

# PC100/PC101

## Long Creepage Distance Type Photocoupler

\* DIN -VDE0884 approved type is also available as an option.

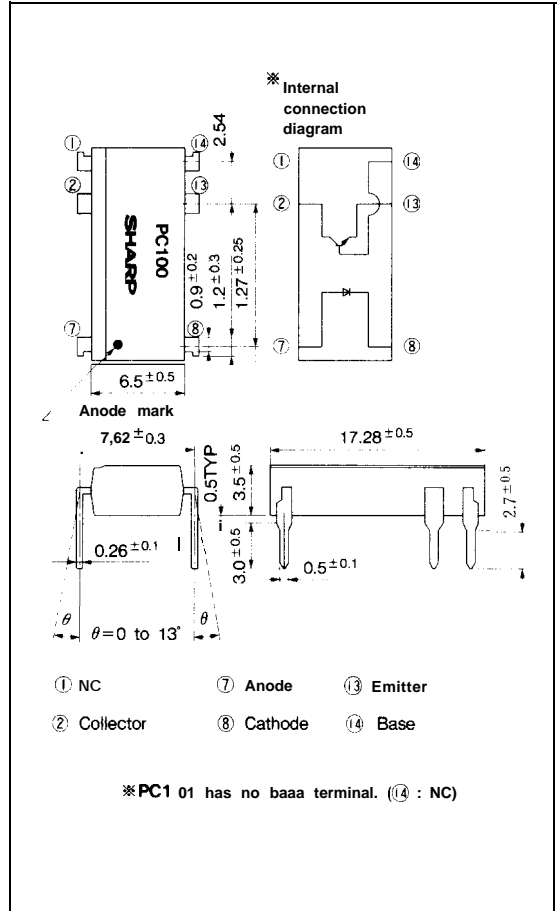
### ■ Features

1. Long creepage distance type (Creepage distance : 8mm or more)\*\*
  2. Internal insulation distance : 2mm or more
  3. Recognized by UL, file No. E64380  
Approved by VDE (DIN-VDE0884 ; No. 77295)  
Approved by BSI  
(BS415 No. 6795, BS7002 : No. 7582)  
Approved by SEMKO  
(PC100 No. 8710014, PC101 No. 8710015)  
Approved by EI  
(PC100 No. 099445-01, PC101 No. 099446-01)  
Approved by DEMKO (No. 84859)
  4. High isolation voltage between input and output ( $V_{iso} : 5\ 000\ V_{rms}$ )
  5. Dual-in-line package
- \*1 Allows pin-to-pin distance minus PWB land space to be 8mm or more.

### ■ m -

1. Switching power supplies
2. Home appliances and OA equipment for export to Europe
3. System appliances, measuring instruments

### ■ Outline Dimensions (Unit : mm)



## Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	*2 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>	35	v
	Emitter-collector voltage	V <sub>ECO</sub>	6	v
	*3 Collector -base voltage	V <sub>CBO</sub>	35	v
	*3 Emitter-base voltage	V <sub>EBO</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
Insulation 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
Soldering temperature		T <sub>sol</sub>	260	°C

\*2 Pulse width ≤ 100 μs, Duty ratio = 0.001

\*3 Applies only to **PC 100**

\*4 40 to 60%RH, AC for 1 minute

\*5 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>CRO</sub>	V <sub>CE</sub> = 20V, I <sub>F</sub> = 0, *6 R <sub>BE</sub> = ∞	—	—	10 <sup>-7</sup>	A
Transfer characteristics	Current transfer ratio	CTR	I <sub>F</sub> = 10mA, V <sub>CE</sub> = 5V, *6 R <sub>BE</sub> = ∞	25	60	180	%
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> = 20mA, I <sub>C</sub> = 1mA, *6 R <sub>BE</sub> = ∞	—	0.1	0.3	v
	Isolation resistance	R <sub>ISO</sub>	DC500, 40 to 60%RH	5 × 10 <sup>10</sup>	10 <sup>12</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, *6 R <sub>BE</sub> = ∞, -3dB	—	40	—	kHz
	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA	—	6	23
Fall time		t <sub>f</sub>	R <sub>L</sub> = 100Ω, *6 R <sub>BE</sub> = ∞	—	8	27	μs

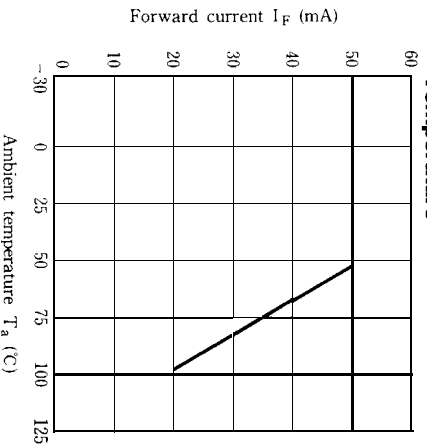
\*6 **PC100** only

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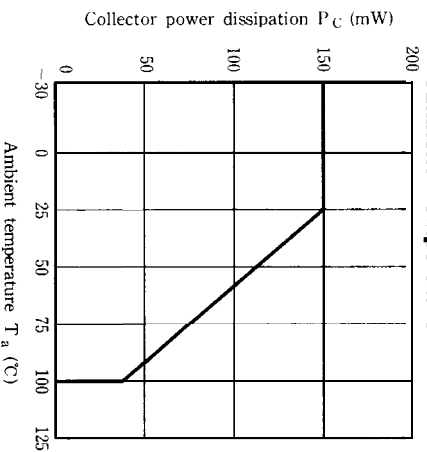
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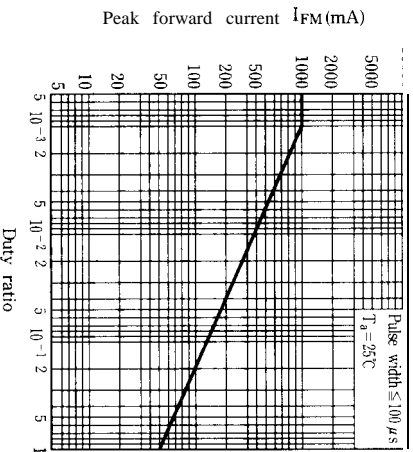
**Fig. 1 Forward Current vs. Ambient Temperature**



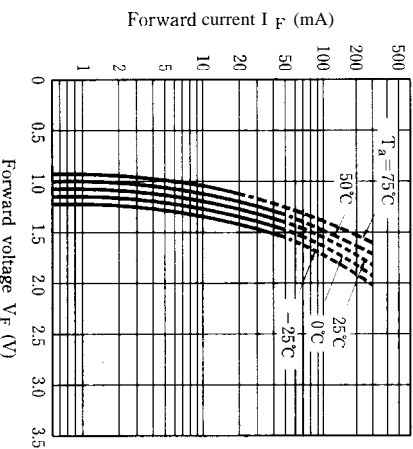
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



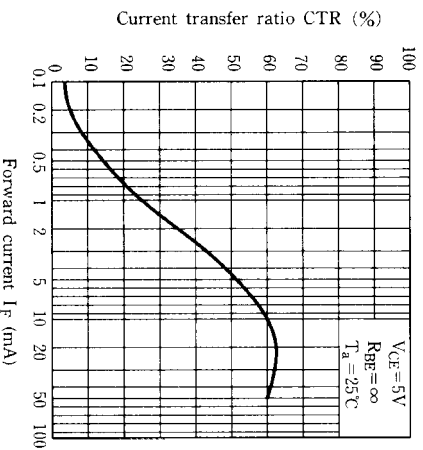
**Fig. 3 Peak Forward Current vs. Duty Ratio**



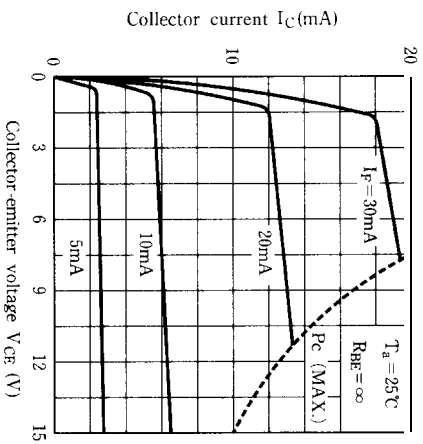
**Fig. 4 Forward Current vs. Forward Voltage**



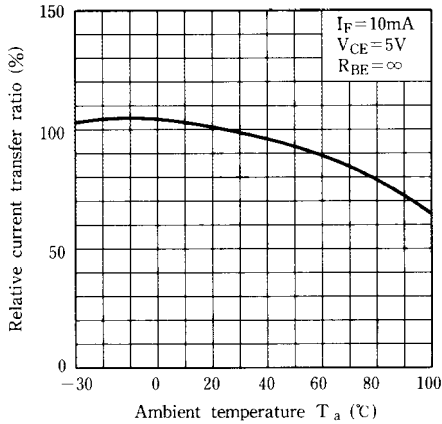
**Fig. 5 Current Transfer Ratio vs. Forward Current**



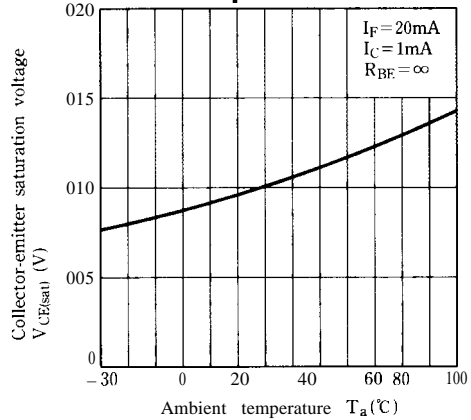
**Fig. 6 Collector Current vs. Collector emitter Voltage**



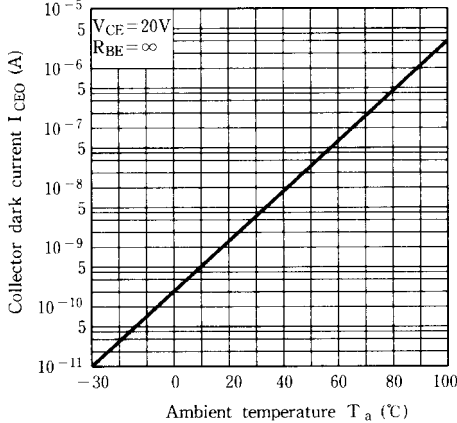
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



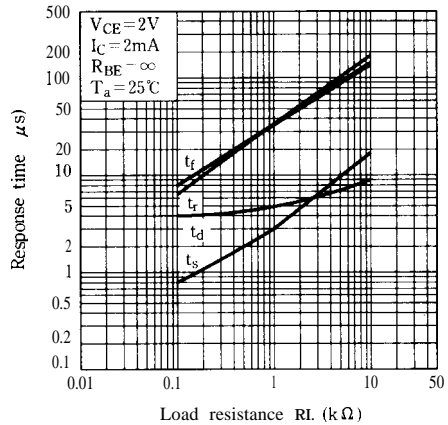
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



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

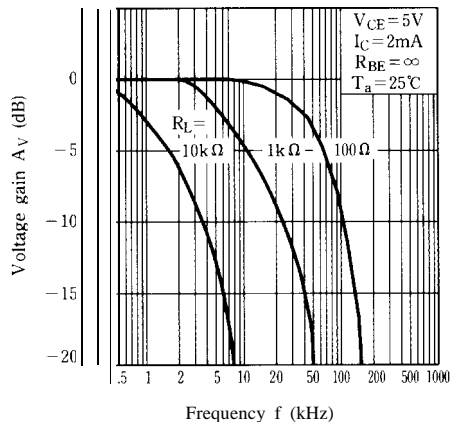


**Fig.10 Response Time vs. Load Resistance**

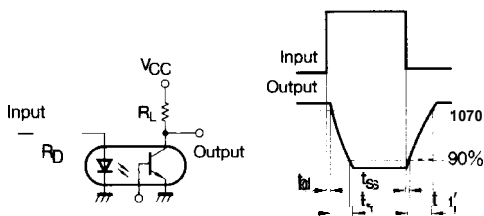


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**Fig.11 Frequency Response**

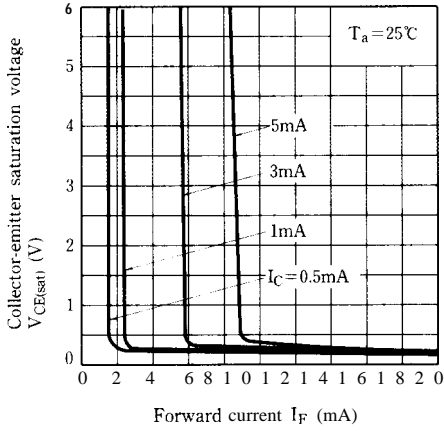


**Test Circuit for Response Time**

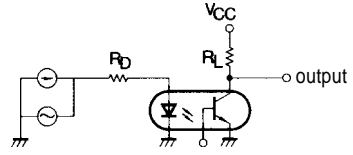


PC101 has no base terminal.

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



**Test Circuit for Frequency Response**



PC101 has no base terminal.

- Please refer to the chapter “Precautions for Use” (Page 78 to 93)