

PC8172xNSZ Series

Low Input Current Type Photocoupler

■ Features

1. Low input current type. ($I_F=0.1\text{mA}$)
2. High resistance to noise due to high common rejection voltage. (CMR:MIN. $10\text{kV}/\mu\text{s}$)
3. Compact dual-in line package.
4. Isolation voltage. ($V_{\text{iso (rms)}}:5\text{kV}$)

■ Applications

1. Programmable controllers.
2. Facsimiles.
3. Telephones.

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

Parameter	Symbol	Rating	Unit	
Input	Forward current	I_F	10	mA
	*1 Peak forward current	I_{FM}	200	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	15	mW
Output	Collector-emitter voltage	V_{CEO}	70	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	mW
Total power dissipation	P_{tot}	170	mW	
Operating temperature	T_{opr}	-30 to +100	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$	
*2 Isolation voltage	$V_{\text{iso (rms)}}$	5	kV	
*3 Soldering temperature	T_{sol}	260	$^\circ\text{C}$	

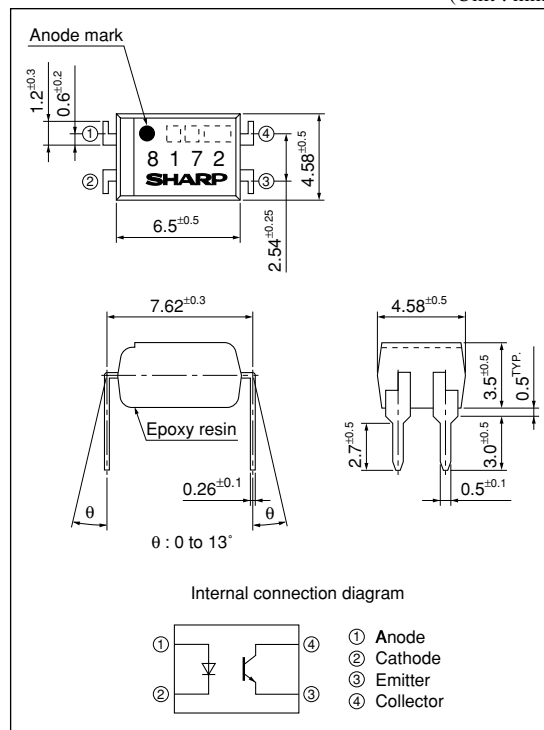
*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio=0.001

*2 40 to 60%RH, AC for 1 minute, $f=60\text{Hz}$

*3 For 10s

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

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

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F=5\text{mA}$	–	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}	$V_{CE}=50\text{V}, I_F=0$	–	–	100	nA	
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	70	–	–	V	
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E=10\mu\text{A}, I_F=0$	6	–	–	V	
Transfer characteristics	Collector current	I_C	$I_F=0.1\text{mA}, V_{CE}=5\text{V}$	0.1	–	0.5	mA	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=5\text{mA}, I_C=1\text{mA}$	–	0.1	0.3	V	
	Isolation resistance	R_{ISO}	DC500V 40 to 60%RH	5×10^{10}	1×10^{11}	–	Ω	
	Floating capacitance	C_f	$V=0, f=1\text{MHz}$	–	0.6	1.0	pF	
	Response time	Rise time	t_r	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	–	4	18	μs
		Fall time	t_f		–	3	18	μs
	*4 Common mode rejection voltage		CMR	$T_a=25^{\circ}\text{C}, R_L=470\Omega, V_{CM}=1.5\text{kV (peak)}, I_F=0\text{mA}, V_{CC}=9\text{V}, V_{np}=100\text{mV}$	10	–	–	kV/ μs

*4 Refer to Fig.1.

Fig.1 Test Circuit for Common Mode Rejection Voltage

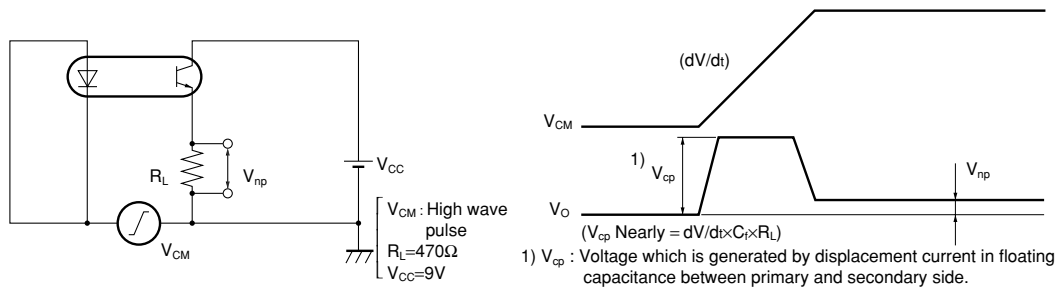


Fig.2 Forward Current vs. Ambient Temperature

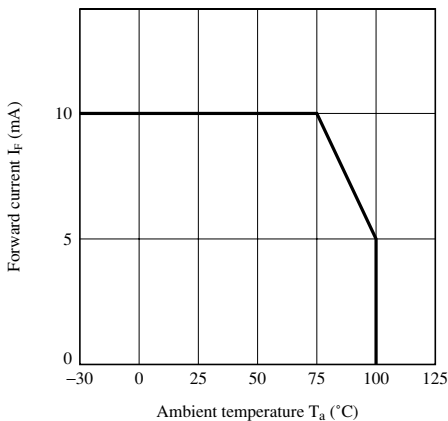


Fig.3 Diode Power Dissipation vs. Ambient Temperature

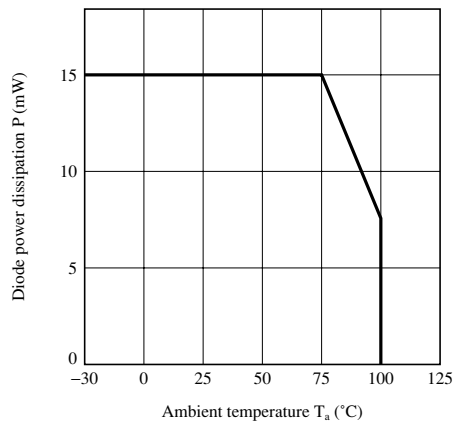


Fig.4 Collector Power Dissipation vs. Ambient Temperature

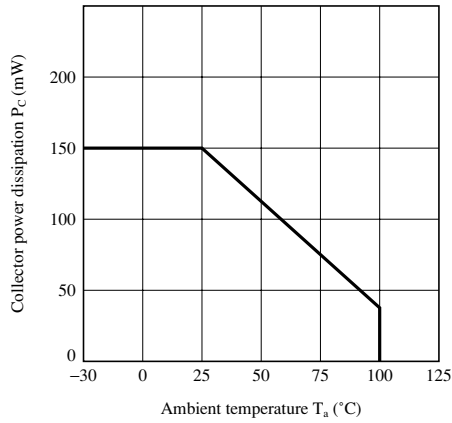


Fig.5 Total Power Dissipation vs. Ambient Temperature

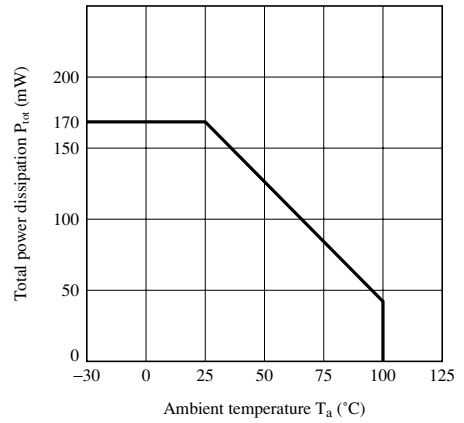
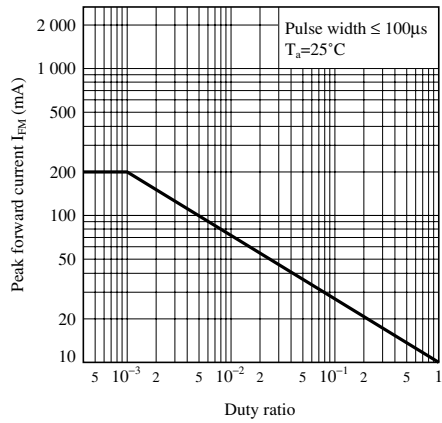


Fig.6 Peak Forward Current vs. Duty Ratio



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