

# 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<sub>a</sub>=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	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	°C
	Storage temperature	$T_{stg}$	-55 to +125	°C
	*3 Soldering temperature	$T_{sol}$	260	°C

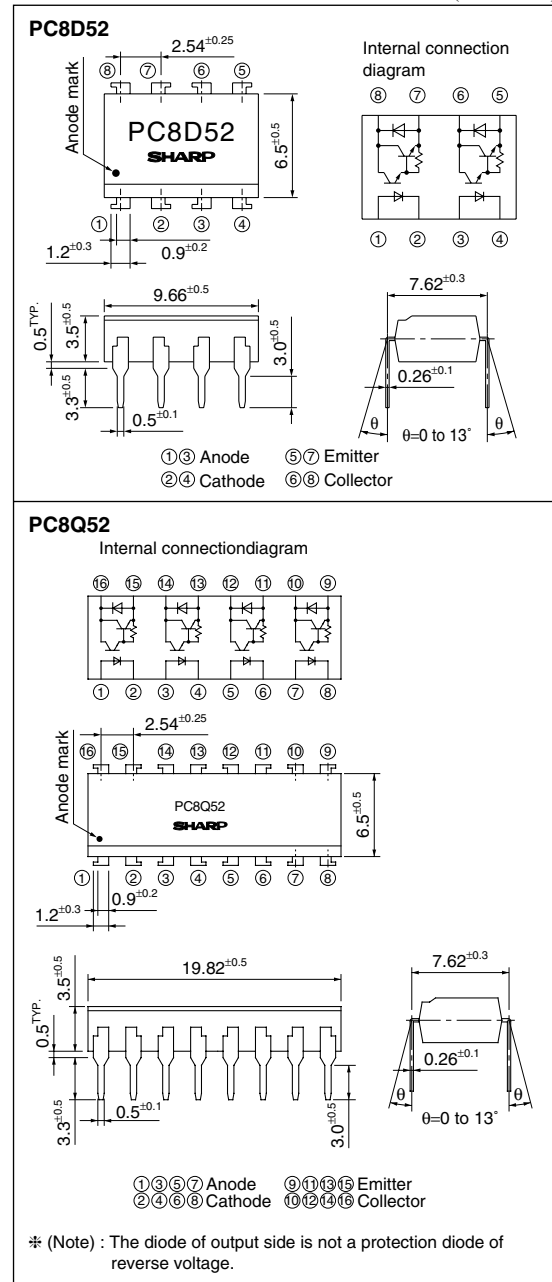
\*1 Pulse width≤100μs, Duty ratio:0.001

\*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	V	
	Reverse current	$I_R$	$V_R=4\text{V}$		–	–	10 $\mu\text{A}$	
	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		$5 \times 10^{10}$	$10^{11}$	–	$\Omega$
	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	$t_r$	–	100
	Fall time	$t_f$	–	20	100	$\mu\text{s}$		

Fig.1 Forward Current vs. Ambient Temperature

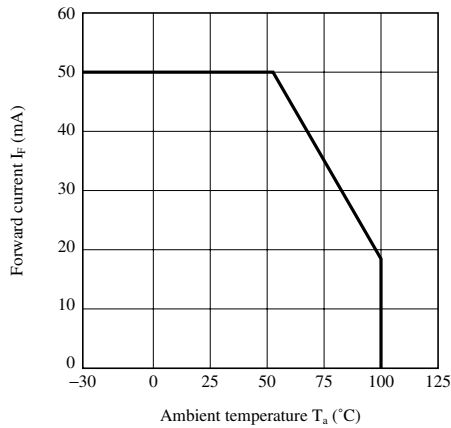


Fig.2 Collector Power Dissipation vs. Ambient Temperature

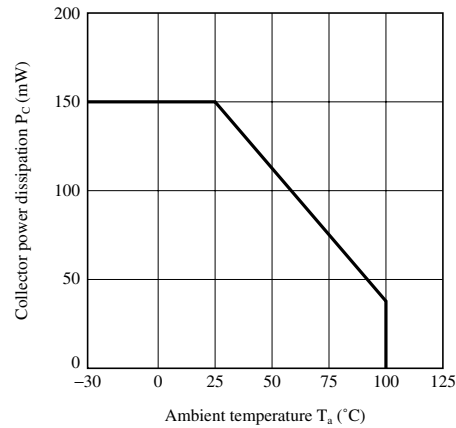


Fig.3 Peak Forward Current vs. Duty Ratio

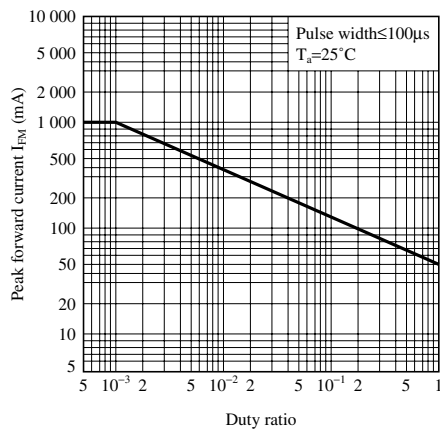
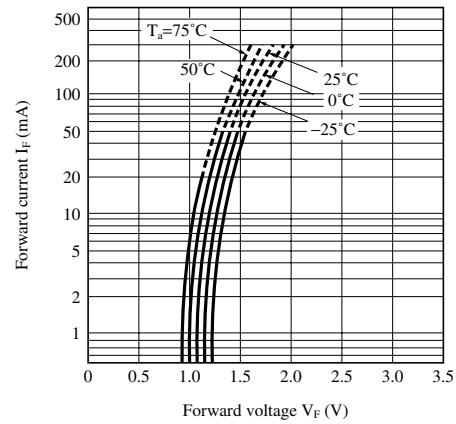
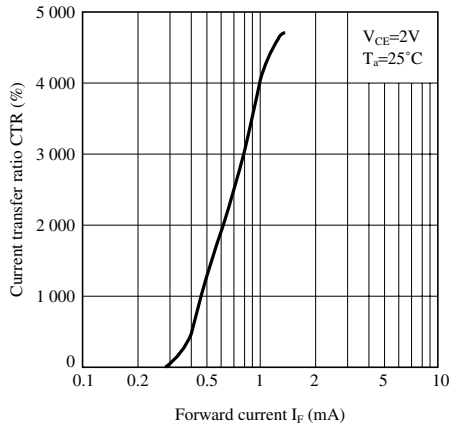


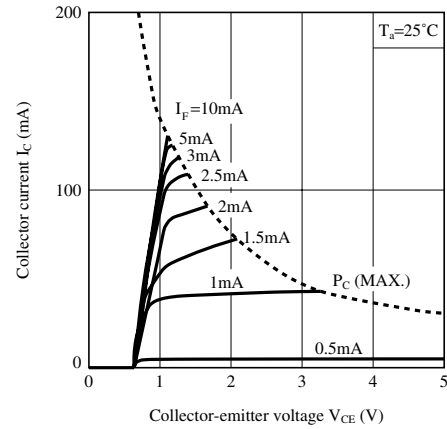
Fig.4 Forward Current vs. Forward Voltage



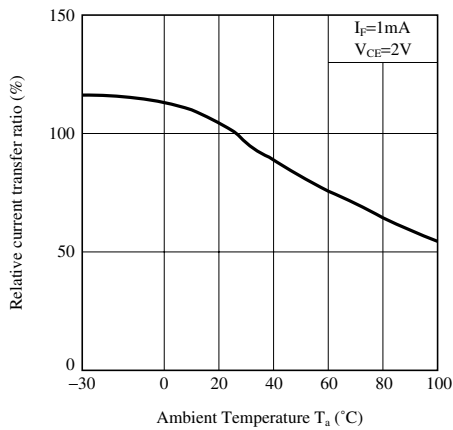
**Fig.5 Current Transfer Ratio vs. Forward Current**



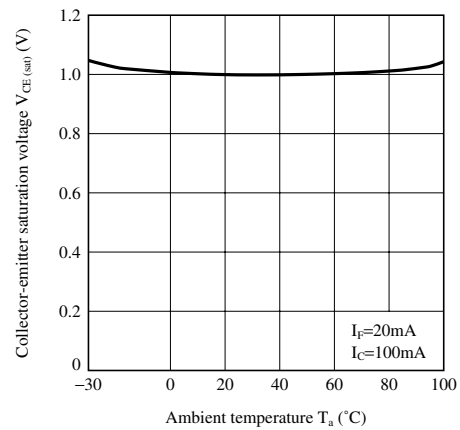
**Fig.6 Collector Current vs. Collector-emitter Voltage**



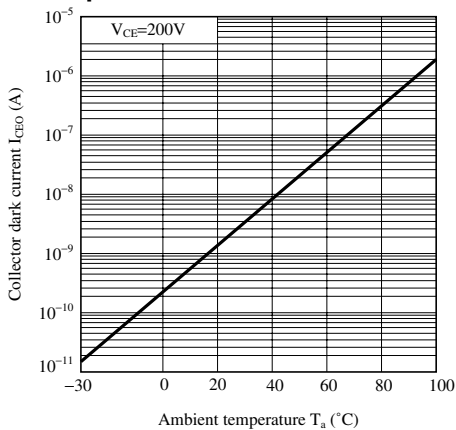
**Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature**



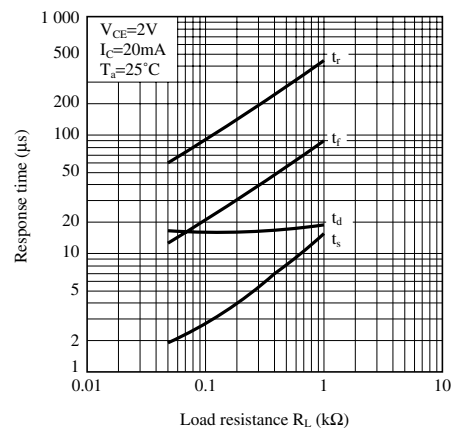
**Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature**



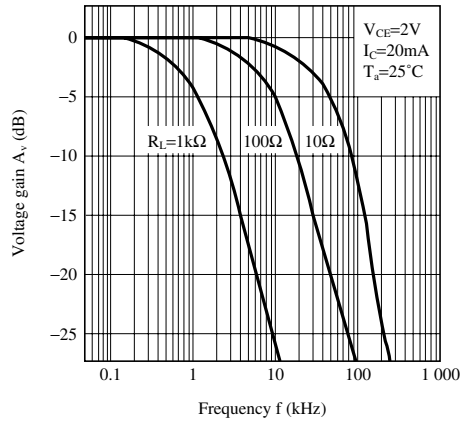
**Fig.9 Collector Dark Current vs. Ambient Temperature**



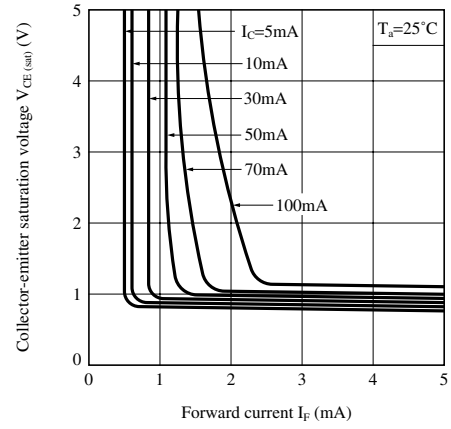
**Fig.10 Response Time vs. Load Resistance**



**Fig.11 Frequency Response**



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



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