PC352

Opaque*, Mini-flat Package, High Resistance to Noise Type Photocoupler

■ Features

1. Opaque type, mini-flat package
   PC352 (1-channel)
2. High resistance to noise due to high common mode rejection voltage (V_{CM} : TYP. 1.5kV)
3. Subminiature type
   (The volume is smaller than that of our conventional DIP type by as far as 30%.)
4. Isolatin voltage between input and output
   PC352•••Viso(rms) : 3.75kV
5. Recognized by UL, file No. E64380

* Employs double transfer mold technology

■ Applications

1. Programmable controllers

■ Package Specifications

Model No.	Package specification
PC352N	Taping reel diameter 370mm (3 000 pcs)
PC352NT	Taping reel diameter 178mm (750 pcs)

■ Absolute Maximum Ratings

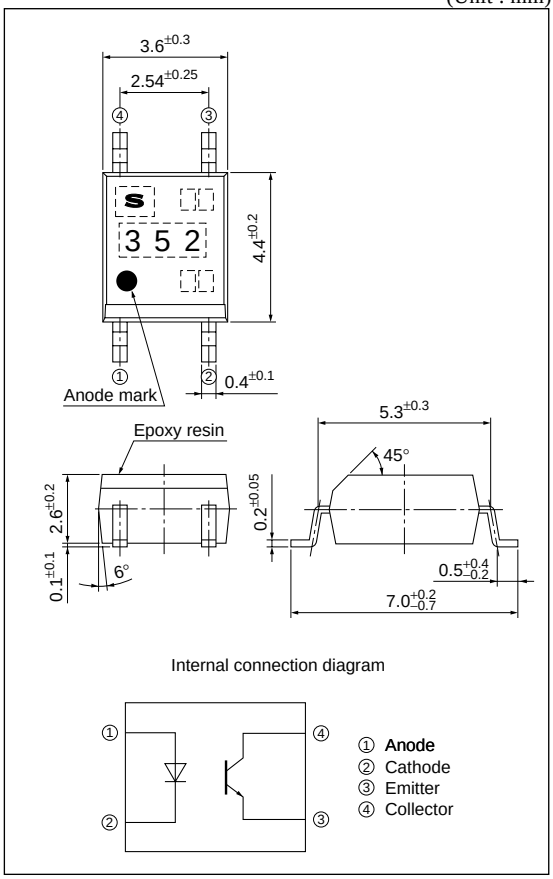
(Ta=25˚C)

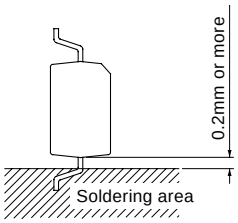
Parameter		Symbol	Rating	Unit
Input	*1 Forward current	I_F	50	mA
	*2 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	*1 Power dissipation	P	70	mW
Output	*1 Collector-emitter voltage	V_{CEO}	35	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	*1 Collector dissipation	P_C	150	mW
*1 Total power dissipation		P_{tot}	170	mW
Operating temperature		T_{opr}	–30 to +100	˚C
Storage temperature		T_{stg}	–40 to +125	˚C
*3 Isolation voltage		$V_{iso(rms)}$	3.75	kV
*4 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 Pulse width≤100μs, Duty ratio:0.01, Refer to Fig.6
*3 AC for 1min., 40 to 60% RH, f=60Hz
*4 For 10s

■ Outline Dimensions

(Unit : mm)





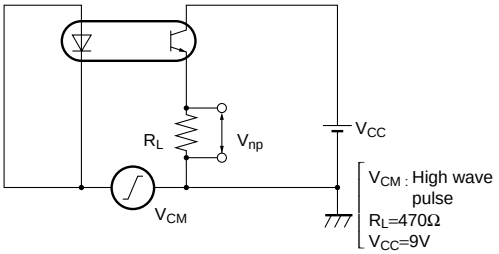
■ Electro-optical Characteristics

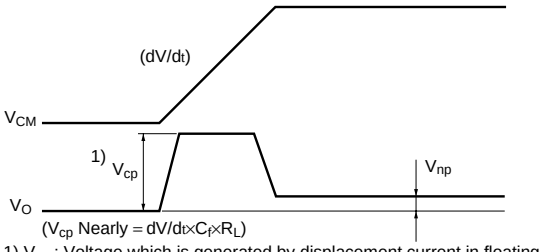
(Ta=25˚C)

	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	200	pF
Output	Collector dark current		I_{CEO}	V_{CE}=20V, I_F=0	–	–	100	nA
	Collector-emitter breakdown voltage		BV_{CEO}	I_C=0.1mA, I_F=0	35	–	–	V
	Emitter-collector breakdown voltage		BV_{ECO}	I_E=10μA, I_F=0	6	–	–	V
Transfer characteristics	Collector current		I_C	I_F=5mA, V_{CE}=5V	4.5	–	24	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=1mA	–	0.1	0.2	V
	Isolation resistance		R_{ISO}	DC500V 40 to 60%RH	5×10^{10}	1×10^{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	15	80	–	
	Response time	Rise time	t_r	V_{CE}=2V, I_C=2mA R_L=100Ω	–	4	18	μs
		Fall time	t_f		–	5	20	μs
	*5 Common mode rejection voltage		CMR	I_F=0, R_L=470Ω Vnp=100mV V_{CM}=1.5kV(peak)	10	–	–	kV/μs

*5 Refer to Fig.1

Fig.1 Test Circuit for Common Mode Rejection Voltage





1) V_{cp} : Voltage which is generated by displacement current in floating capacitance between primary and secondary side.

Fig.2 Forward Current vs. Ambient Temperature

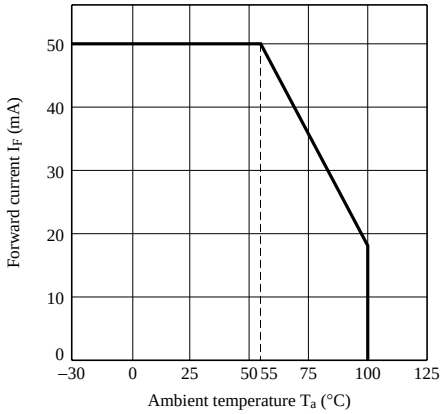


Fig.3 Diode Power Dissipation vs. Ambient Temperature

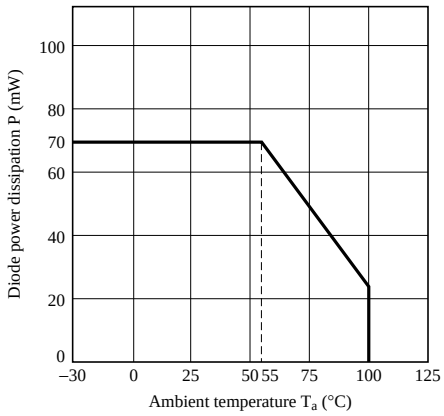


Fig.4 Collector Power Dissipation vs. Ambient Temperature

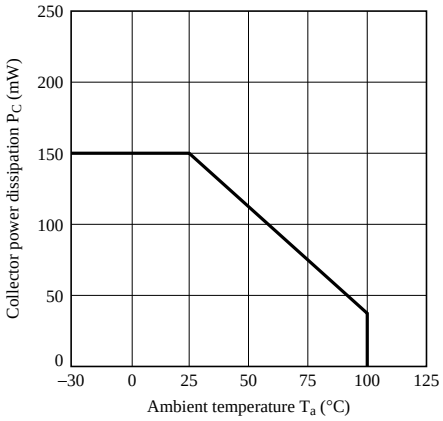


Fig.5 Total Power Dissipation vs. Ambient Temperature

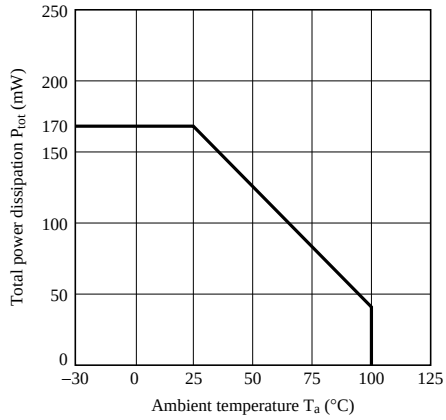


Fig.6 Peak Forward Current vs. Duty Ratio

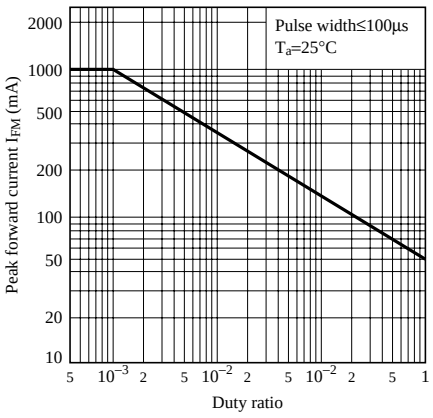


Fig.7 Forward Current vs. Forward Voltage

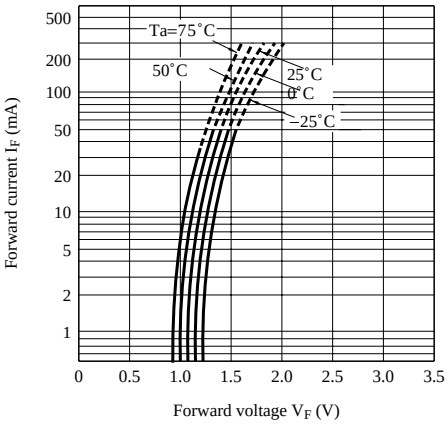


Fig.8 Current Transfer Ratio vs. Forward Current

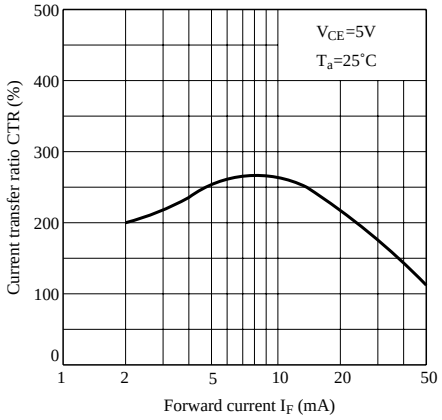


Fig.9 Collector Current vs. Collector-emitter Voltage

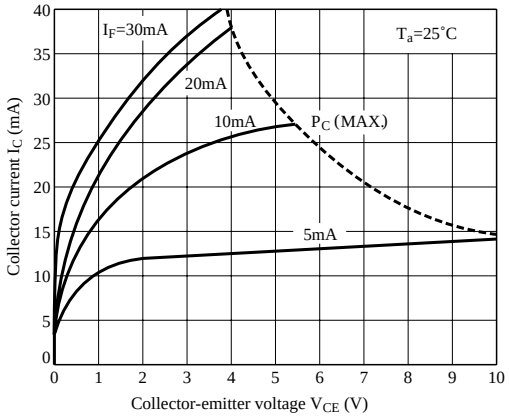


Fig.10 Relative Current Transfer Ratio vs. Ambient Temperature

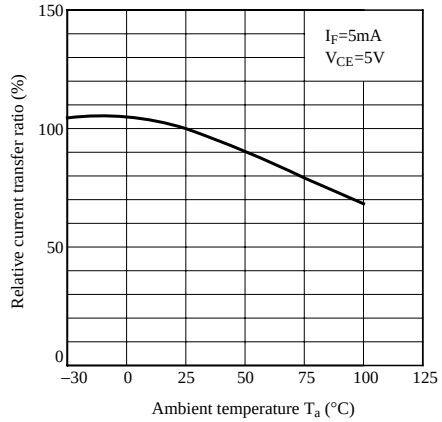


Fig.11 Collector-emitter Saturation Voltage vs. Ambient Temperature

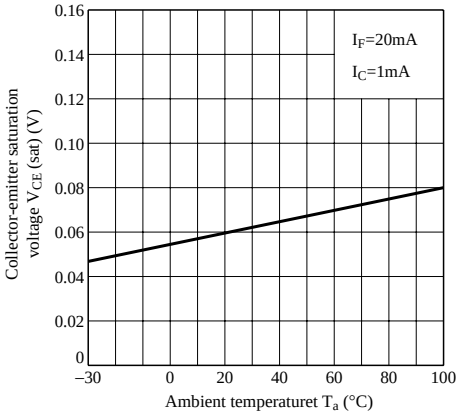


Fig.12 Collector Dark Current vs. Ambient Temperature

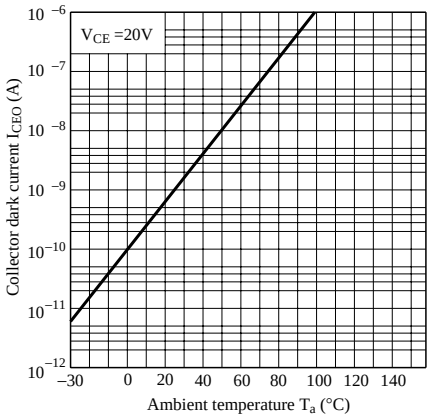


Fig.13 Response Time vs. Load Resistance

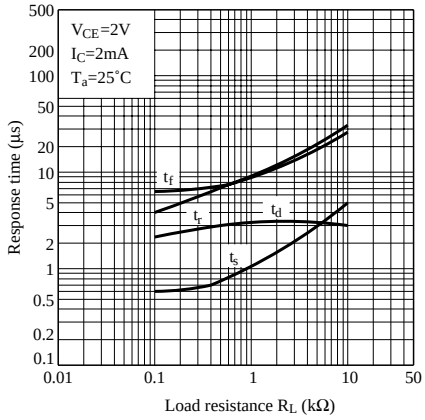


Fig.14 Test Circuit for Response Time

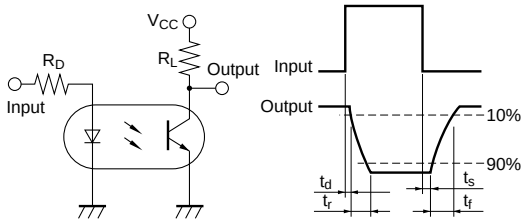


Fig.15 Voltage Gain vs Frequency

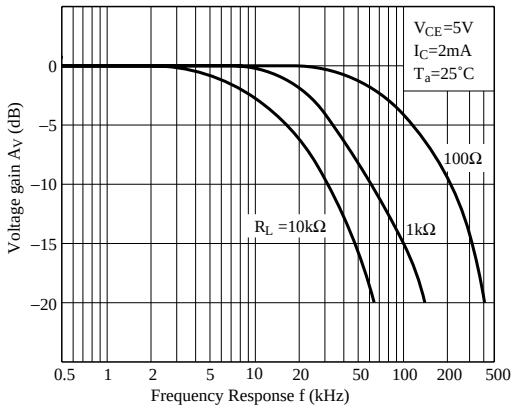


Fig.16 Collector-emitter Saturation Voltage vs. Forward Current

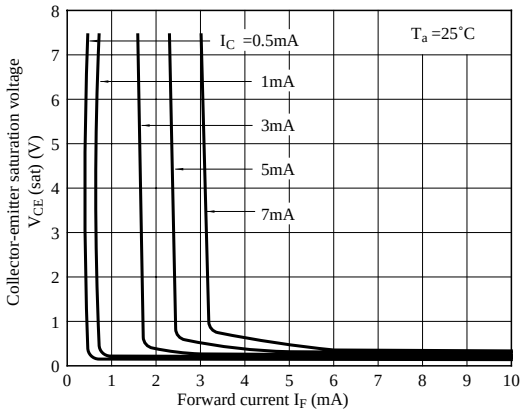
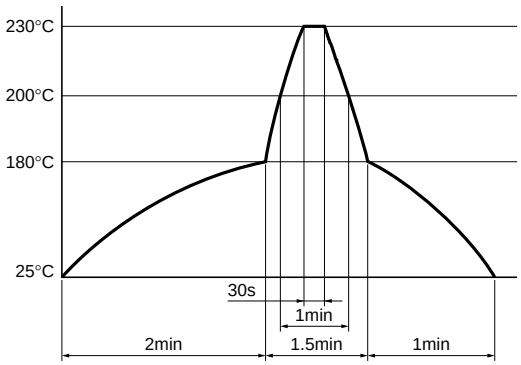


Fig.17 Reflow Soldering

Only one time soldering is recommended within the temperature profile shown below.



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