

PC450T11

Photocoupler with Built-in Breakdown Diode for Surge Voltage Absorption

■ Features

1. Built-in breakdown diode for absorption of surge voltage
2. High current transfer ratio
(CTR: MIN. 1500% at $I_F = 5\text{mA}$)
3. Mini-flat package
4. Applicable to soldering reflow
5. Available tape-packaged products

■ Applications

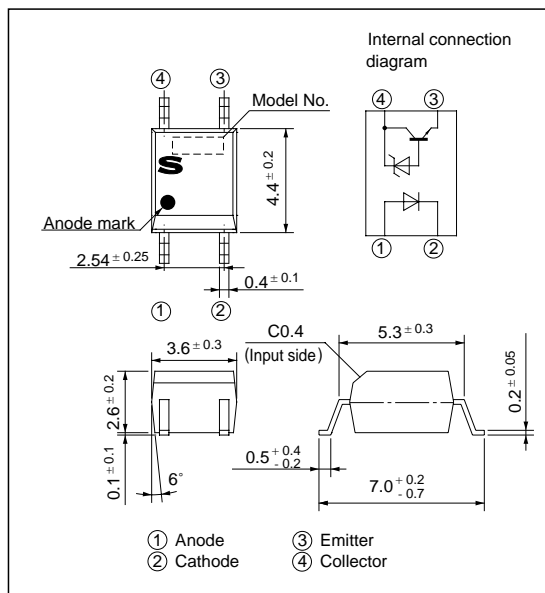
1. Programmable controllers

■ Package Specifications

Model No.	Package Specification
PC450T11	Taping diameter 178mm(750pcs.)

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

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	Emitter-collector voltage	V_{ECO}	6	V
	*2 Surge endurance	E_{sj}	20	mJ
	Collector current	I_C	150	mA
	Collector power dissipation	P_C	150	mW
	Total power dissipation	P_{tot}	170	mW
*3 Isolation voltage		V_{iso}	3.75	kV _{rms}
Operating temperature		T_{opr}	- 30 to + 100	$^\circ\text{C}$
Storage temperature		T_{stg}	- 40 to + 125	$^\circ\text{C}$
*4 Soldering temperature		T_{sol}	260	$^\circ\text{C}$

*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio : 0.001

*2 $E_{sj} = 40\text{V} (V_{CEO}) \times 100\text{mA} (I_C) \times 10\text{ms} \times 1/2$

*3 AC for 1 min., 40 to 60% RH, $f = 60\text{Hz}$

*4 For 10 seconds

Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F = 20\text{mA}$	-	1.2	1.4	V	
	Reverse current	I_R	$V_R = 4\text{V}$	-	-	10	μA	
	Terminal capacitance	C_t	$V = 0, f = 1\text{kHz}$	-	30	250	pF	
Output	Collector dark current	I_{CEO}	$V_{CE} = 20\text{V}, I_F = 0$	-	-	5	μA	
	Collector-emitter breakdown voltage	BV_{CEO}	$I_F = 0$ $I_C = 0.1\text{mA}$	40	-	60	V	
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E = 10\mu\text{A}, I_F = 0$	6	-	-	V	
	Collector current	I_C	$V_{CE} = 2\text{V}, I_F = 5\text{mA}$	75	-	-	mA	
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 10\text{mA}$ $I_C = 100\text{mA}$	-	-	0.5	V	
	Isolation resistance	R_{ISO}	DC500V, 40 to 60% RH	5×10^{10}	10^{11}	-	Ω	
	Floating capacitance	C_f	$V = 0, f = 1\text{MHz}$	-	0.6	1.0	pF	
	Response time	Rise time	t_r	$V_{CE} = 2\text{V}, I_C = 2\text{mA}$	-	50	-	μs
		Fall time	t_f	$R_L = 100\Omega$	-	30	-	μs

Fig. 1 Forward Current vs. Ambient Temperature

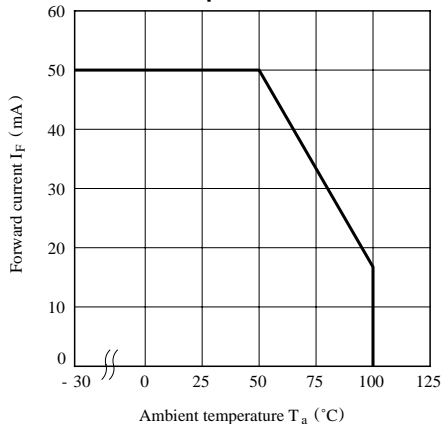


Fig. 2 Diode Power Dissipation vs. Ambient Temperature

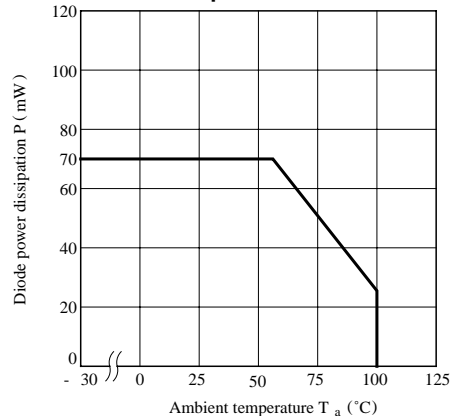


Fig. 3 Power Dissipation vs. Ambient Temperature

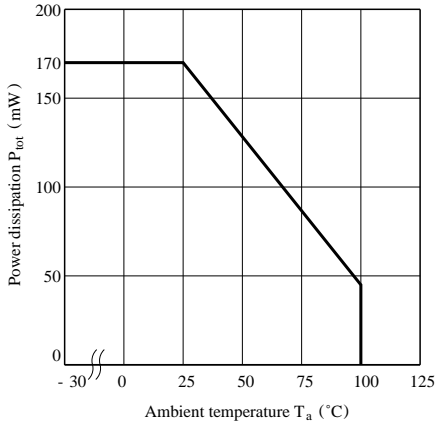


Fig. 4 Peak Forward Current vs. Duty Ratio

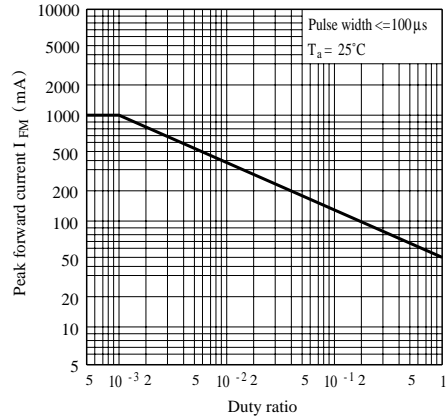


Fig. 5 Forward Current vs. Forward Voltage

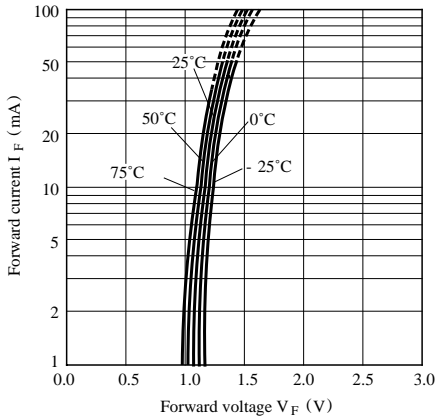


Fig. 6 Current Transfer Ratio vs. Forward Current

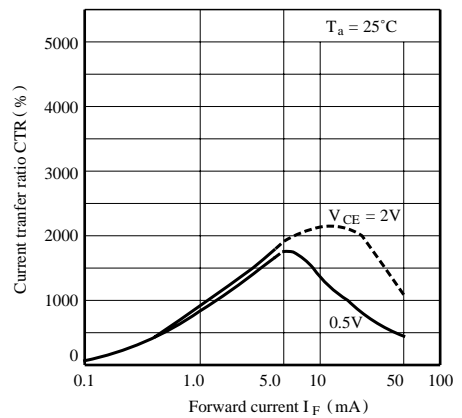


Fig. 7 Collector Current vs. Collector-emitter Voltage

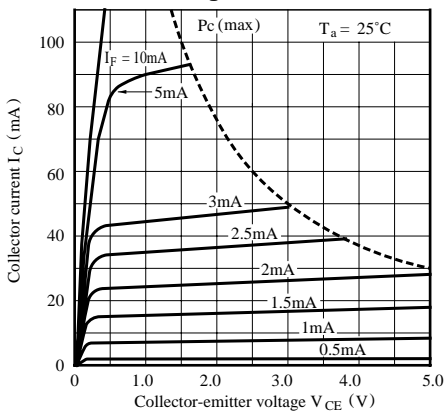


Fig. 8 Relative Current Transfer Ratio vs. Ambient Temperature

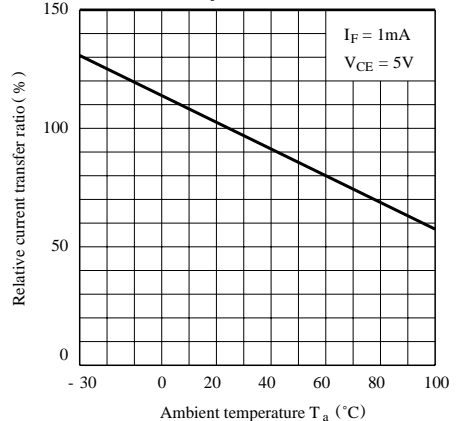


Fig.9 Collector-emitter Saturation Voltage vs. Ambient Temperature

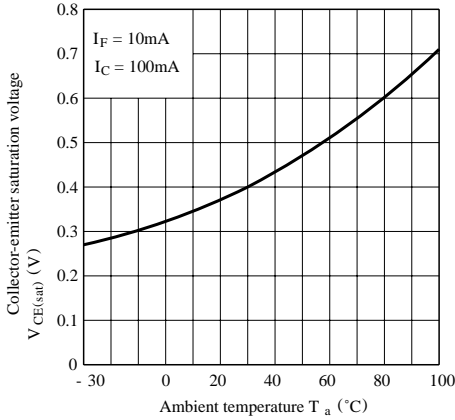


Fig.10 Collector Dark Current vs. Ambient Temperature

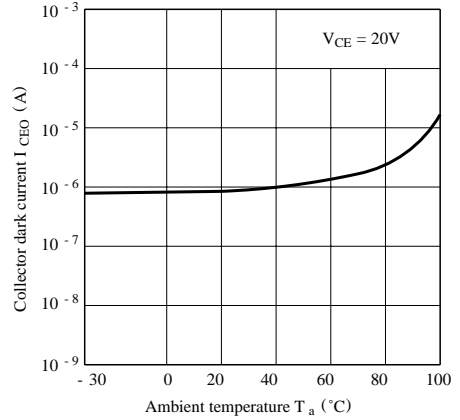


Fig.11 Response Time vs. Load Resistance

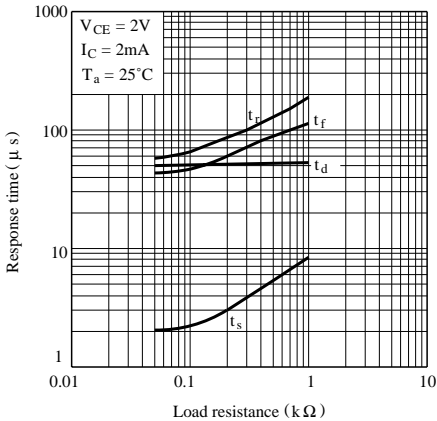
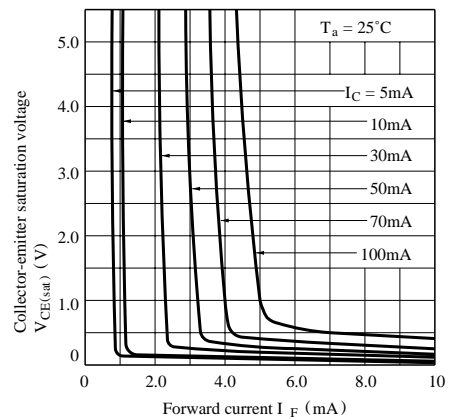


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



●Please refer to the chapter “Precautions for Use.”