

PC865 Series

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

■ Features

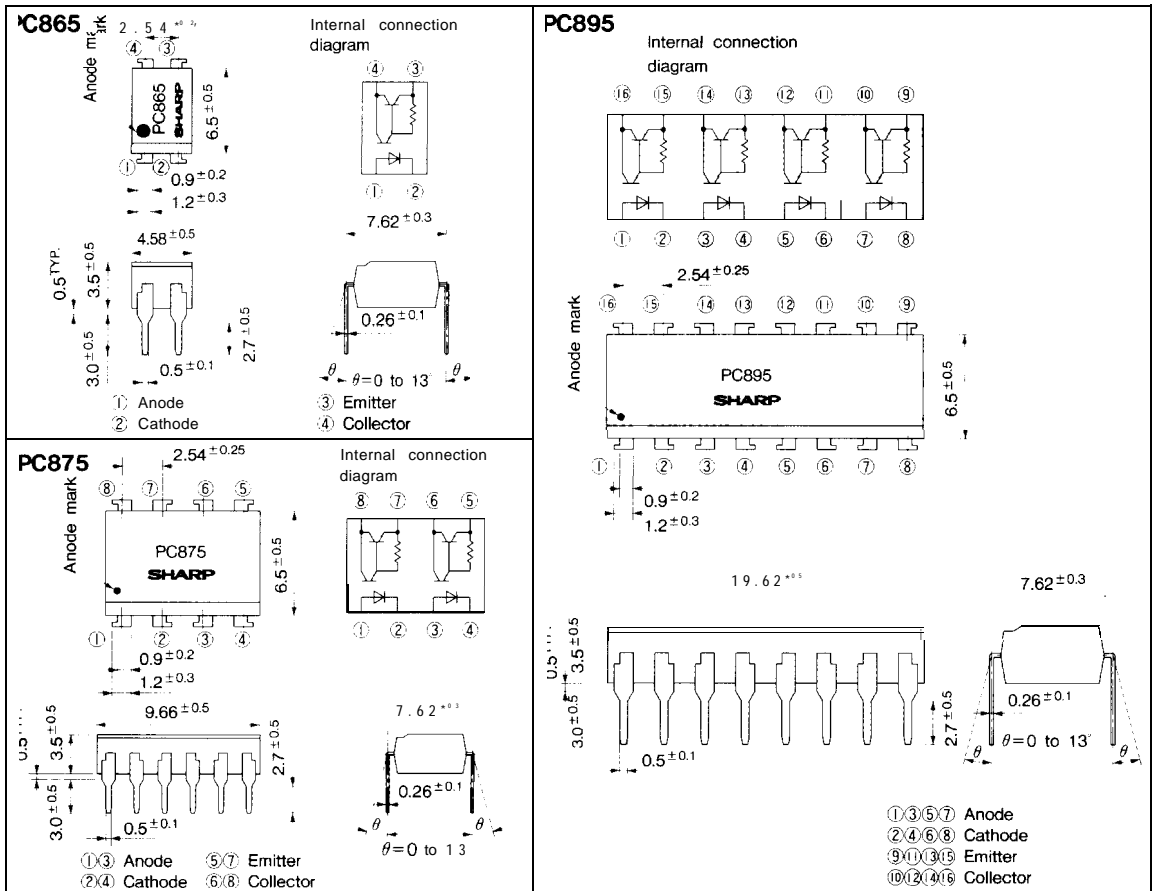
1. Low collector dark current
(I_{CFO} : MAX. $10 \mu A$ at $V_{CE}=24V$, $T_a=85^\circ C$)
2. High current transfer ratio
(CTR : MIN. 1 000% at $I_F=1mA$, $V_{CE}=2V$)
3. High collector-emitter voltage (V_{CEO} : 70V)
4. High isolation voltage between input and output (V_{iso} : 5 000V_{rms})
5. Compact 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
	*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}	70	v
	Emitter-collector voltage	V _{ECCO}	0.1	V
	Collector current	I _C	80	mA
	Collector power dissipation	P _C	150	mW
	Total power dissipation	P _{tot}	200	mW
*1 Isolation voltage		V _{iso}	5000	V _{rms}
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 ≤ 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 _F	I _F = 20mA	—	1.2	1.4	V	
	Reverse current	I _R	V _R = 4V	—	—	70	μA	
	Terminal capacitance	C _t	V = 0, f = 1kHz	—	30	250	pF	
output	Collector dark current	I _{CEO}	V _{CE} = 24V I _F = 0	Ta = 25°C	—	—	2X10 ⁻⁷	A
			Ta = 85°C	—	—	10 ⁻⁵	A	
Transfer characteristics	*4 Current transfer ratio		CTR	I _F = 1mA, V _{CE} = 2V	1000	—	8000	%
	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 = 100Ω, -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 = 100Ω	—	35	200	μs	

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Fig. 1 Forward Current vs. Ambient Temperature

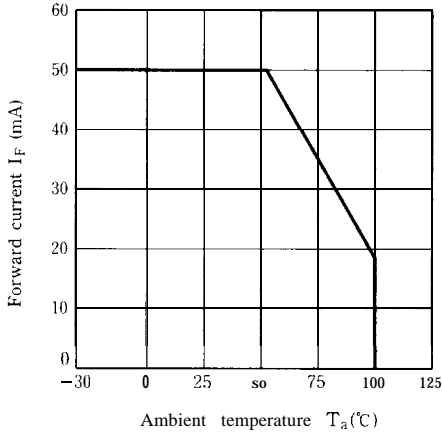


Fig. 2 Collector Power Dissipation VS. Ambient Temperature

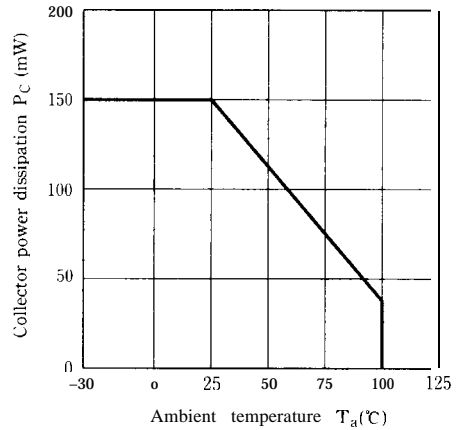


Fig. 3 Peak Forward Current vs. Duty Ratio

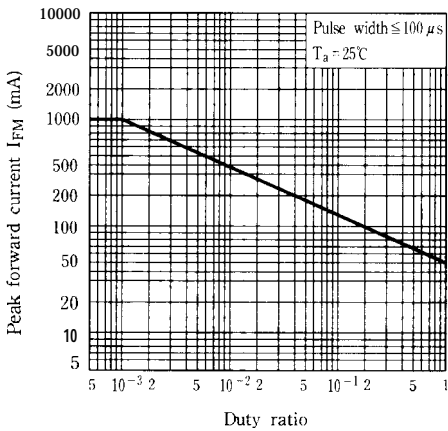


Fig. 4 Forward Current vs. Forward Voltage

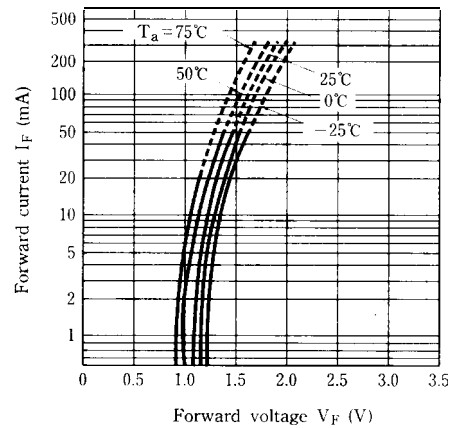


Fig. 5 Current Transfer Ratio vs. Forward Current

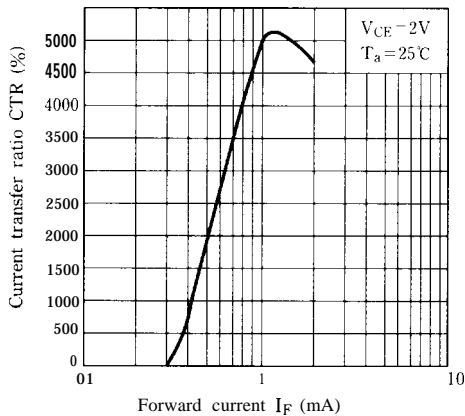


Fig. 6 Collector Current vs. Collector-emitter Voltage

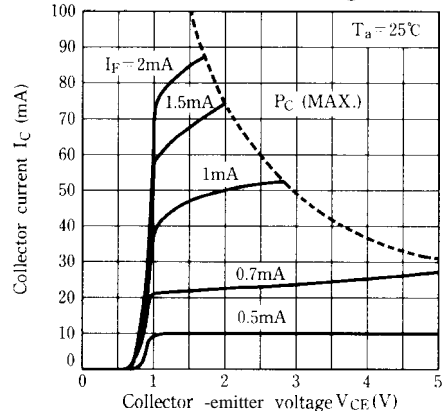


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

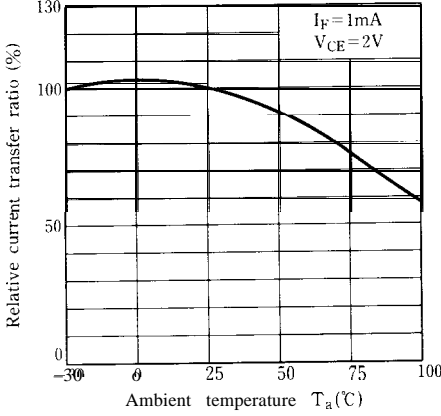


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

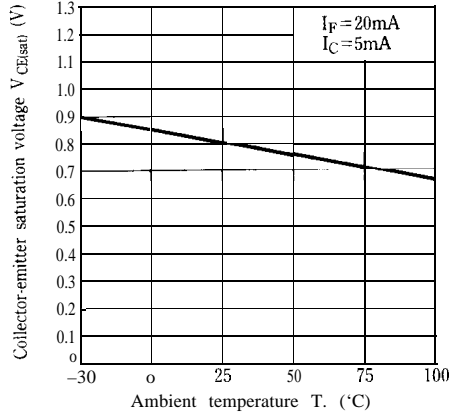


Fig. 9 Collector Dark Current vs. Ambient Temperature

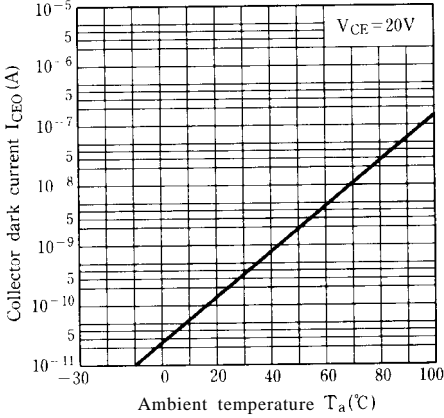


Fig.10 Response Time vs. Load Resistance

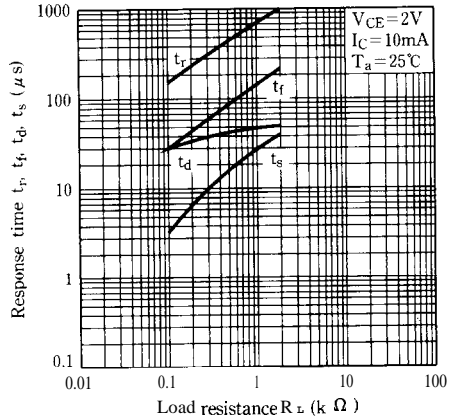
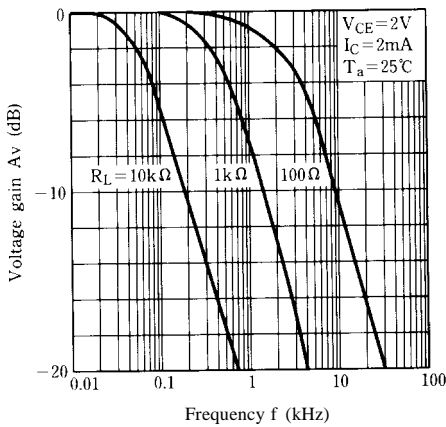
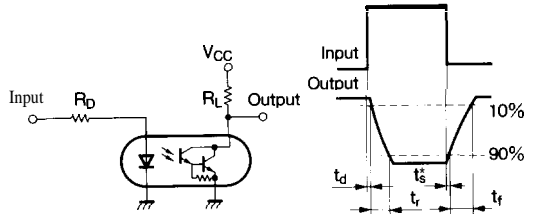


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

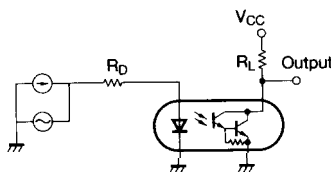
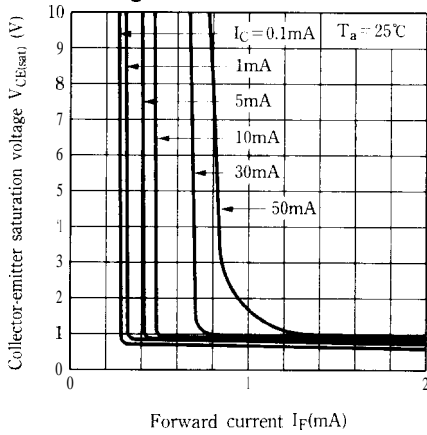


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current

. Please refer to the chapter "Precautions for Use" (Page 78 to 93)