

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. 2 000% at $I_F=5\text{mA}$)
3. Mini-flat package
4. Applicable to soldering reflow
5. Available tape packaged products

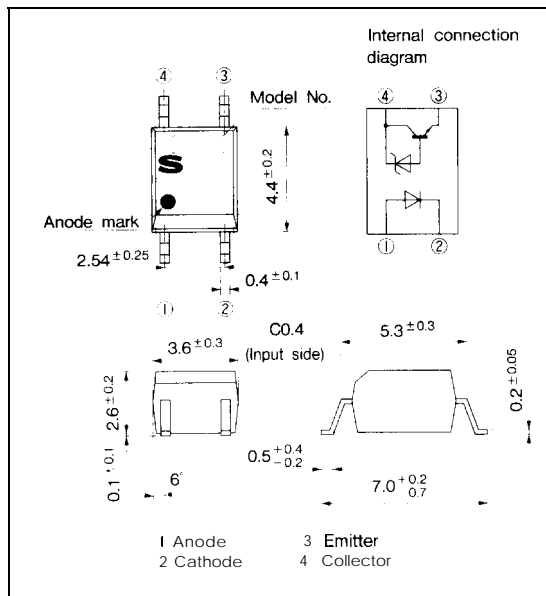
Applications

1. Programmable controllers

Package Specifications

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

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	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}	2.5	kV _{rms}
Operating temperature		T_{opr}	-30 to +100	°C
Storage temperature		T_{stg}	-40 to +125	°C
*4 Soldering temperature		T_{sol}	260	°C

- *1 Pulse width $\leq 100 \mu\text{s}$, Duty ratio :0.001
- *2 $E_{sj} = 40V(V_{CEO}) \times 100\text{mA}(I_C) \times 10\text{ms} \times 1/2$
- *3 AC for 1 min., 40 to 60%RH, f= 60Hz
- *4 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	$V_R=4V$			10	μA	
	Terminal capacitance	C_t	$V=0, f=1kHz$	-	30	250	pF	
output	Collector dark current	I_{CEO}	$V_{CE}=20V, I_F=0$			5	μA	
	Collector -emitter breakdown voltage	BV_{CEO}	$I_F=0, I_C=0.1mA$	40		60	v	
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E=10 \mu A, I_F=0$	6	-	-	V	
	Collector current	I_C	$V_{CE}=2V, I_F=5mA$	75	-	-	mA	
Transfer characteristics	Collector -emitter saturation voltage	$V_{CE(sat)}$	$I_F=10mA, I_C=100mA$	-	-	0.5	v	
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	-	Ω	
	Floating capacitance	c_l	$V=0, f=1MHz$		0.6	1.0	pF	
	Response time	Rise time	t_r	$V_{CE}=2V, I_C=2mA, R_L=100\Omega$		50		μs
		Fall time	t_f			-	30	-

Fig. 1 Forward Current vs. Ambient Temperature

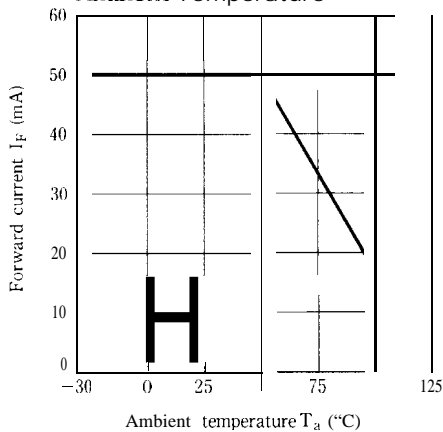


Fig. 2 Diode Power Dissipation vs. Ambient Temperature

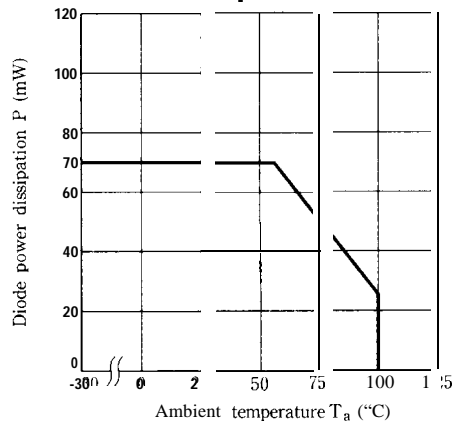


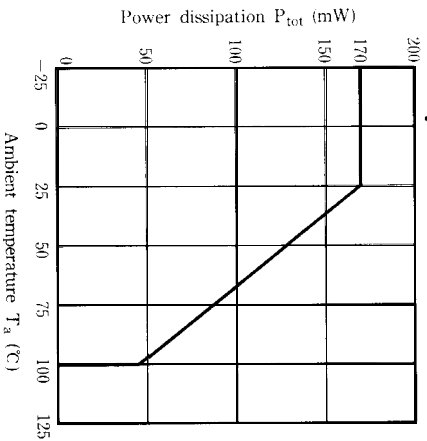
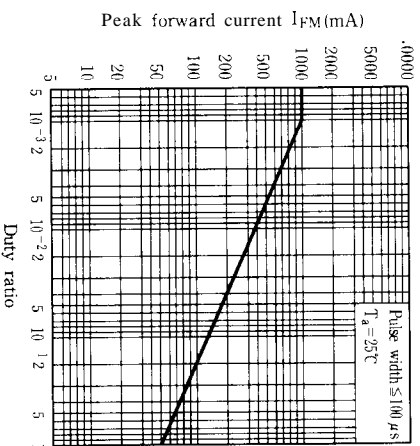
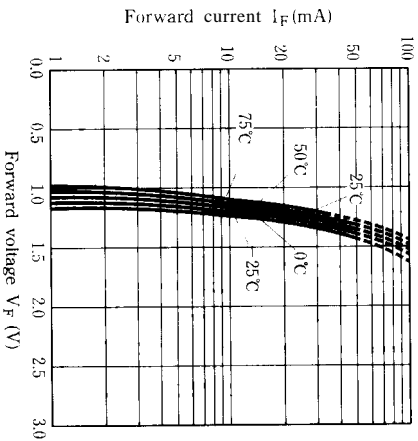
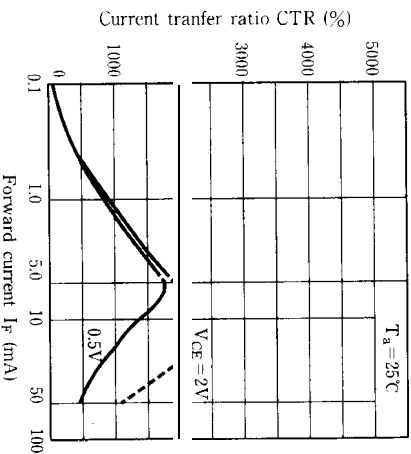
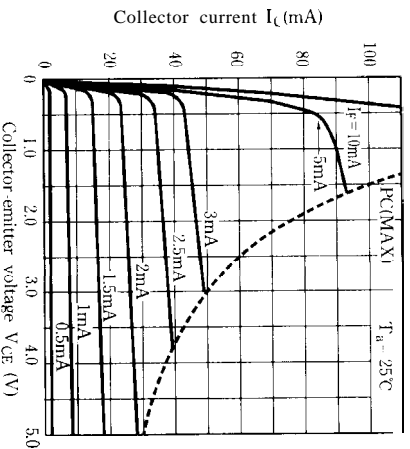
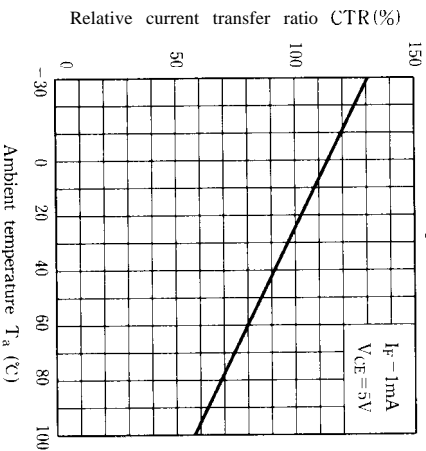
Fig. 3 Power Dissipation vs. Ambient Temperature**Fig. 4 Peak Forward Current vs. Duty Ratio****Fig. 5 Forward Current vs. Forward Voltage****Fig. 6 Current Transfer Ratio vs. Forward Current****Fig. 7 Collector Current vs. Collector-emitter Voltage****Fig. 8 Relative Current Transfer Ratio vs. Ambient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

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

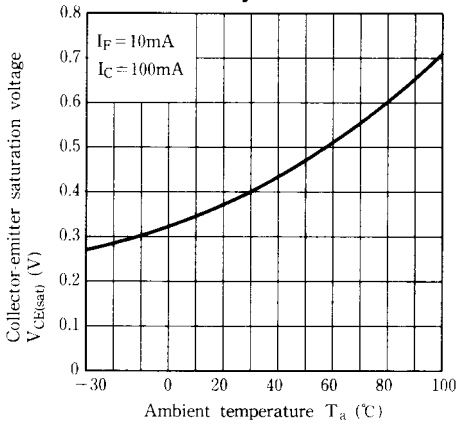


Fig.10 Collector Dark Current vs. Ambient Temperature

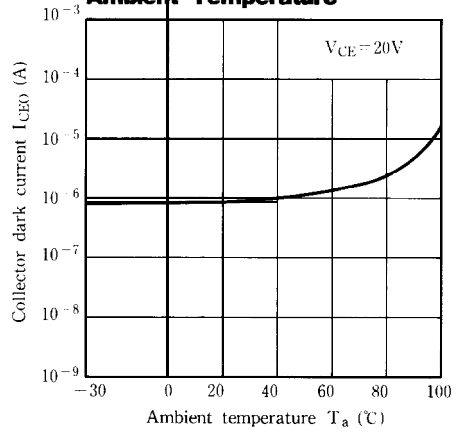


Fig.11 Response Time vs. Load Resistance

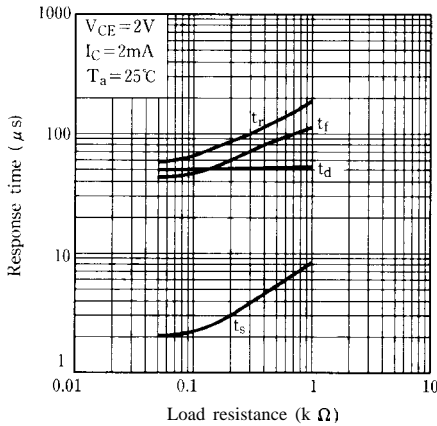
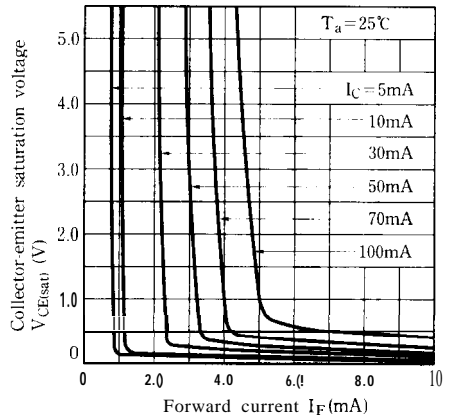


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



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