (No. E64380)
 - Approved by VDE (DIN-VDE83601)
 - Approved by BSI (BS415 No. 7087, BS7002 No. 7409)
 - Approved by SEMCO (No. 9216212)
 - Approved by DEMCO (No. 108954)
 - Approved by EI (No. 155030)
 - Recognized by CSA (No. CA95323)

■ Model Line-up

Model No.	*Creepage distance	*Clearance distance
PC123	6.4mm or more	6.4mm or more
PC123F	8mm or more	8mm or more

* Between input and output

■ Applications

1. Power supplies
2. OA equipment

■ Absolute Maximum Ratings

($T_a=25^\circ\text{C}$)

	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	70	mW
Output	Collector-emitter voltage	V_{CEO}	70	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	mW
Total power dissipation		P_{tot}	200	mW
*2	Isolation voltage	$V_{iso (rms)}$	5	kV
	Operating temperature	T_{opr}	-30 to +100	$^\circ\text{C}$
	Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$
*3	Soldering temperature	T_{sol}	260	$^\circ\text{C}$

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

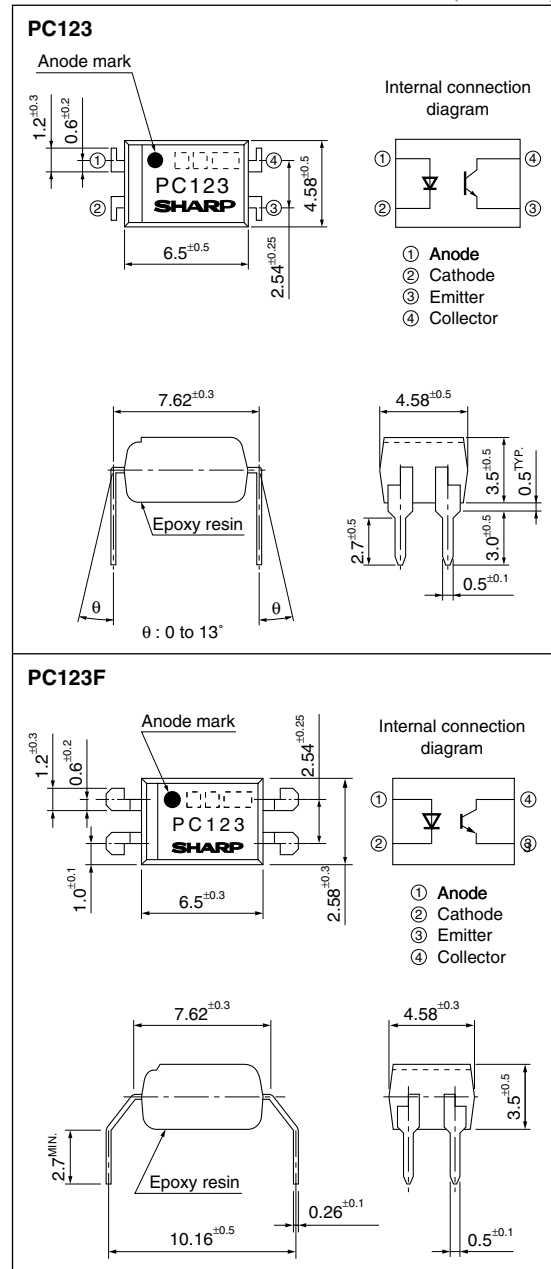
*2 40 to 60%RH, AC for 1 minute

*3 For 10s

European Safety Standard Approved Type Long Creepage Distance Photocoupler

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

($T_a=25^{\circ}\text{C}$)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F=20\text{mA}$	-	1.2	1.4	V	
	Reverse current	I_R	$V_R=4\text{V}$	-	-	10	μA	
	Terminal capacitance	C_t	$V=0, f=1\text{kHz}$	-	30	250	pF	
Output	Collector dark current	I_{CEO}	$V_{CE}=50\text{V}, I_F=0$	-	-	100	nA	
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	70	-	-	V	
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E=10\mu\text{A}, I_F=0$	6	-	-	V	
Transfer characteristics	Collector current	I_C	$I_F=5\text{mA}, V_{CE}=5\text{V}$	2.5	-	20	mA	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$	-	0.1	0.2	V	
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	-	Ω	
	Floating capacitance	C_f	$V=0, f=1\text{MHz}$	-	0.6	1.0	pF	
	Cut-off frequency	f_c	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$	-	80	-	kHz	
	Response time	Rise time	t_r	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	-	4	18	μs
		Fall time	t_f		-	3	18	μs

■ Rank Table

($I_F=5\text{mA}, V_{CE}=5\text{V}, T_a=25^{\circ}\text{C}$)

Model No.	Rank mark	I_C (mA)
PC123 / PC123Y / PC123F / PC123FY	A, B, S or no mark	2.5 to 20.0
PC123A / PC123Y1 / PC123F1 / PC123FY1	A	2.5 to 7.5
PC123B / PC123Y2 / PC123F2 / PC123FY2	B	5.0 to 12.5
PC123C / PC123Y5 / PC123F5 / PC123FY5	no mark	10.0 to 20.0
PC123S / PC123YS / PC123FS / PC123FY8	S	5.0 to 10.0

Fig.1 Forward Current vs. Ambient Temperature

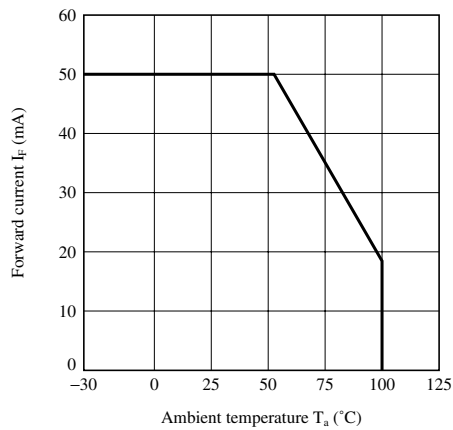


Fig.2 Diode Power Dissipation vs. Ambient Temperature

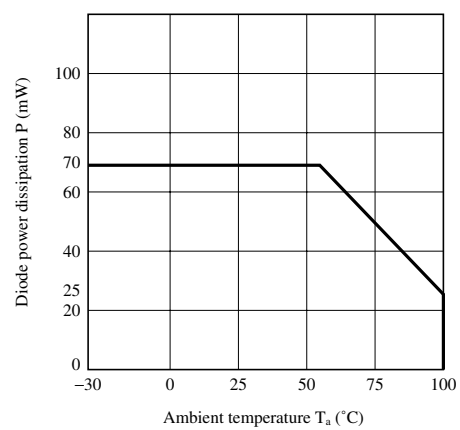


Fig.3 Collector Power Dissipation vs. Ambient Temperature

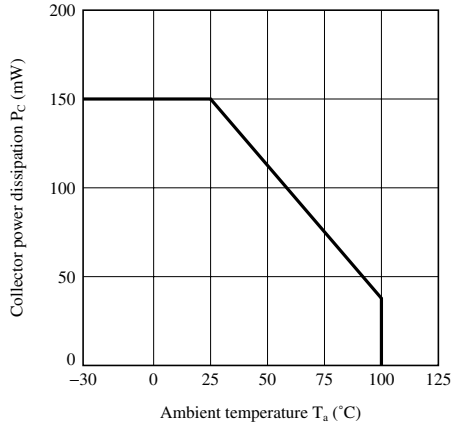


Fig.4 Power Dissipation vs. Ambient Temperature

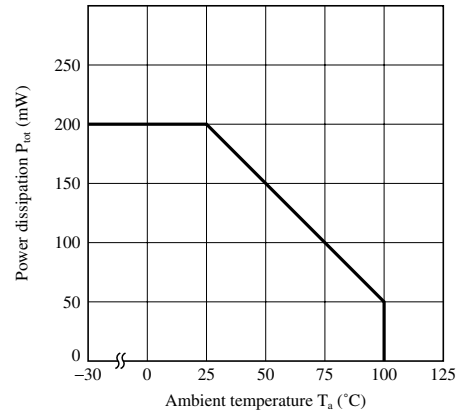


Fig.5 Peak Forward Current vs. Duty Ratio

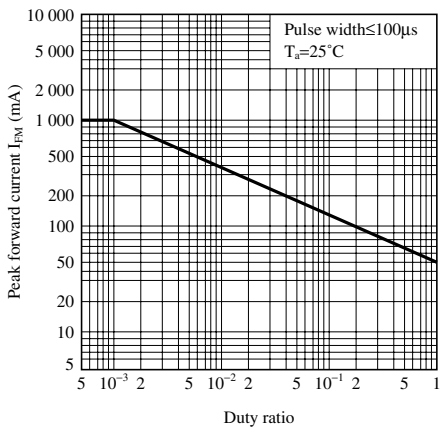


Fig.6 Forward Current vs. Forward Voltage

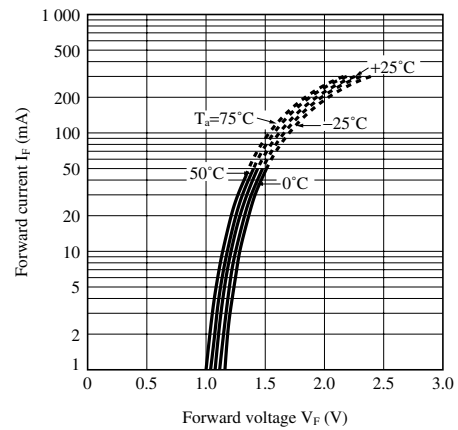


Fig.7 Current Transfer Ratio vs. Forward Current

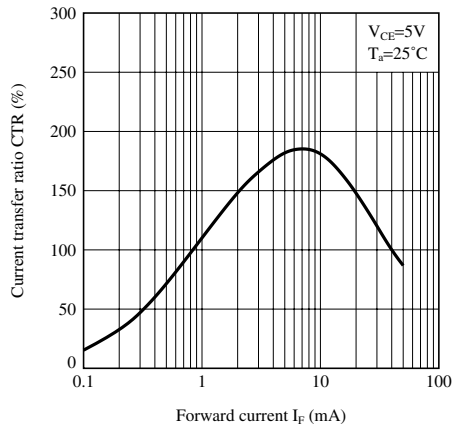


Fig.8 Collector Current vs. Collector-emitter Voltage

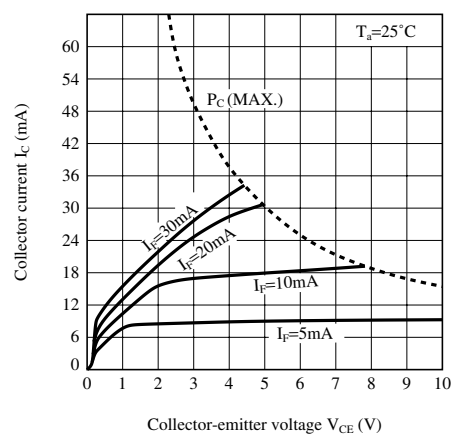


Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature

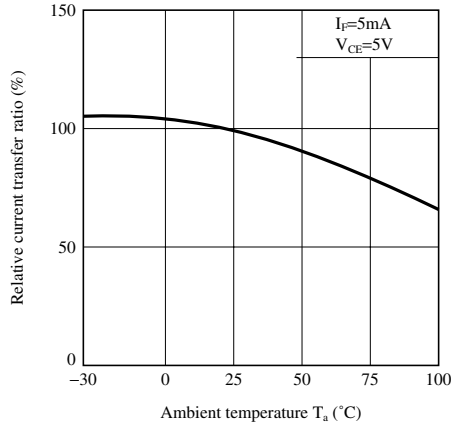


Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature

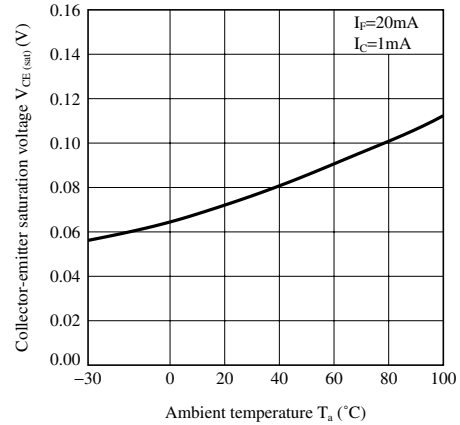


Fig.11 Collector Dark Current vs. Ambient Temperature

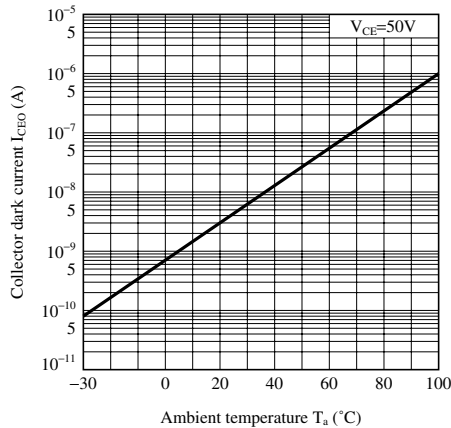


Fig.12 Response Time vs. Load Resistance

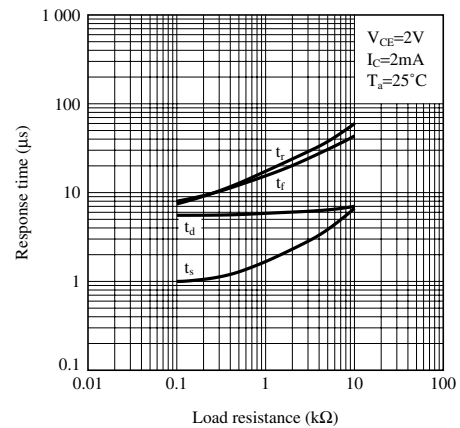


Fig.13 Frequency Response

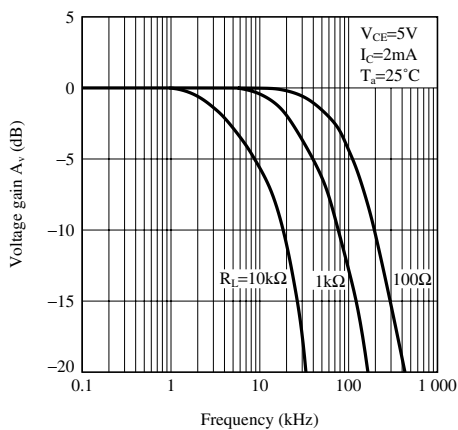
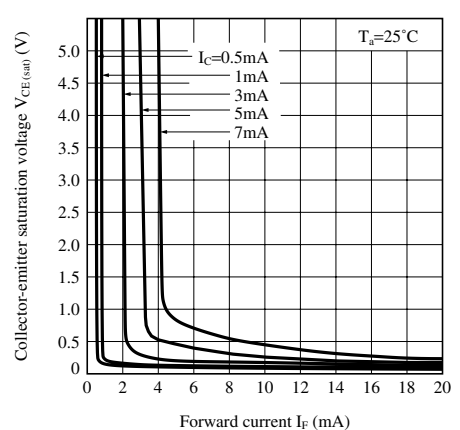


Fig.14 Collector-emitter Saturation Voltage vs. Forward Current



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