

PC81510NSZ

Low Input Current Photocoupler

■ Features

1. Low input drive current ($I_F=0.5\text{mA}$)
2. High sensitivity
(Darlington type, CTR:MIN.600%)
3. Isolation voltage (Viso (rms):5kV)
4. 4-pin DIP package

■ Applications

1. Various types of home appliances
2. Programmable controllers

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

	Parameter	Symbol	Rating	Unit
Input	*1 Forward current	I_F	10	mA
	*2 Peak forward current	I_{FM}	200	mA
	Reverse voltage	V_R	6	V
Output	*1 Power dissipation	P	15	mW
	Collector-emitter voltage	V_{CEO}	35	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	80	mA
	*1 Collector power dissipation	P_C	150	mW
	*1 Total power dissipation	P_{tot}	170	mW
	Operating temperature	T_{opr}	-30 to +100	$^\circ\text{C}$
	Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$
	*3 Isolation voltage	V_{iso} (rms)	5	kV
	*4 Soldering temperature	T_{sol}	260	$^\circ\text{C}$

*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig.2 to 5

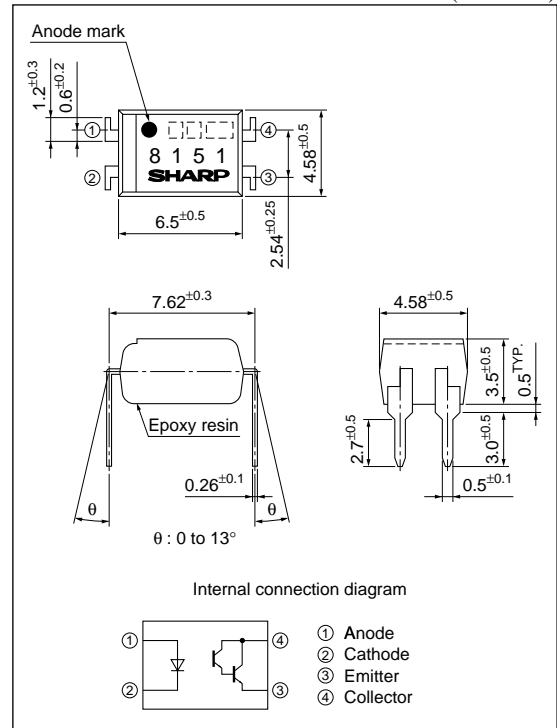
*2 Pulse width $\leq 100\mu\text{s}$, Duty ratio=0.001 (shown in Fig.6)

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

*4 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	$I_F=5mA$	–	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}	$V_{CE}=10V, I_F=0$	–	–	1000	nA
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C=0.1mA, I_F=0$	35	–	–	V
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E=10\mu A, I_F=0$	6	–	–	V
Transfer characteristics	Collector current	I_C	$I_F=0.5mA, V_{CE}=2V$	3	14	60	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=1mA, I_C=2mA$	–	–	1.0	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
	Response time	Rise time	t_r	$V_{CE}=2V$ $I_C=10mA$ $R_L=100\Omega$	–	60	300
Fall time		t_f	–		53	250	μs

Fig.1 Forward Current vs. Ambient Temperature

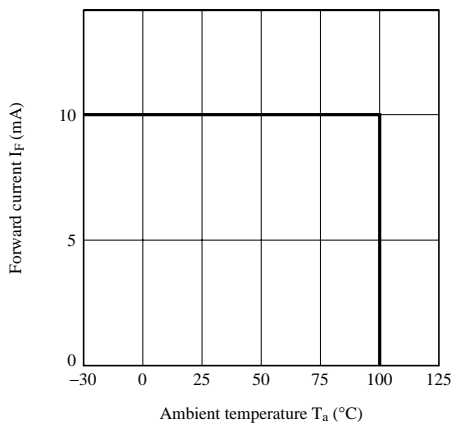


Fig.2 Diode Power Dissipation vs. Ambient Temperature

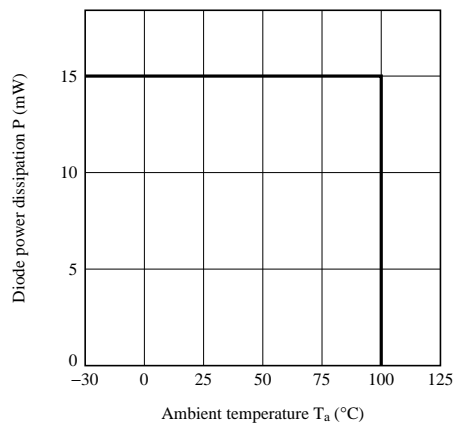


Fig.3 Collector Power Dissipation vs. Ambient Temperature

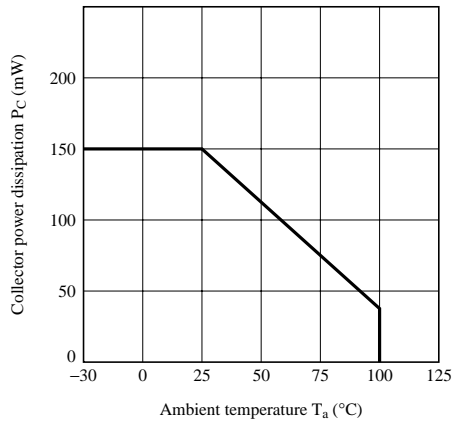


Fig.4 Total Power Dissipation vs. Ambient Temperature

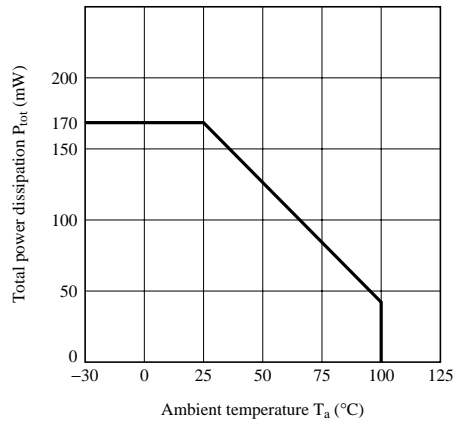
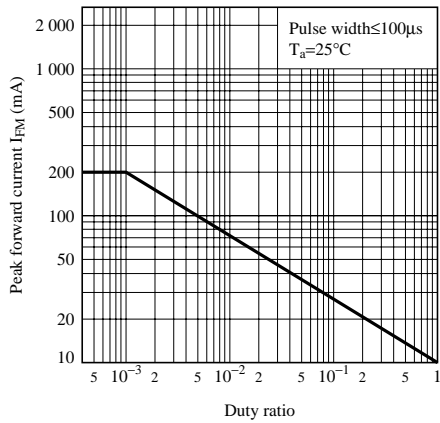


Fig.5 Peak Forward Current vs. Duty Ratio



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