

# PC866 Series

## Low Driving Current Type Photocoupler

### ■ Features

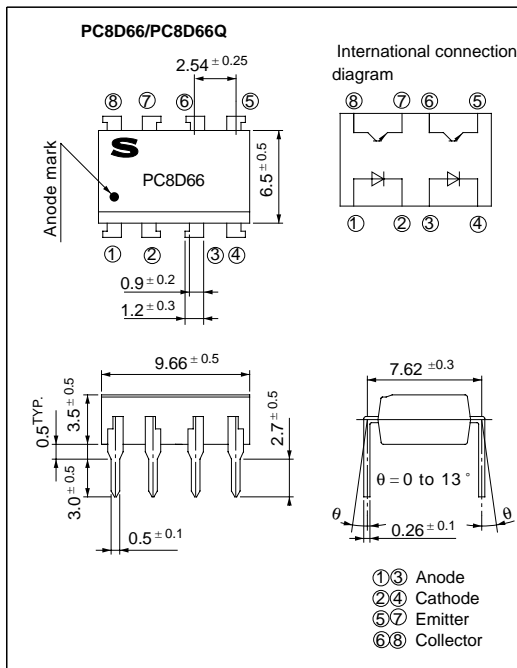
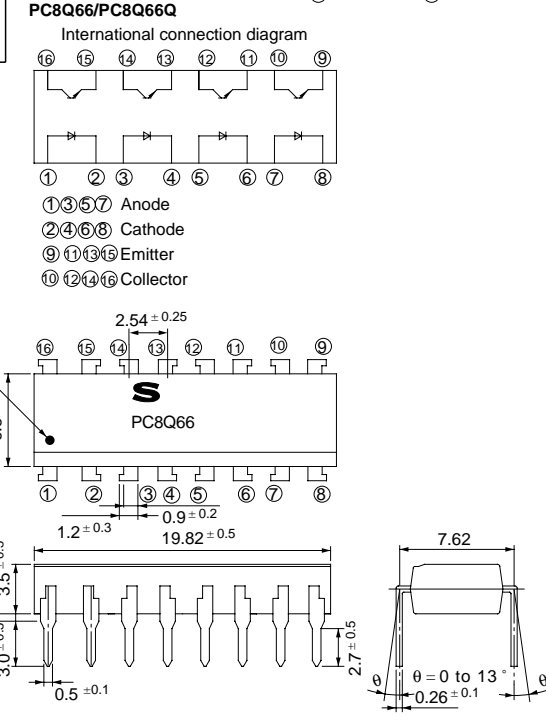
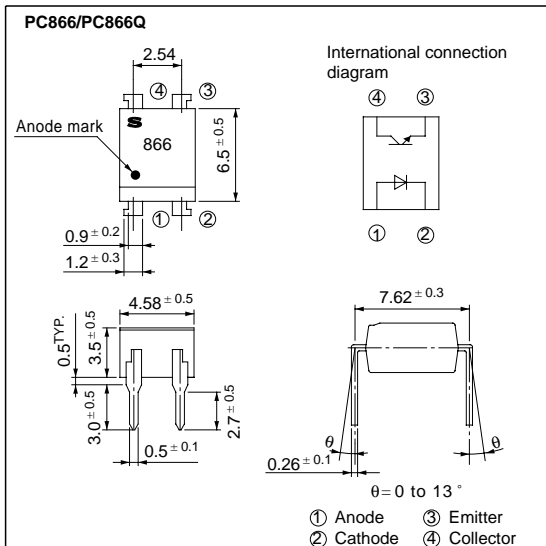
1. Low driving current (single Tr. output)  
(CTR : MIN. 100 % at  $I_F = 1\text{mA}$ )
2. High collector-emitter voltage ( $V_{CE0} : 80\text{V}$ )
3. Isolation voltage between input and output  
( $V_{iso} : 5000\text{V}_{rms}$ )
4. Also available burn-in type  
(PC866Q / PC8D66Q / PC8Q66Q)

### ■ Applications

1. Telephone sets
2. Computer terminals
3. System appliances, measuring instruments

### ■ Outline Dimensions

(Unit : mm)



\* In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

## ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	*1 Peak 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>	80	V
	Emitter-collector voltage	V <sub>ECO</sub>	6	V
	Collector current	I <sub>C</sub>	50	mA
	Collector power dissipation	P <sub>C</sub>	150	mW
Total power dissipation		P <sub>tot</sub>	200	mW
*2 Isolation 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
*3 Soldering temperature		T <sub>sol</sub>	260	°C

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

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

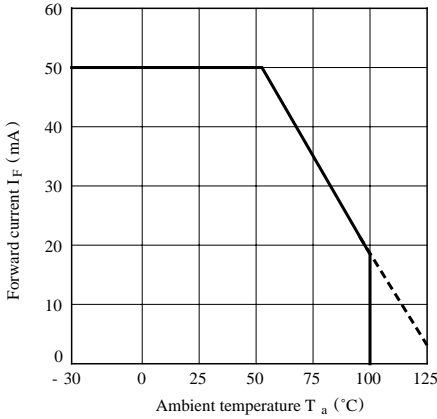
\*3 For 10 seconds

## ■ Electro-optical Characteristics

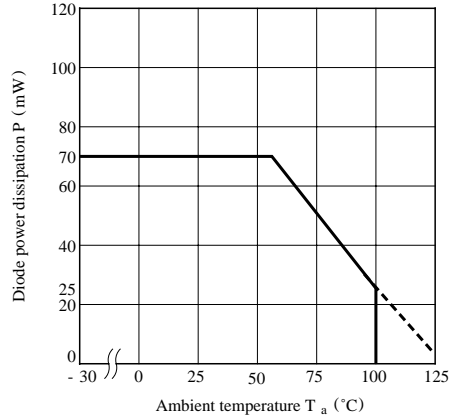
(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 10mA	-	1.2	1.4	V	
	Peak forward voltage	V <sub>FM</sub>	I <sub>FM</sub> = 0.5A	-	-	3.0	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	-	-	100	nA	
	Collector-emitter breakdown voltage	BV <sub>CEO</sub>	I <sub>C</sub> = 0.1mA, I <sub>F</sub> = 0	80	-	-	V	
	Emitter-collector breakdown voltage	BV <sub>ECO</sub>	I <sub>E</sub> = 10μA, I <sub>F</sub> = 0	6	-	-	V	
Transfer characteristics	Current transfer ratio		CTR	I <sub>F</sub> = 1mA, V <sub>CE</sub> = 0.5V	100	-	-	%
	Collector-emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>F</sub> = 1mA, I <sub>C</sub> = 0.2mA	-	-	0.4	V
	Isolation resistance		R <sub>ISO</sub>	DC500V, 40 to 60% RH	5 × 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> = 5V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω - 3dB	-	50	-	kHz
	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA R <sub>L</sub> = 100Ω	-	8	-	μs
Fall time		t <sub>f</sub>	-		8	-		

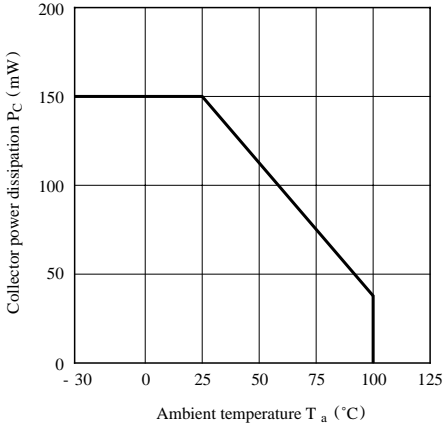
**Fig. 1 Forward Current vs. Ambient Temperature**



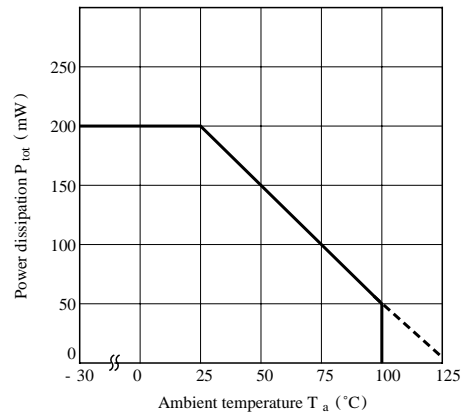
**Fig. 2 Diode Power Dissipation vs. Ambient Temperature**



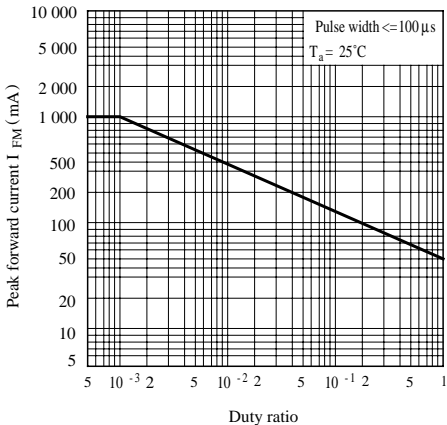
**Fig. 3 Collector Power Dissipation vs. Ambient Temperature**



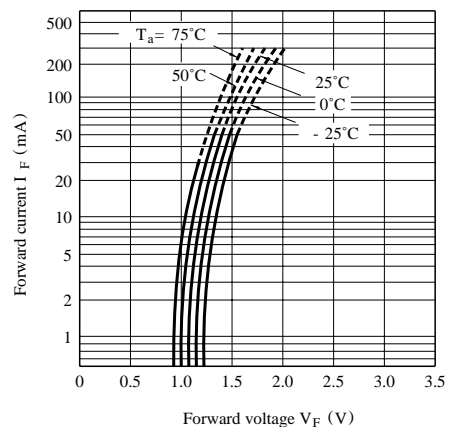
**Fig. 4 Power Dissipation vs. Ambient Temperature**



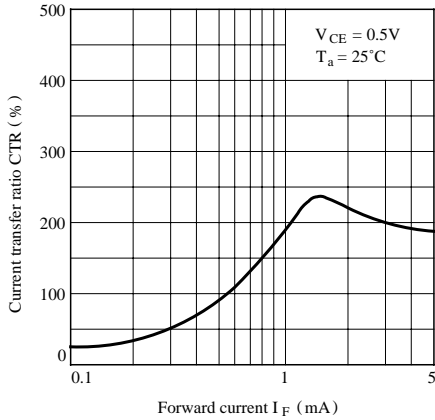
**Fig. 5 Peak Forward Current vs. Duty Ratio**



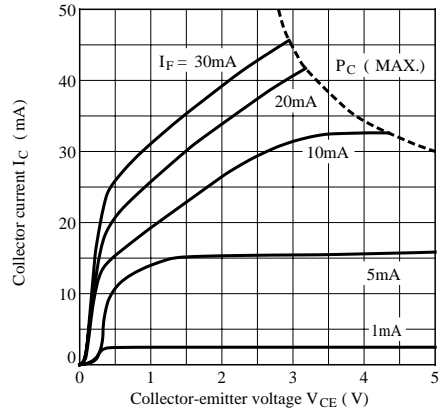
**Fig. 6 Forward Current vs. Forward Voltage**



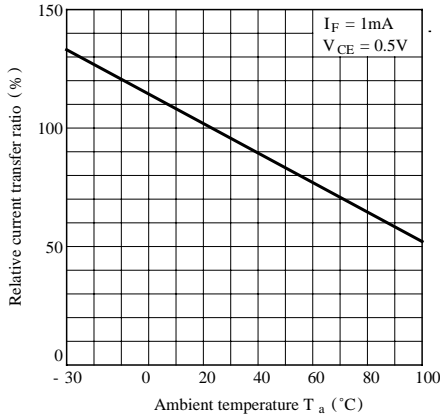
**Fig. 7 Current Transfer Ratio vs. Forward Current**



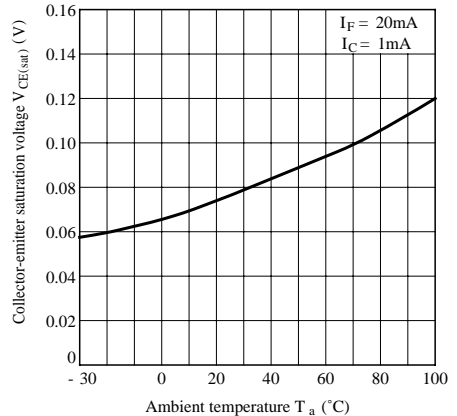
**Fig. 8 Collector Current vs. Collector-emitter Voltage**



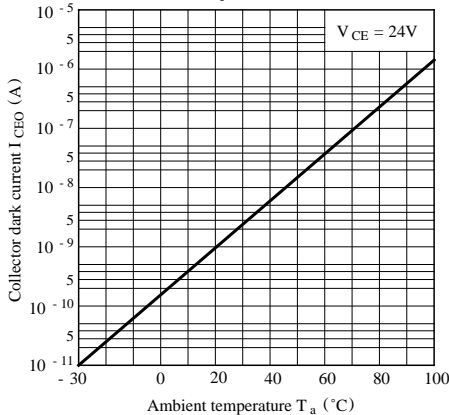
**Fig. 9 Relative Current Transfer Ratio vs. Ambient Temperature**



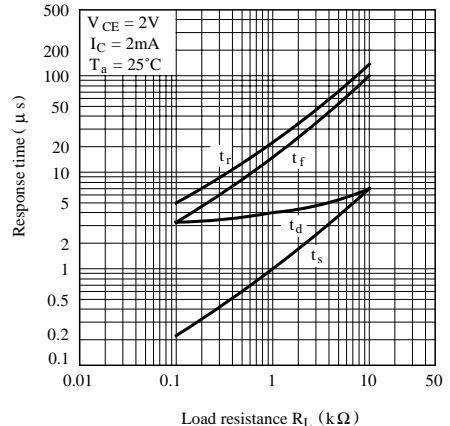
**Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature**



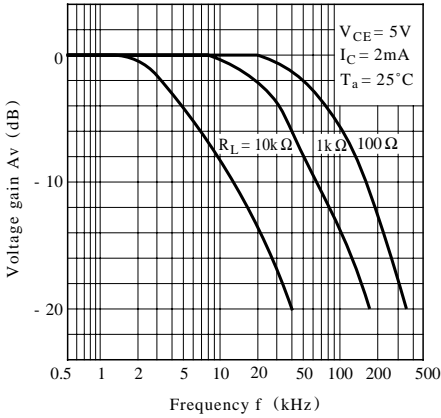
**Fig.11 Collector Dark Current vs. Ambient Temperature**



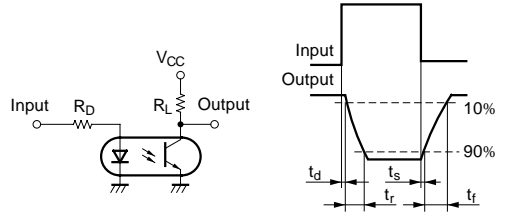
**Fig.12 Response Time vs. Load Resistance**



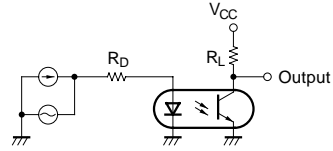
**Fig.13 Frequency Response**



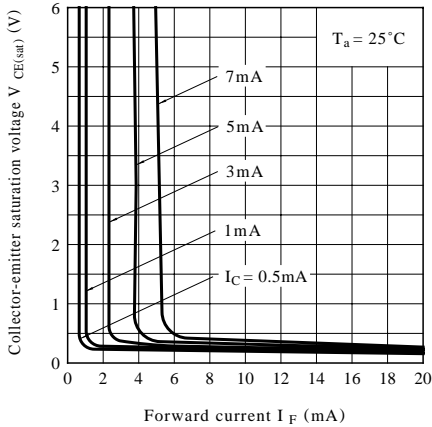
**Test Circuit for Response Time**



**Test Circuit for Frequency Response**



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



● Please refer to the chapter “Precautions for Use”