PC451

Mini-Flat Package, High Collector-emitter Voltage Type Photocoupler

■ Features

1. High collector-emitter voltage
   V_{CEO}:350V
2. Soldering reflow type
3. Recognized by UL, file No. E64380

■ Applications

1. Telephones
2. Modems

■ Package Specifications

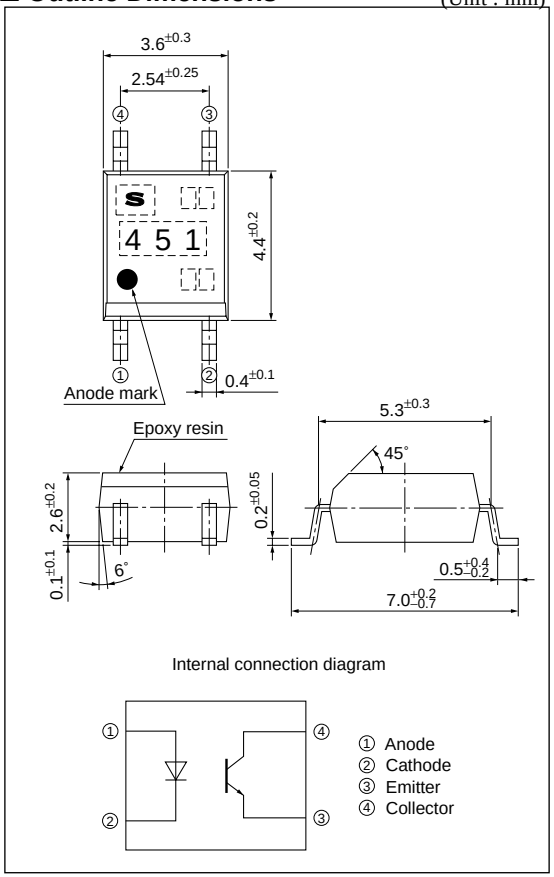
Model No.	Package specification	Diameter of reel	Tape width
PC451	Taping package (3 000pcs.)	ϕ370mm	13.5mm
PC451T	Taping package (750pcs.)	ϕ180mm	13.5mm
PC451Z	Sleeve package (100pcs.)	–	–

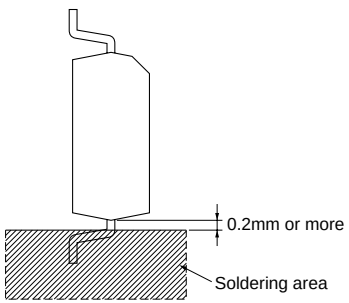
■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	*1 Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	*1 Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	350	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	*1 Collector power dissipation	P_C	150	mW
*1 Total power dissipation		P_{tot}	170	mW
Operating temperature		T_{opr}	−25 to +100	°C
Storage temperature		T_{stg}	−40 to +125	°C
*2 Isolation voltage		$V_{iso\ (rms)}$	3.75	kV
*3 Soldering temperature		T_{sol}	260	°C

*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig.2 to 5
*2 40 to 60%RH, AC for 1 min
*3 For 10 s

■ Outline Dimensions (Unit : mm)





■ 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}=200V, I_F=0	–	–	1000	nA
	Collector-emitter breakdown voltage		BV_{CEO}	I_C=0.1mA, I_F=0	350	–	–	V
Transfer characteristics	Collector current		I_C	I_F=5mA, V_{CE}=5V	2	4	–	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}	10^{11}	–	Ω
	Floating capacitance		C_f	V=0, f=1MHz	–	0.6	1.0	pF
	Cut-off frequency		f_C	V_{CE}=5V, I_C=2mA, R_L=100Ω, −3dB	–	50	–	kHz
	Response time	Rise time	t_r	V_{CE}=2V I_C=2mA R_L=100Ω	–	4	10	μs
		Fall time	t_f		–	5	12	μs

Fig.1 Forward Current vs. Ambient Temperature

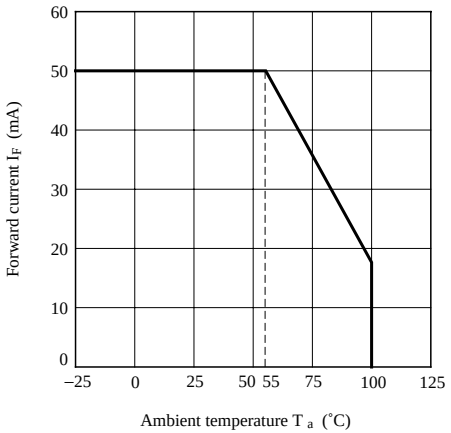


Fig.2 Diode Power Dissipation vs. Ambient Temperature

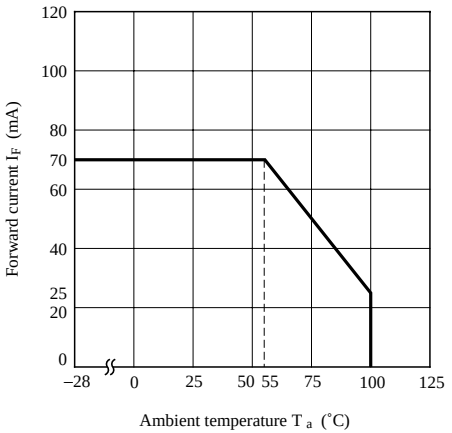


Fig.3 Collector Power Dissipation vs. Ambient Temperature

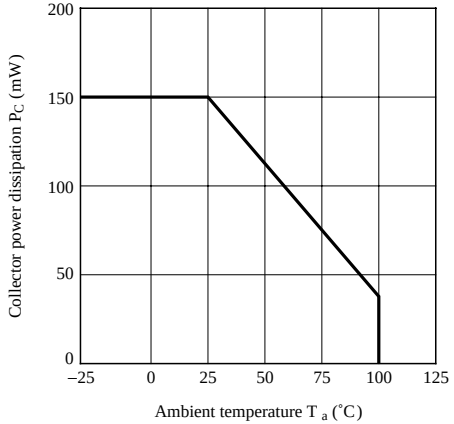


Fig.4 Power Dissipation vs. Ambient Temperature

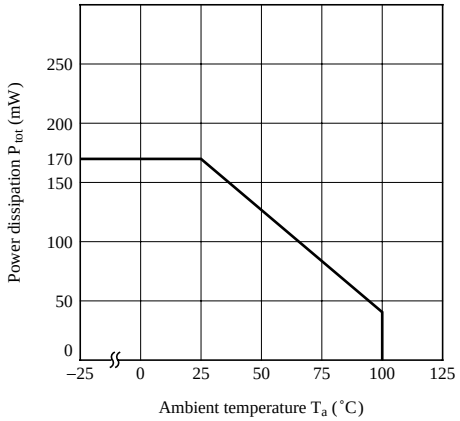


Fig.5 Peak Forward Current vs. Duty Ratio

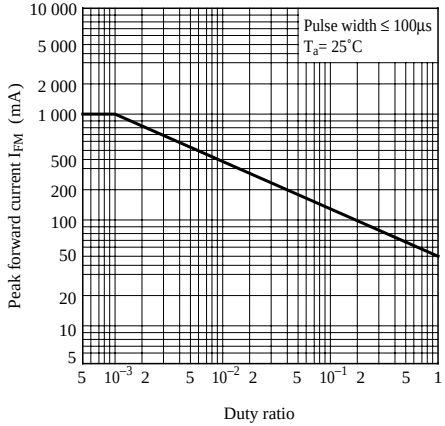


Fig.6 Forward Current vs. Forward Voltage

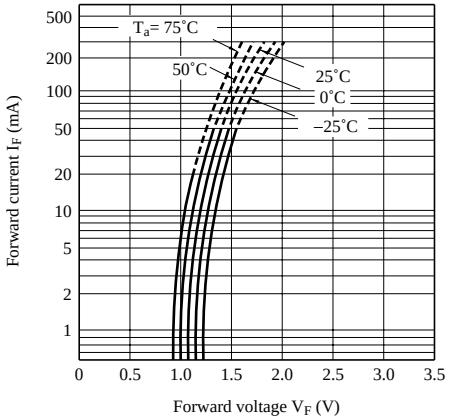


Fig.7 Current Transfer Ratio vs. Forward Current

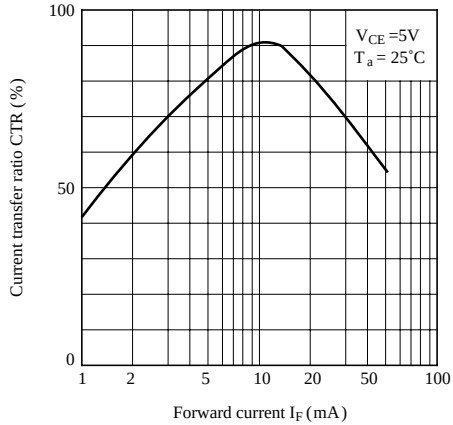


Fig.8 Collector Current vs. Collector-emitter Voltage

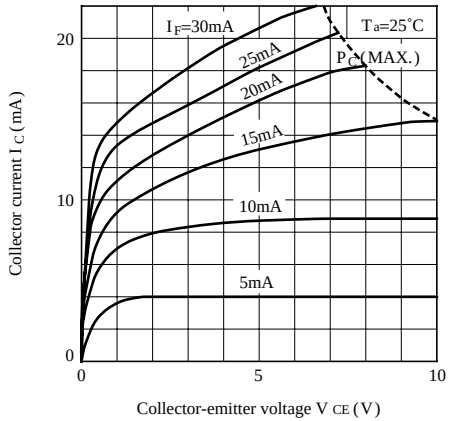


Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature

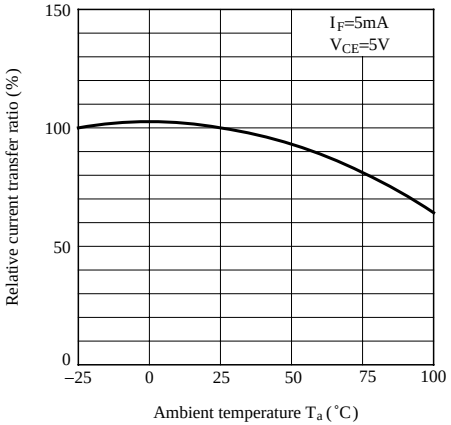


Fig.10 Collector - emitter Saturation Voltage vs. Ambient Temperature

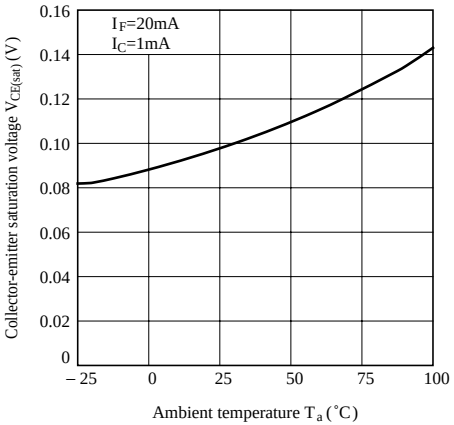


Fig.11 Collector Dark Current vs. Ambient Temperature

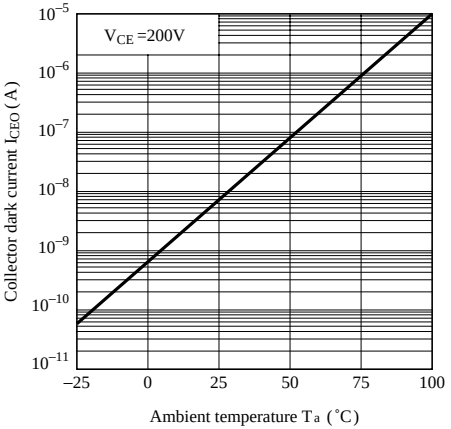


Fig.12 Response Time vs. Load Resistance

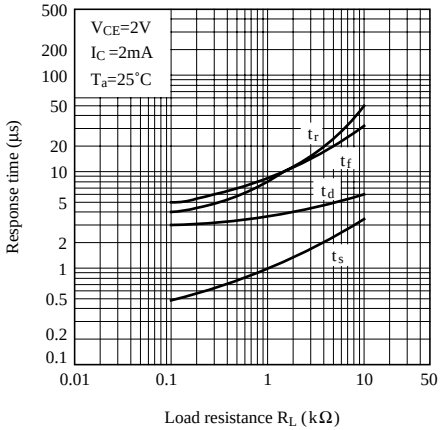


Fig.13 Test Circuit for Response Time

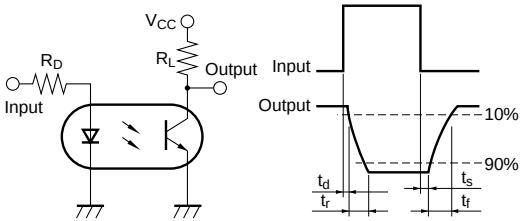


Fig.14 Voltage gain A(dB) vs. Frequency

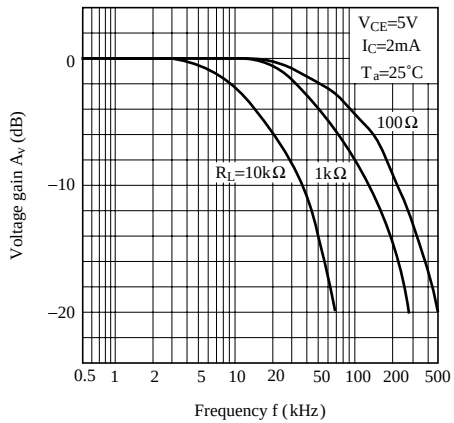


Fig.15 Test Circuit Frepuency Response

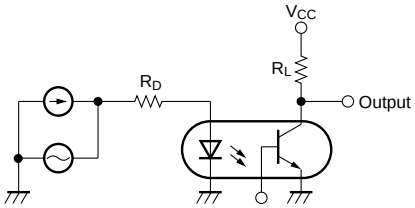
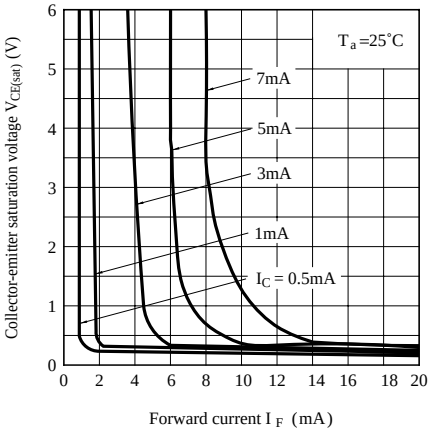


Fig.16 Collector-emitter Saturation Voltage vs. Forward Current



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