

PC452

Compact Surface Mount, High Collector-emitter Voltage Type Photocoupler

■ Features

1. Opaque, mini-flat package
2. High collector-emitter voltage
($V_{CEO} : 300V$)
3. High current transfer ratio
(CTR : MIN. 1 000% at $I_F = 1mA$, $V_{CE} = 2V$)
4. High isolation voltage between input and output
(Viso : 3 750 V_{rms})

■ Applications

1. Telephone sets
2. Copiers, facsimiles
3. Interfaces with various power supply circuits, power distribution boards
4. Hybrid substrates which require high density mounting

■ Package Specifications

Model No.	Package specifications	Diameter of reel	Tape width
PC452	Taping package (Net : 3 000pcs.)	$\phi 370mm$	12mm
PC452T	Taping package (Net : 750pcs.)	$\phi 178mm$	12mm
PC452Z	Sleeve package (Net : 100pcs.)	—	—

■ Absolute Maximum Ratings

($T_a = 25^\circ C$)

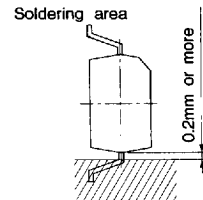
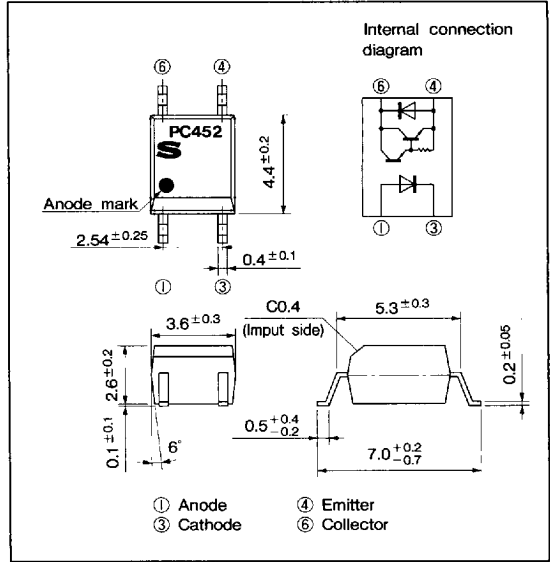
Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	300	V
	Collector current (forward direction)	I_C	150	mA
	Emitter-collector voltage	V_{ECO}	0.1	V
	Collector power dissipation	P_C	150	mW
Total power dissipation		P_{tot}	170	mW
*1 Isolation voltage		V_{iso}	3 750	V_{rms}
Operating temperature		T_{opr}	-30 to +100	$^\circ C$
Storage temperature		T_{stg}	-40 to +125	$^\circ C$
*2 Soldering temperature		T_{sol}	260	$^\circ C$

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

*2 10 seconds or less, 0.2mm or more from the root of lead.

■ Outline Dimensions

(Unit : mm)



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"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."

■ Electro-optical Characteristics

(Ta=25℃)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V _F	I _F = 10mA	—	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-emitter breakdown voltage	BV _{CEO}	I _F = 0, I _C = 0.1mA	300	—	—	V	
	Collector dark current	I _{CEO}	V _{CE} = 200V, I _F = 0	—	—	2 × 10 ⁻⁷	A	
Transfer characteristics	Current transfer ratio	CTR	I _F = 1mA, V _{CE} = 2V	1 000	—	—	%	
	Collector current	I _C	I _F = 1mA, V _{CE} = 2V	10	—	—	mA	
	Collector-emitter saturation voltage	V _{CE (sat)}	I _F = 20mA I _C = 100mA	—	—	1.2	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 = 20mA R _L = 100Ω, -3dB	1	7	—	kHz	
	Response time	Rise time	t _r	V _{CE} = 2V, I _C = 20mA	—	100	300	μs
		Fall time	t _f	R _L = 100Ω	—	20	100	μs

Fig. 1 Forward Current vs. Ambient Temperature

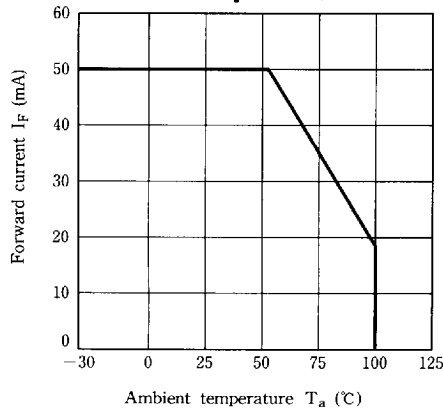


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

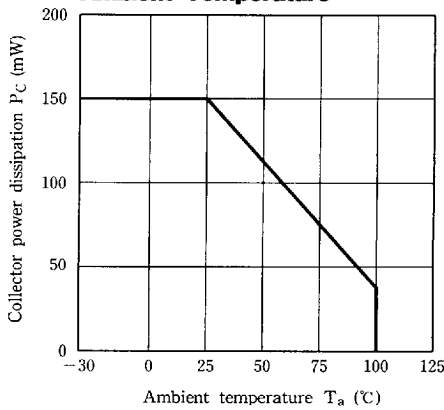


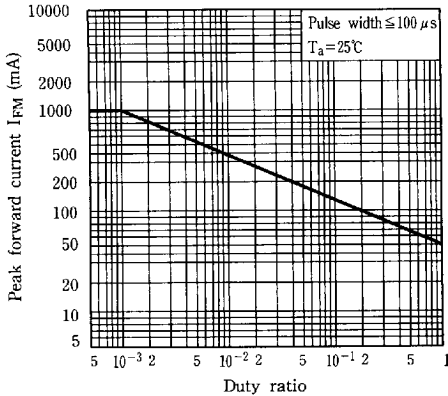
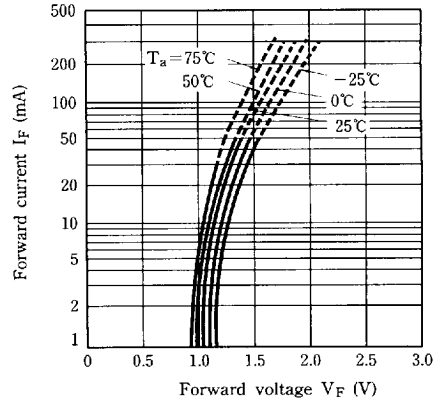
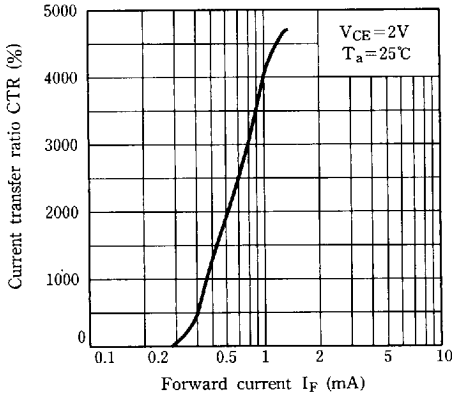
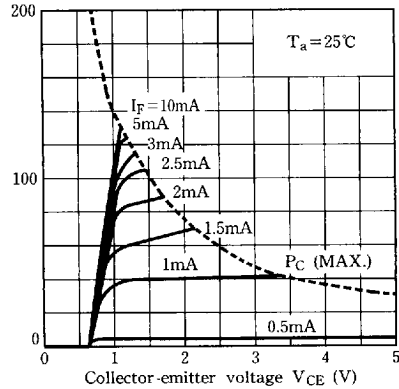
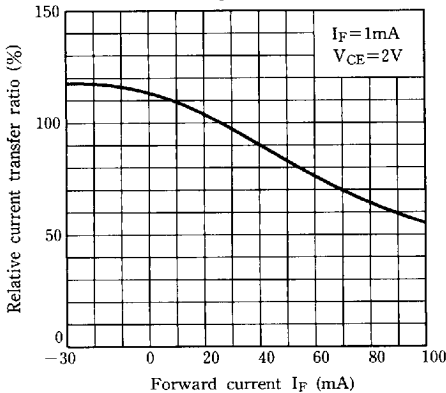
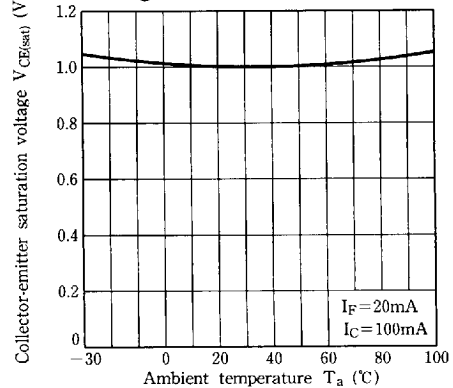
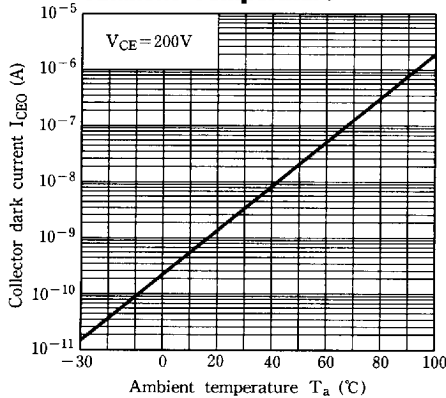
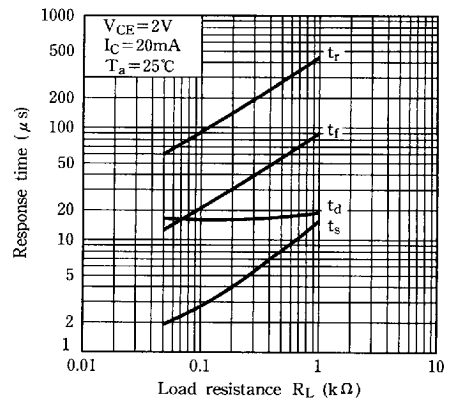
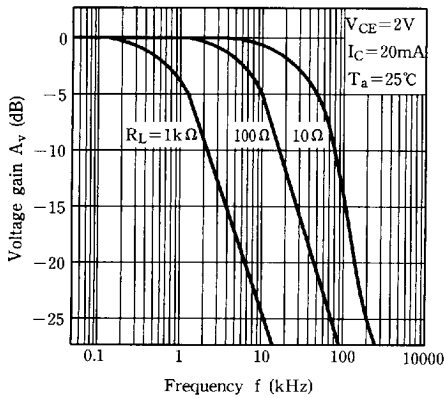
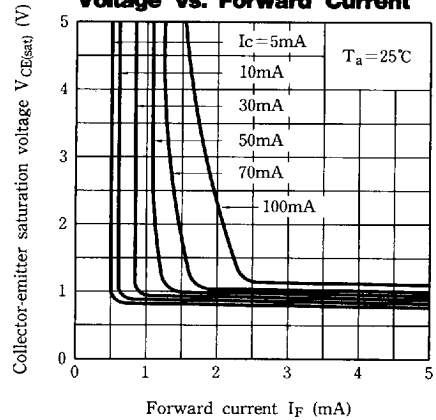
Fig. 3 Peak Forward Current vs. Duty Ratio**Fig. 4 Forward Current vs. Forward Voltage****Fig. 5 Current Transfer Ratio vs. Forward Current****Fig. 6 Collector Current vs. Collector-emitter Voltage****Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature****Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**

Fig. 9 Collector Dark Current vs. Ambient Temperature**Fig.10 Response Time vs. Load Resistance****Fig.11 Frequency Response****Fig.12 Collector-emitter Saturation Voltage vs. Forward Current**

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