SHARP

Under development	
New product	●

PC851X series

Photocoupler

4-pin DIP High Collector-emitter Voltage Type Photocoupler

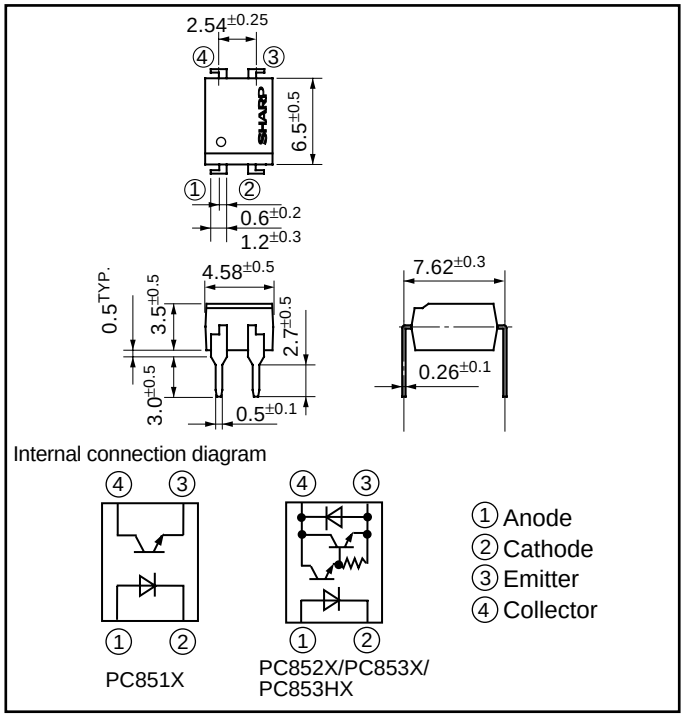
■ Features

(1) High collector-emitter voltage
V_{CEO} : 350V
(2) Single phototransistor output : **PC851X**
Darlington phototransistor output : **PC852X/PC853X/ PC853HX**
(3) Recognized by UL, file No.E64380
PC851X : recognized model No. **PC851**
PC852X : recognized model No. **PC852**
PC853X : recognized model No. **PC853**
PC853HX : recognized model No. **PC853H**
(4) 4pin DIP package

■ Applications

(1) Telephones
(2) Modems
(3) Facsimiles
(4) Set top box

■ Outline Dimensions



■ 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}	350	V
	Emitter-collector voltage	**PC851X**	V_{ECO}	6	V
		PC852X/PC853X/PC853HX		0.1	
	Collector current	**PC851X**	I_C	50	mA
		PC852X/PC853X/PC853HX		150	
	Collector power dissipation	**PC851X/PC852X**	P_C	150	mW
		PC853X/PC853HX		300	
	Total power dissipation	**PC851X/PC852X**	P_{tot}	200	mW
		PC853X/PC853HX		320	
*2 Isolation voltage			$V_{iso(rms)}$	5	kV
Operating temperature		**PC851X**	T_{opr}	-25 to +100	°C
		PC852X/PC853X/PC853HX		-30 to +100	
Storage temperature			T_{stg}	-55 to +125	°C
*3 Soldering 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

PC851X 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		Ct	V=0, f=1kHz	-	30	250	pF
Output	Collector dark current		I_{CEO}	V_{CE}=200V, I_F=0	-	-	1	μA
	Collector-emitter breakdown voltage		BV_{CEO}	I_C=0.1mA, I_F=0	350	-	-	V
	Emitter-collector breakdown voltage		BV_{ECO}	I_E=10μA, I_F=0	6		-	V
Transfer characterisitcs	Collector current		I_C	I_F=5mA, V_{CE}=5V	2.0	4.0	-	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=1mA	-	0.1	0.3	V
	Isolation resistance		R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	1×10^{11}	-	Ω
	Floating capacitance		Cf	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency		fc	V_{CE}=5V, I_C=2mA, R_L=100Ω, -3dB	-	50	-	kHz
	Response time	Rise time	tr	V_{CE}=2V, I_C=2mA, R_L=100Ω	-	4	10	μs
		Fall time	tf		-	5	12	μs

PC825X/PC853X/PC853HX Ta=25˚C

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		Ct	V=0, f=1kHz	-	30	250	pF
Output	Collector dark current		I_{CEO}	V_{CE}=200V, I_F=0	-	-	200	nA
	Collector-emitter breakdown voltage		BV_{CEO}	I_C=0.1mA, I_F=0	350	-	-	V
Transfer characterisitcs	Collector current		I_C	I_F=1mA, V_{CE}=2V	10	40	150	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}	1×10^{11}	-	Ω
	Floating capacitance		Cf	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency		fc	V_{CE}=2V, I_C=20mA, R_L=100Ω, -3dB	1	7	-	kHz
	Response time	Rise time	tr	V_{CE}=2V, I_C=20mA, R_L=100Ω	-	100	300	μs
		Fall time	tf		-	20	100	μs

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— Personal computers
— Office automation equipment
— Telecommunication equipment [terminal]
— Test and measurement equipment
— Industrial control
— Audio visual equipment
— Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
— Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
— Traffic signals
— Gas leakage sensor breakers
— Alarm equipment
— Various safety devices, etc.

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— Telecommunication equipment [trunk lines]
— Nuclear power control equipment
— Medical and other life support equipment (e.g., scuba).

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