PC865 Series

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

■ Features

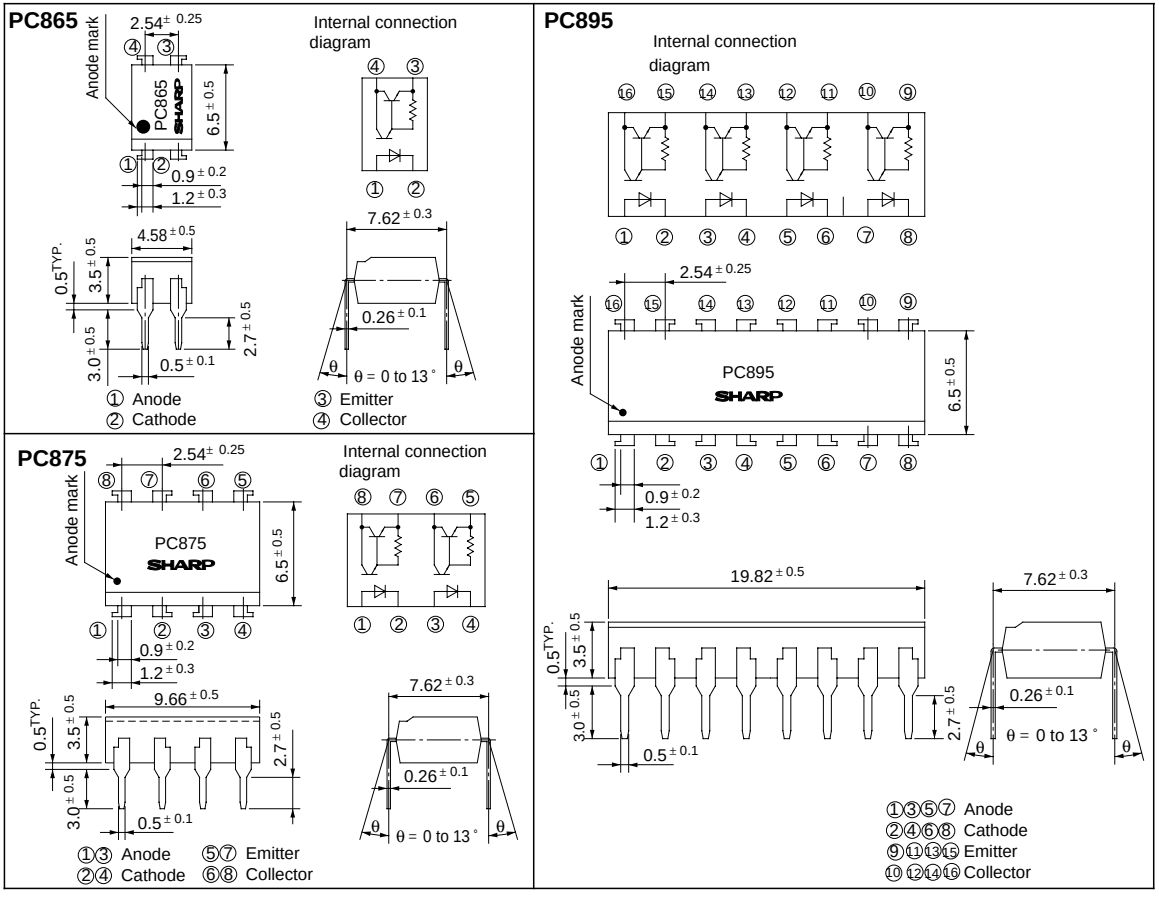
1. Low collector dark current
   (I_{CEO} : MAX. 10 μA at V_{CE} = 24V, Ta = 85˚C)
2. High current transfer ratio
   (CTR : MIN. 1 000% at I_F = 1mA, V_{CE} = 2V)
3. High collector-emitter voltage (V_{CEO} : 70V)
4. High isolation voltage between input and output (V_{iso} : 5 000V $_{rms}$)
5. Compact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

■ 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_F	50	mA
	*1Peak 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}	0.1	V
	Collector current	I_C	80	mA
	Collector power dissipation	P_C	150	mW
Total power dissipation		P_{tot}	200	mW
*2Isolation voltage		V_{iso}	5 000	V_{rms}
Operating temperature		T_{opr}	- 30 to + 100	˚C
Storage temperature		T_{stg}	- 55 to + 125	˚C
*3Soldering temperature		T_{sol}	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_F	I_F = 20mA		-	1.2	1.4	V
	Reverse current		I_R	V_R = 4V		-	-	10	μA
	Terminal capacitance		C_t	V = 0, f = 1kHz		-	30	250	pF
Output	Collector dark current		I_{CEO}	V_{CE} = 24V	Ta = 25˚C	-	-	2×10^{-7}	A
				I_F = 0	Ta = 85˚C	-	-	10^{-5}	A
Transfer characteristics	Current transfer ratio		CTR	I_F = 1mA, V_{CE} = 2V		1 000	-	8 000	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F = 20mA, I_C = 5mA		-	0.8	1.0	V
	Isolation resistance		R_{iso}	DC500V, 40 to 60 % RH		5×10^{10}	10^{11}	-	Ω
	Floating capacitance		C_f	V = 0, f = 1MHz		-	0.6	1.0	pF
	Cut-off frequency		f_C	V_{CE} = 2V, I_C = 2mA, R_L = 100 Ω, - 3dB		1	6	-	kHz
	Response time	Rise time	t_r	V_{CE} = 2V, I_C = 10mA		-	100	300	μs
		Fall time	t_f	R_L = 100 Ω		-	35	200	μs

Fig. 1 Forward Current vs. Ambient Temperature

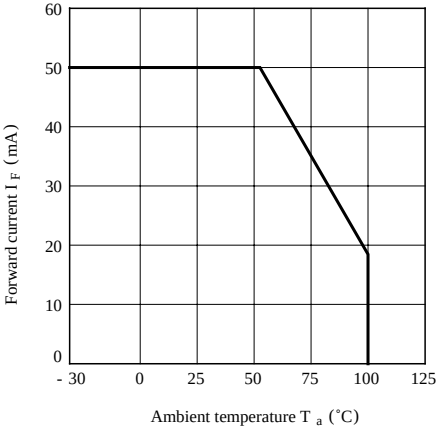


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

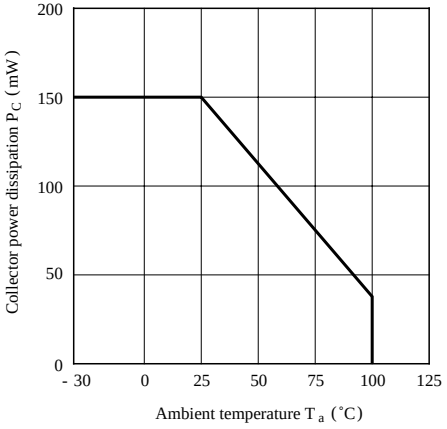


Fig. 3 Peak Forward Current vs. Duty Ratio

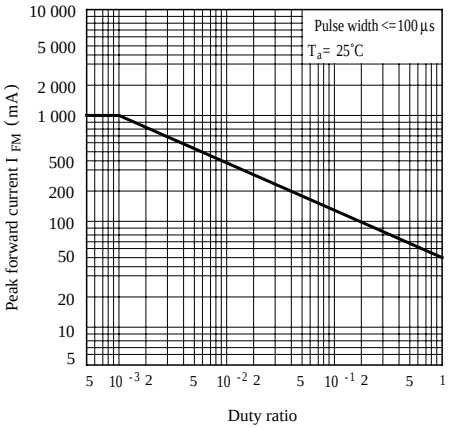


Fig. 4 Forward Current vs. Forward Voltage

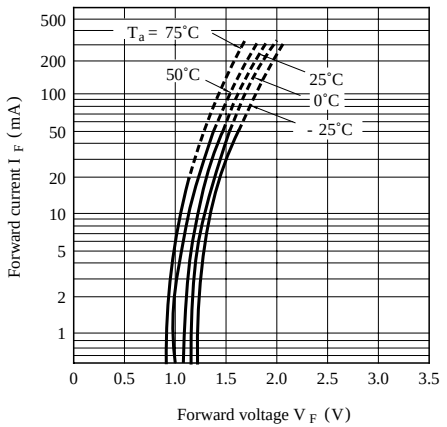


Fig. 5 Current Transfer Ratio vs. Forward Current

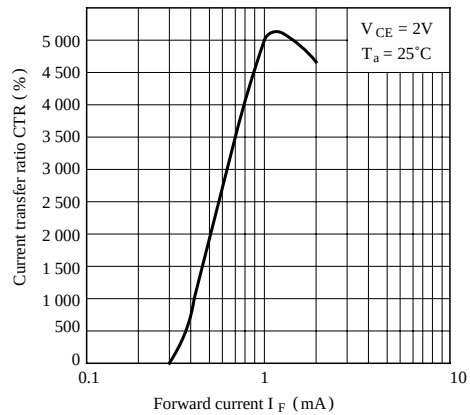


Fig. 6 Collector Current vs. Collector-emitter Voltage

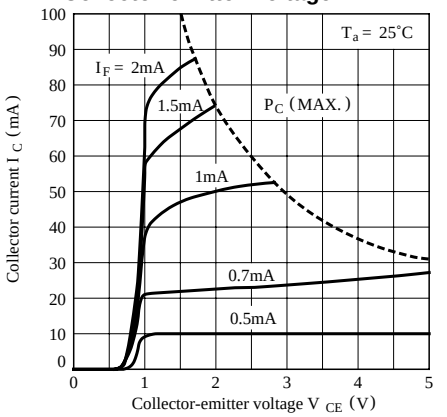


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

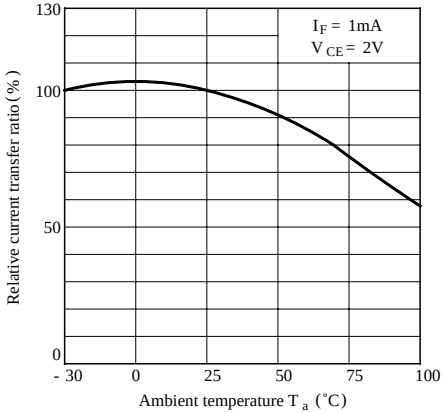


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

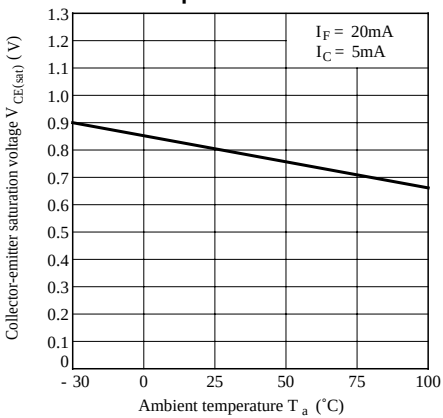


Fig. 9 Collector Dark Current vs. Ambient Temperature

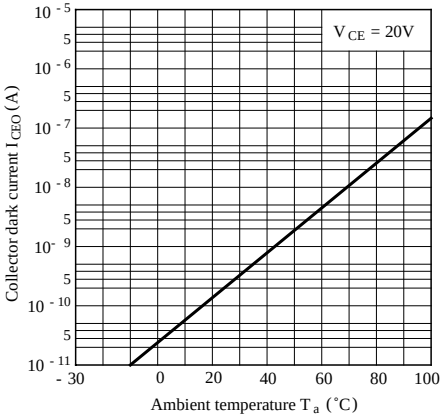


Fig.10 Response Time vs. Load Resistance

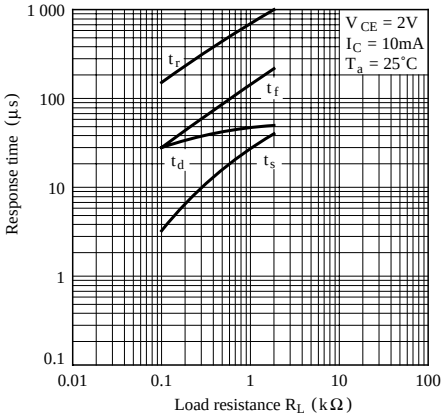
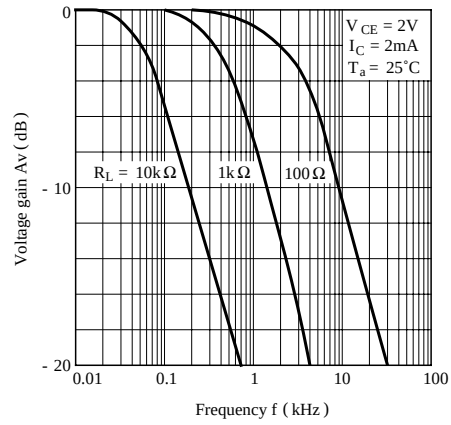
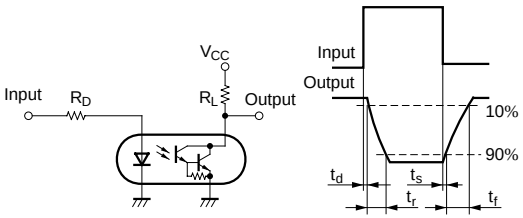


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frepuency Response

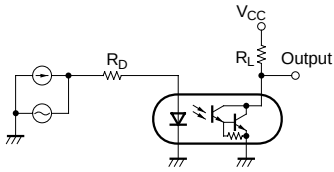
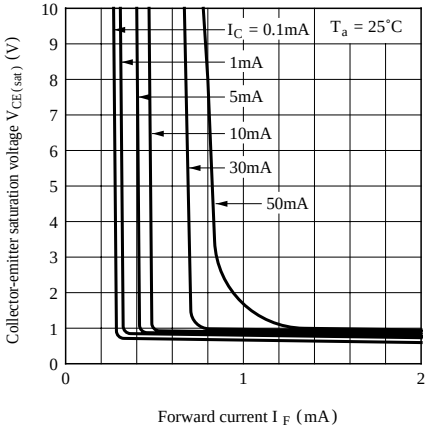


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



● Please refer to the chapter "Precautions for Use"