

# PC865 Series

## ■ Features

1. Low collector dark current  
( $I_{CEO}$  : MAX.  $10 \mu\text{A}$  at  $V_{CE} = 24\text{V}$ ,  $T_a = 85^\circ\text{C}$  )
2. High current transfer ratio  
(CTR : MIN. 1 000% at  $I_F = 1\text{mA}$ ,  $V_{CE} = 2\text{V}$ )
3. High collector-emitter voltage ( $V_{CEO}$  : 70V)
4. High isolation voltage between input and output ( $V_{iso}$  : 5 000V<sub>rms</sub>)
5. Compact dual-in-line package  
**PC865** (1-channel ) **PC875** (2-channel )  
**PC895** (4-channel )
6. Recognized by UL, file No. E64380

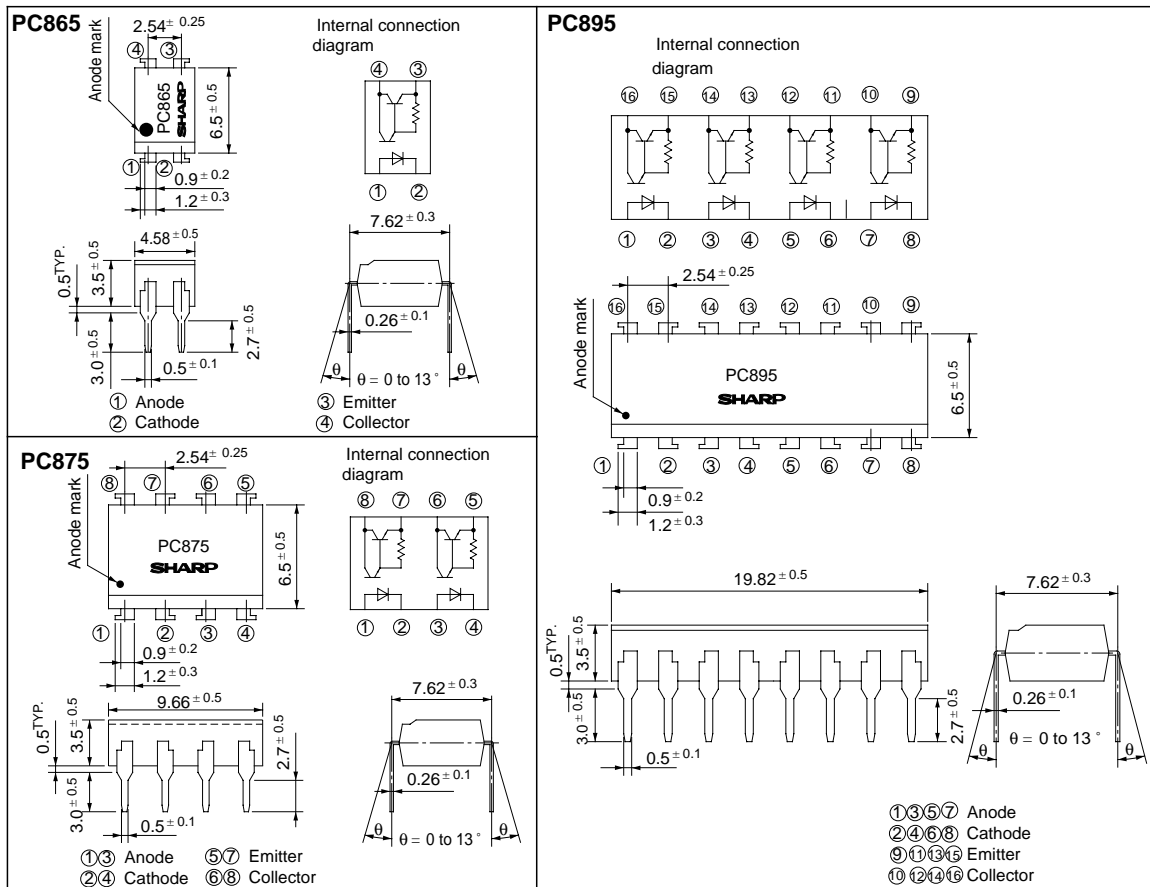
## High Sensitivity, Low Collector Dark Current, High Collector-emitter Voltage Type Photocoupler

## ■ Applications

1. Programmable controllers
2. System appliances, measuring instruments
3. Copiers, automatic vending machines
4. Signal transmission between circuits of different potentials and impedances

## ■ Outline Dimensions

(Unit : mm)



## ■ Absolute Maximum Ratings

(Ta = 25 °C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	*1Peak forward current	I <sub>FM</sub>	1	A
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V <sub>CEO</sub>	70	V
	Emitter-collector voltage	V <sub>ECCO</sub>	0.1	V
	Collector current	I <sub>C</sub>	80	mA
	Collector power dissipation	P <sub>C</sub>	150	mW
Total power dissipation		P <sub>tot</sub>	200	mW
*2Isolation voltage		V <sub>iso</sub>	5 000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	- 30 to + 100	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 125	°C
*3Soldering temperature		T <sub>sol</sub>	260	°C

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

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

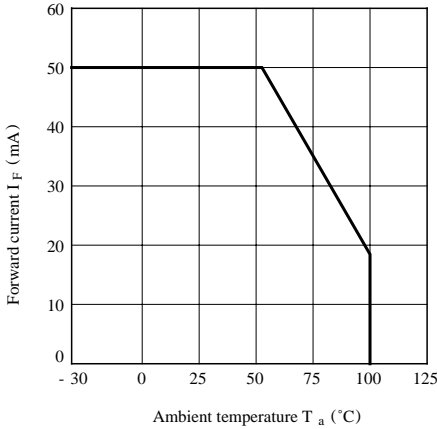
\*3 For 10 seconds

## ■ Electro-optical Characteristics

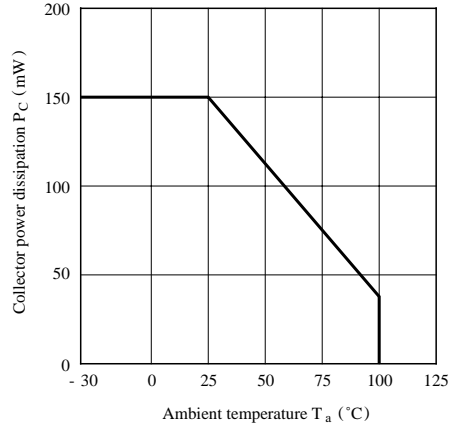
(Ta = 25 °C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 20mA	-	1.2	1.4	V	
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 4V	-	-	10	μA	
	Terminal capacitance	C <sub>t</sub>	V = 0, f = 1kHz	-	30	250	pF	
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> = 24V I <sub>F</sub> = 0	Ta = 25 °C	-	-	2 x 10 <sup>-7</sup>	A
				Ta = 85 °C	-	-	10 <sup>-5</sup>	A
Transfer characteristics	Current transfer ratio	CTR	I <sub>F</sub> = 1mA, V <sub>CE</sub> = 2V	1 000	-	8 000	%	
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> = 20mA, I <sub>C</sub> = 5mA	-	0.8	1.0	V	
	Isolation resistance	R <sub>iso</sub>	DC500V, 40 to 60 % RH	5 x 10 <sup>10</sup>	10 <sup>11</sup>	-	Ω	
	Floating capacitance	C <sub>f</sub>	V = 0, f = 1MHz	-	0.6	1.0	pF	
	Cut-off frequency	f <sub>c</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100 Ω, - 3dB	1	6	-	kHz	
	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 10mA R <sub>L</sub> = 100 Ω	-	100	300	μs
Fall time		t <sub>f</sub>	-		35	200	μs	

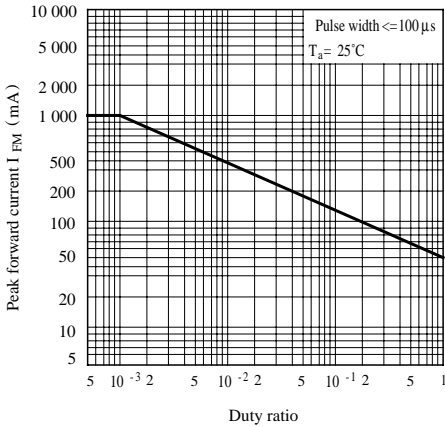
**Fig. 1 Forward Current vs. Ambient Temperature**



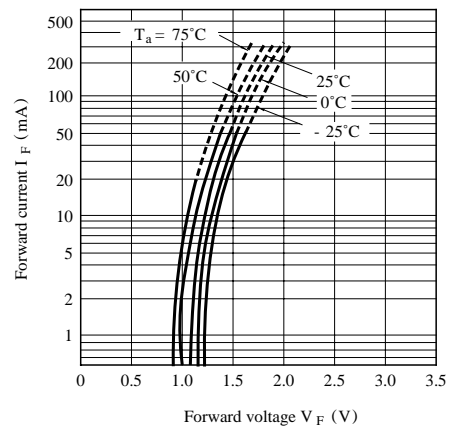
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



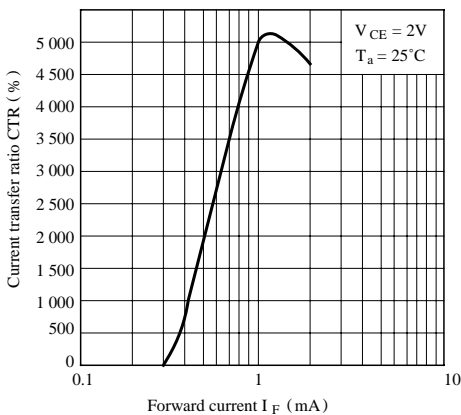
**Fig. 3 Peak Forward Current vs. Duty Ratio**



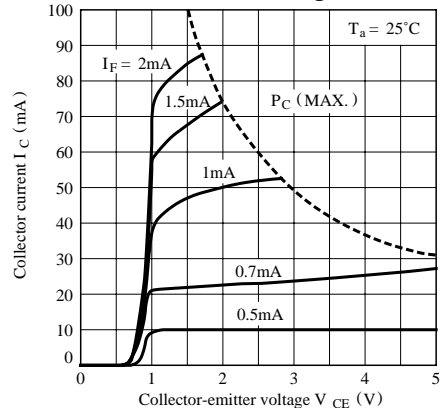
**Fig. 4 Forward Current vs. Forward Voltage**



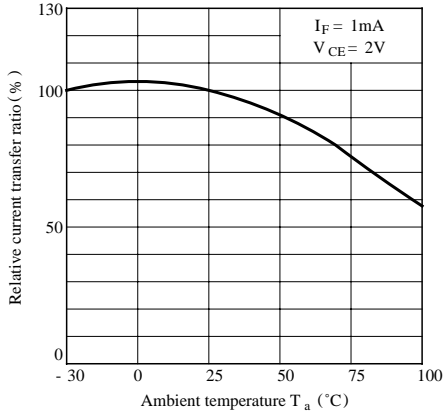
**Fig. 5 Current Transfer Ratio vs. Forward Current**



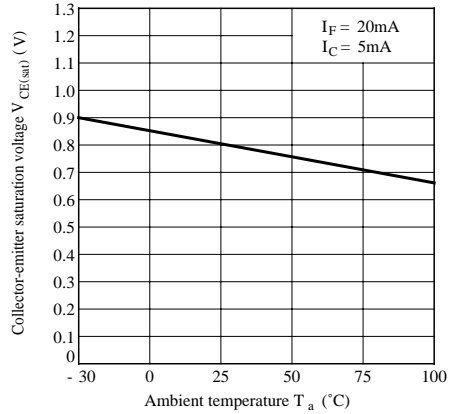
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



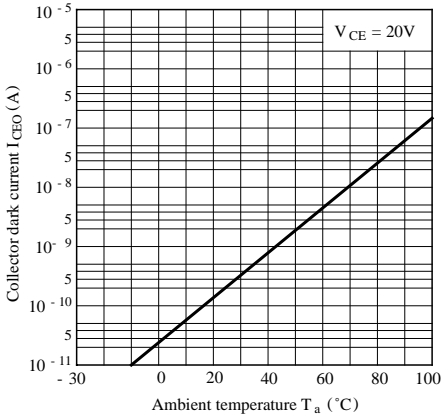
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



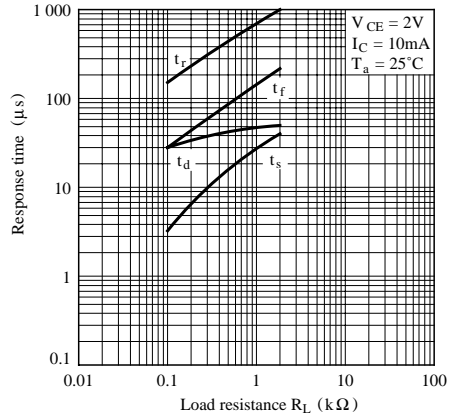
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



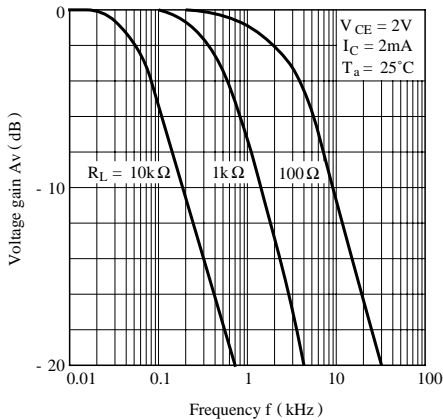
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



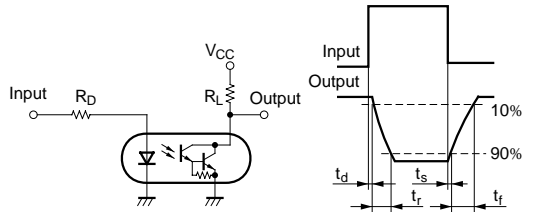
**Fig.10 Response Time vs. Load Resistance**



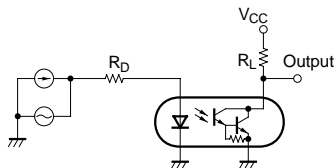
**Fig.11 Frequency Response**



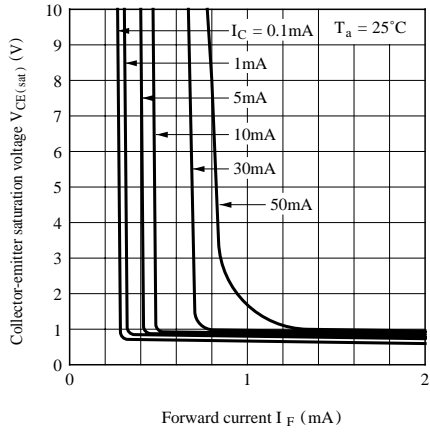
**Test Circuit for Response Time**



**Test Circuit for Frequency Response**



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



- Please refer to the chapter “Precautions for Use”

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