

PC8D52/PC8Q52

High Collector-emitter Voltage Type Photocouplers

■ Features

1. High collector-emitter voltage V_{CEO} :350V
2. High current transfer ratio
(CTR:MIN. 1 000% at $I_F=1\text{mA}$, $V_{CE}=2\text{V}$)
3. High isolation voltage between input and output
($V_{iso(rms)}$:5kV)
4. Compact dual-in-line package
PC8D52 (2-channel type)
PC8Q52 (4-channel type)
5. Recognized by UL (NO. E64380)

■ Applications

1. Telephones
2. Facsimiles
3. Modems
4. Set-top Boxes

■ 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}	350	V
	Emitter-collector voltage	V_{ECO}	0.1	V
	Collector current	I_C	150	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	$^\circ\text{C}$	

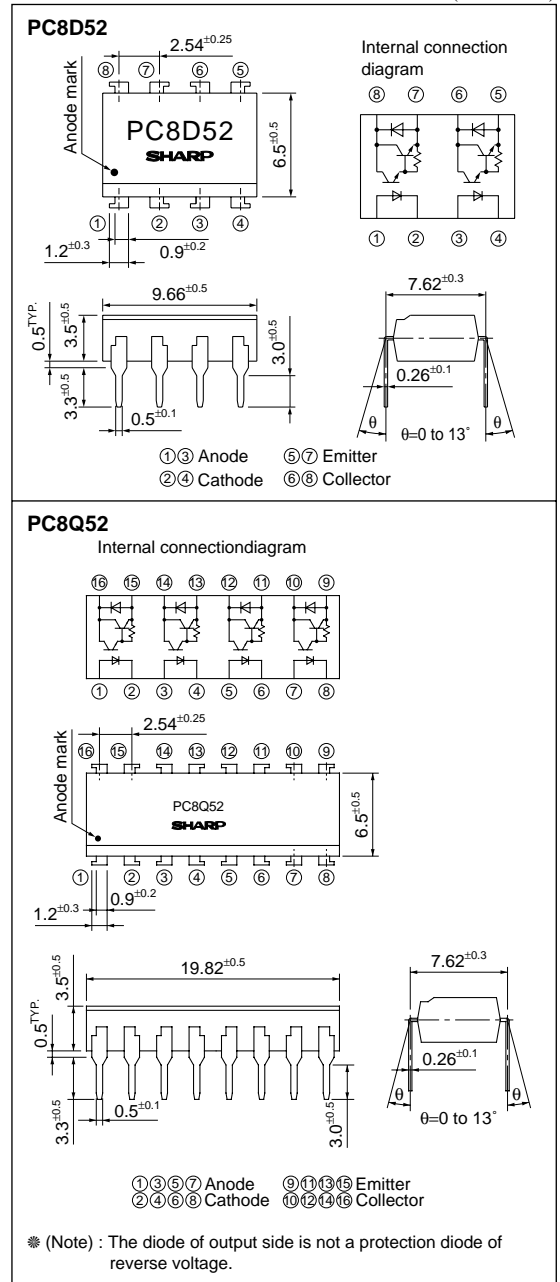
*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio:0.001

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

*3 For 10s

■ 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	$I_F=10\text{mA}$	—	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}	$V_{CE}=200\text{V}, I_F=0$	—	—	200	nA
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	350	—	—	V
Transfer characteristics	Collector current	I_C	$I_F=1\text{mA}, V_{CE}=2\text{V}$	10	40	150	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=100\text{mA}$	—	—	1.2	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	$V_{CE}=2\text{V}, I_C=20\text{mA}, R_L=100\Omega, -3\text{dB}$	1	7	—	kHz
	Response time	Rise time	t_r	$V_{CE}=2\text{V}, I_C=20\text{mA}, R_L=100\Omega$	—	100	300
Fall time		t_f	—		20	100	μs

Fig.1 Forward Current vs. Ambient Temperature

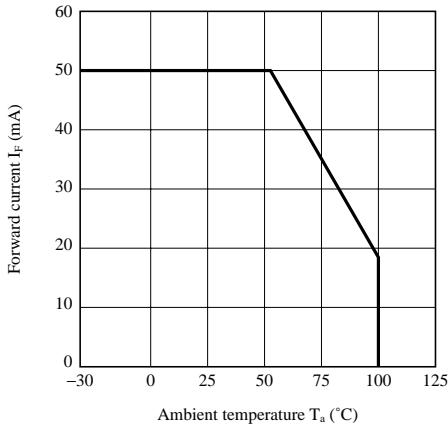


Fig.2 Collector Power Dissipation vs. Ambient Temperature

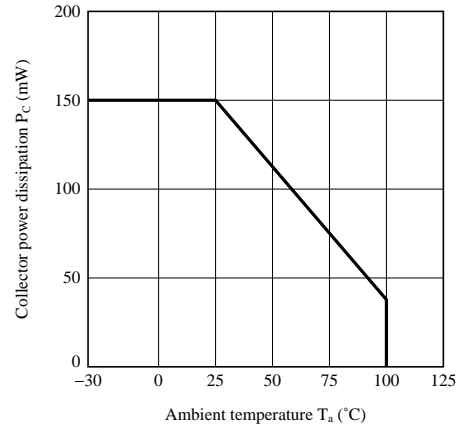


Fig.3 Peak Forward Current vs. Duty Ratio

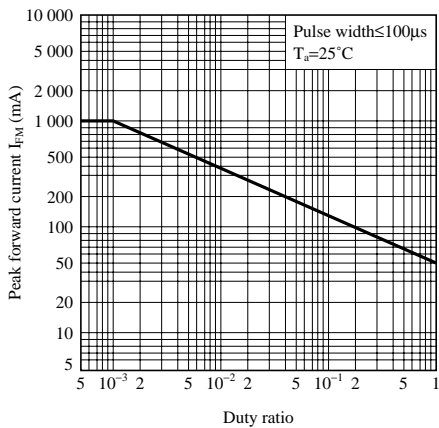


Fig.4 Forward Current vs. Forward Voltage

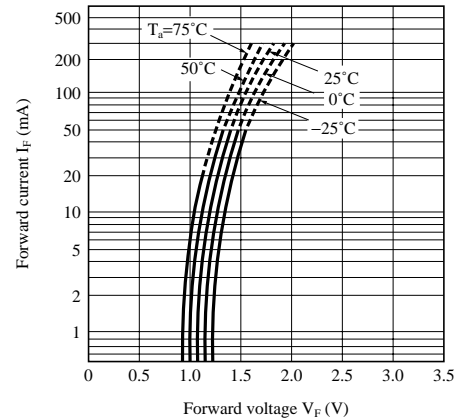


Fig.5 Current Transfer Ratio vs. Forward Current

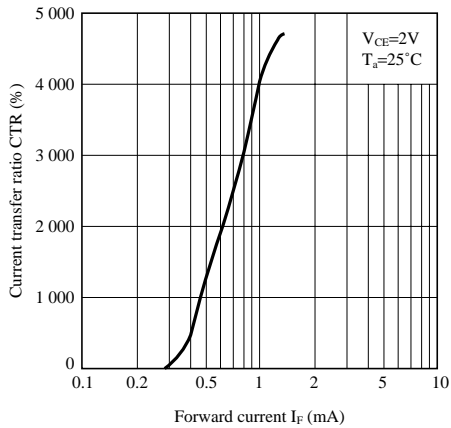


Fig.6 Collector Current vs. Collector-emitter Voltage

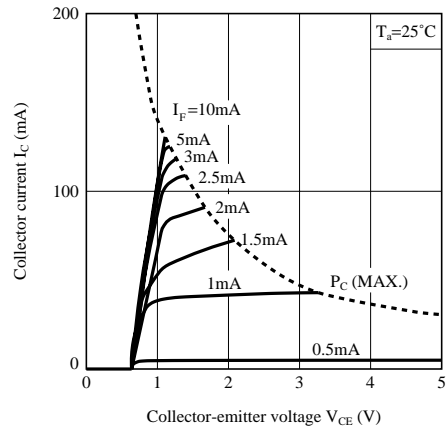


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

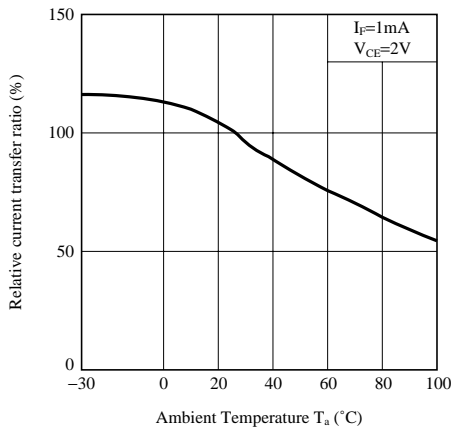


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

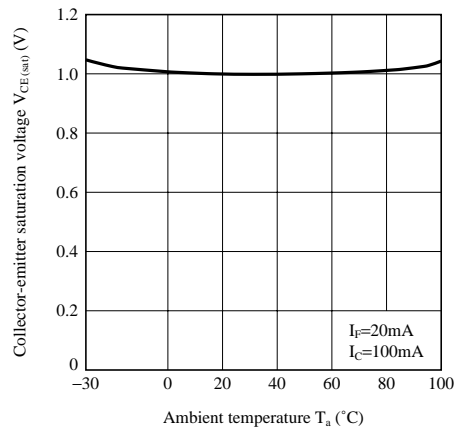


Fig.9 Collector Dark Current vs. Ambient Temperature

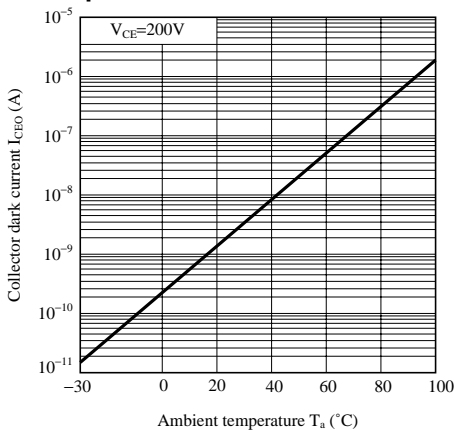


Fig.10 Response Time vs. Load Resistance

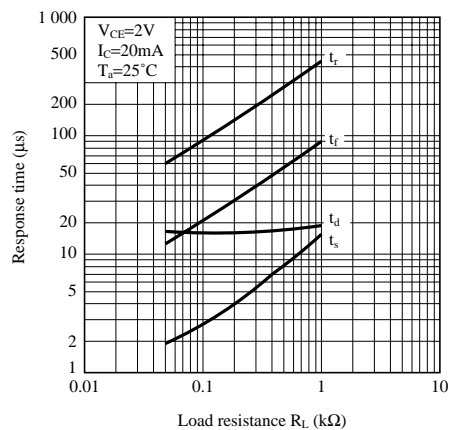


Fig.11 Frequency Response

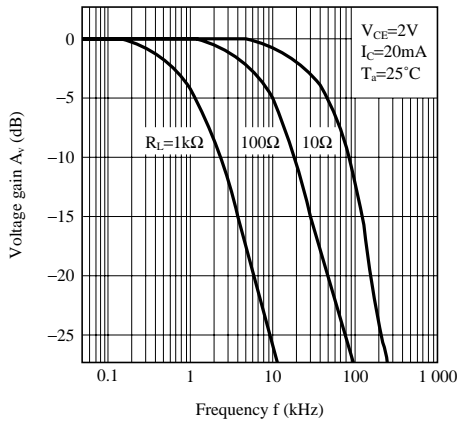
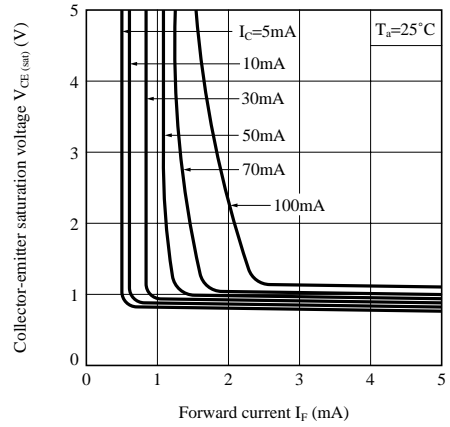


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



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