PC812

High Noise Resistance Type Photocoupler

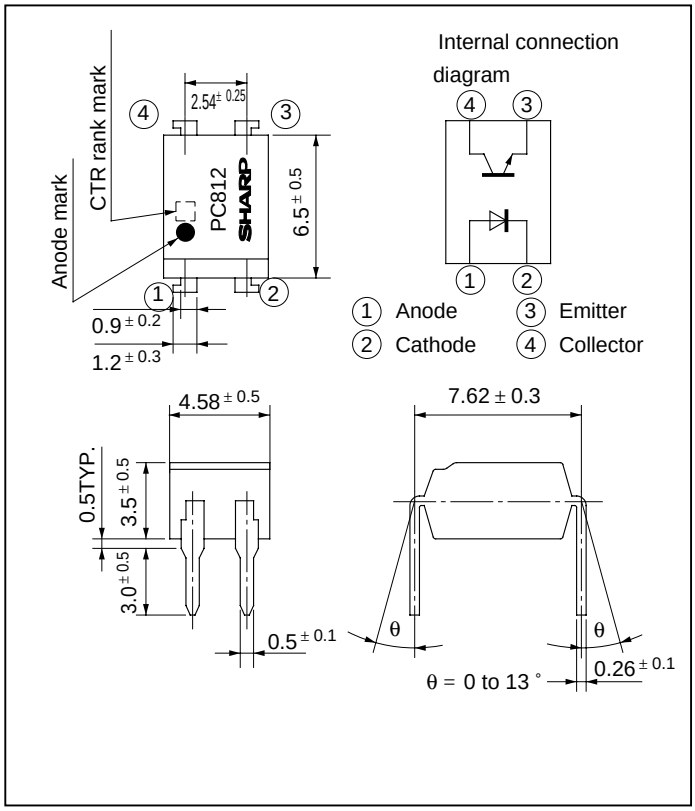
■ Features

1. High noise reduction
   (Common mode rejection voltage
   V_{CM} : TYP. 1.5kV at dv/dt = 2kV/μs,
   R_L = 470Ω, V_{np} = 100mV)
2. High current transfer ratio
   (CTR : MIN. 90% at I_F = 5mA, V_{CE} = 5V)
3. High isolation voltage between input and output (V_{iso} : 5 000 V_{rms})
4. Compact dual-in-line package

■ Applications

1. Motor-control circuits
2. Computer terminals
3. System appliances, measuring instruments
4. Signal transmission between circuits of different potentials and impedances

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings (T_a = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	35	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}	200	mW
*2Isolation voltage		V_{iso}	5 000	V_{rms}
Operating temperature		T_{opr}	- 30 to + 100	°C
Storage temperature		T_{stg}	- 55 to + 125	°C
*3Soldering temperature		T_{sol}	260	°C

*1 Pulse width <=100μs, Duty ratio : 0.001
*2 40 to 60% RH, AC for 1 minute
*3 For 10 seconds

" In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device. "

Downloaded from Elcodis.com electronic components distributor

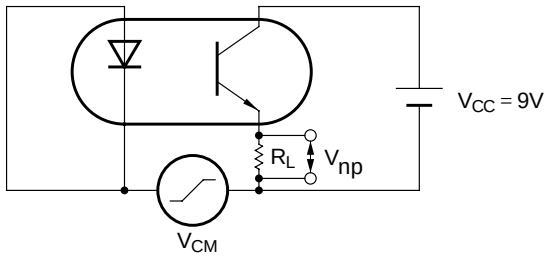
■ Electro-optical Characteristics (Ta= 25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F = 20mA	-	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM} = 0.5A	-	-	3.0	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	-	-	10^{-7}	A
Transfer characteristics	*4 Current transfer ratio		CTR	I_F = 5mA, V_{CE} = 5V	90	-	480	%
	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}	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	-	kHz
	*4 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		V_{CM}	dv/dt = 2kV/μs, R_L = 470Ω, V_{np} = 100mV, I_F = 0	-	1.5	-	kV

*4 Classification table of current transfer ratio is shown below.

Model No.	Rank mark	CTR (%)	t_r(μs)		t_f(μs)	
			TYP.	MAX.	TYP.	MAX.
PC812A	A	90 to 180	3	14	4	16
PC812B	B	150 to 180	4	16	5	18
PC812C	C	240 to 480	5	18	7	20
PC812	A, B or C	90 to 480	4	18	5	20
Measurement conditions		I = 5mA V_{CE} = 5V T_a = 25˚C	V_{CE} = 2V I_C = 2mA R_L = 100Ω T_a = 25˚C			

*5 Test Circuit for V_{CM}



V_{CM} : Common mode rejection voltage (higher value of pulse wave)
dv/dt : Rising factor of voltage

Test condition
V_{np} = 100mV, R_L = 470Ω
dv/dt = 2kV/μs, I_F = 0

Fig. 1 Forward Current vs. Ambient Temperature

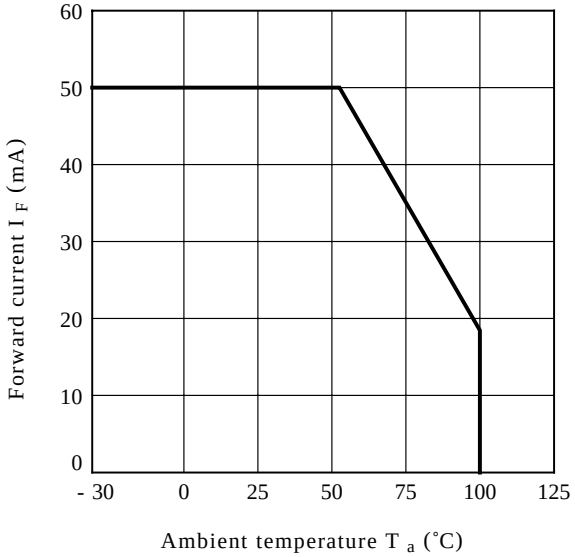
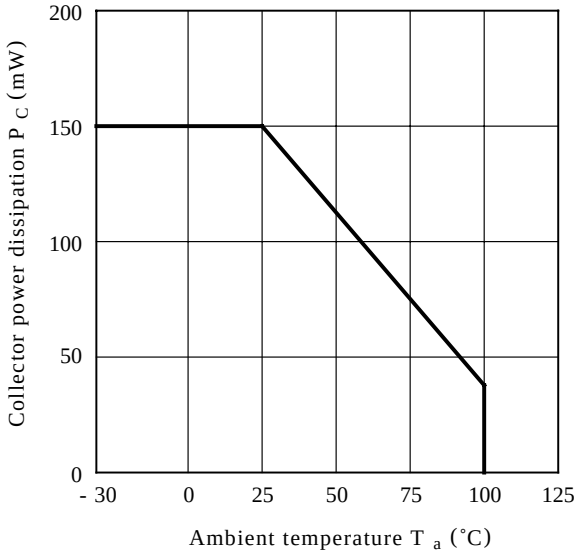


Fig. 2 Collector Power Dissipation vs. Ambient Temperature



Downloaded from Elcodis.com electronic components distributor

Fig. 3 Peak Forward Current vs. Duty Ratio

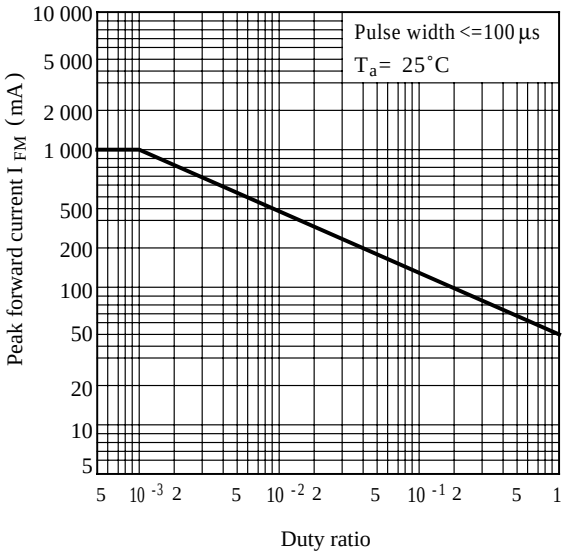


Fig. 4 Forward Current vs. Forward Voltage

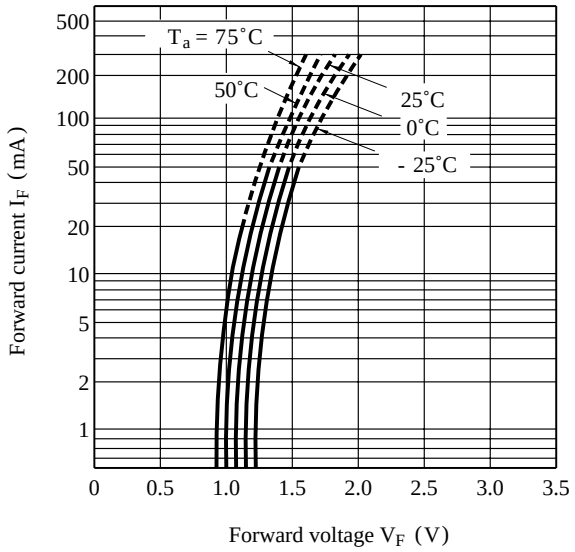


Fig. 5 Current Transfer Ratio vs. Forward Current

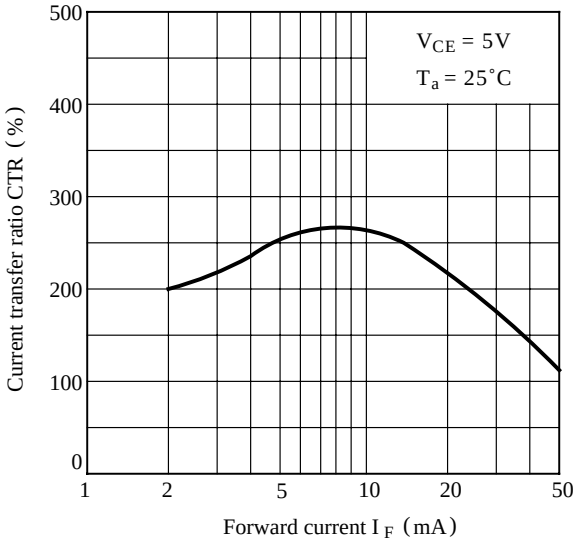


Fig. 6 Collector Current vs. Collector-emitter Voltage

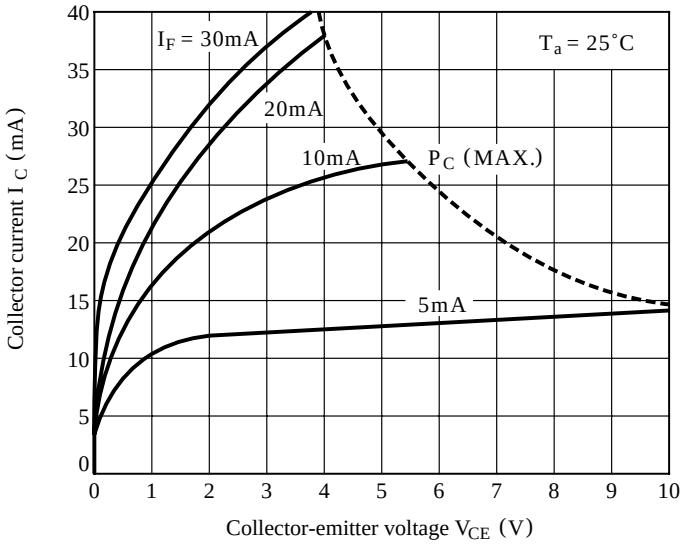


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

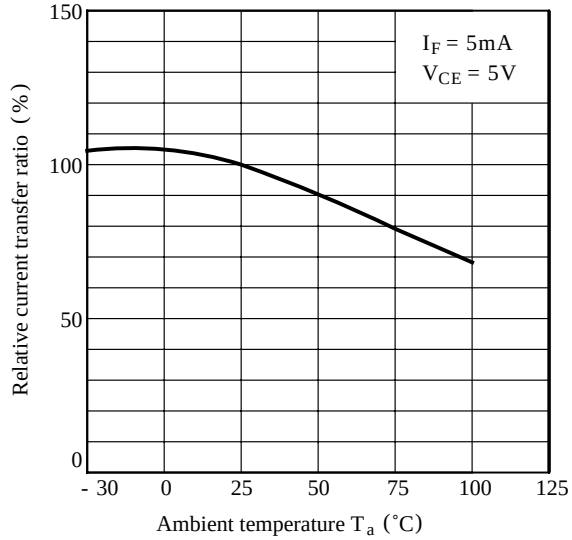
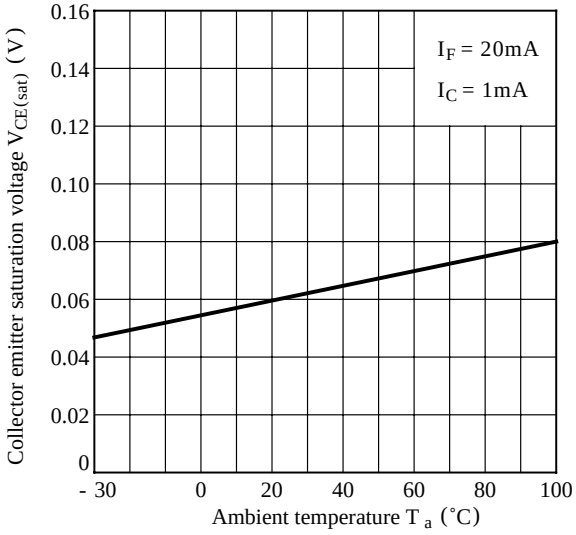


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature



Downloaded from Elcodis.com electronic components distributor

Fig. 9 Collector Dark Current vs. Ambient Temperature

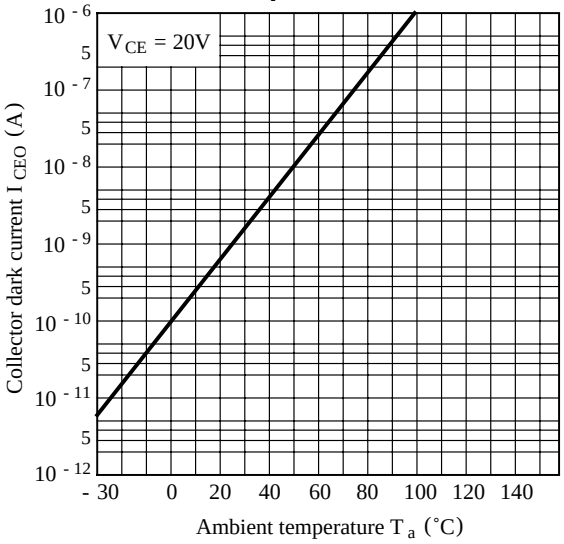


Fig.10 Response Time vs. Load Resistance

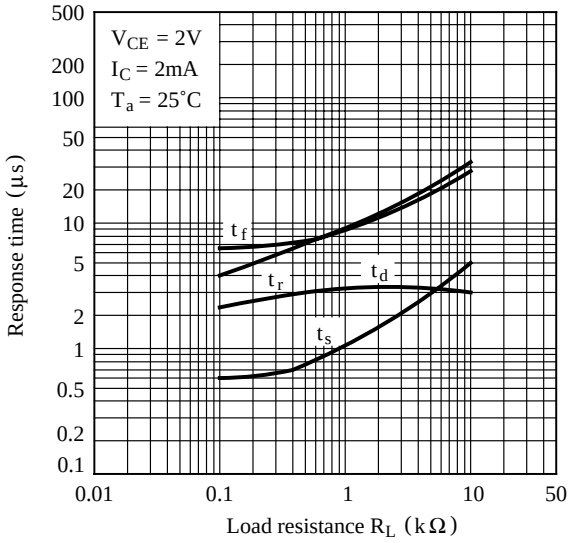
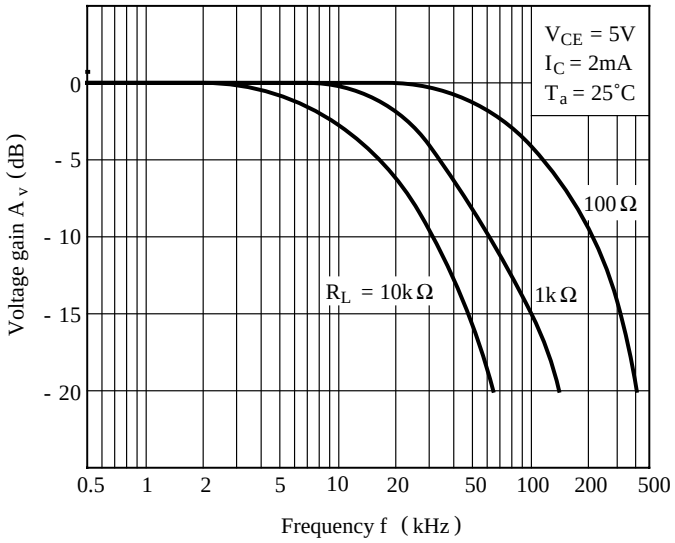


Fig.11 Frequency Response



Test Circuit for Response Time

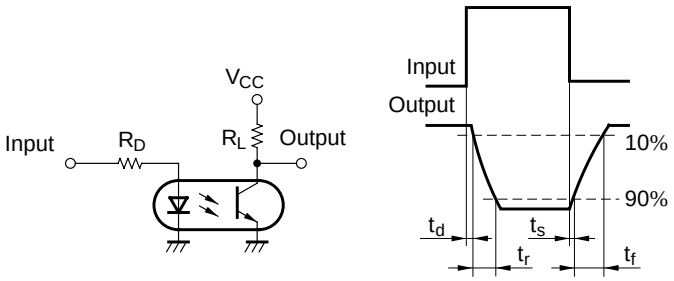
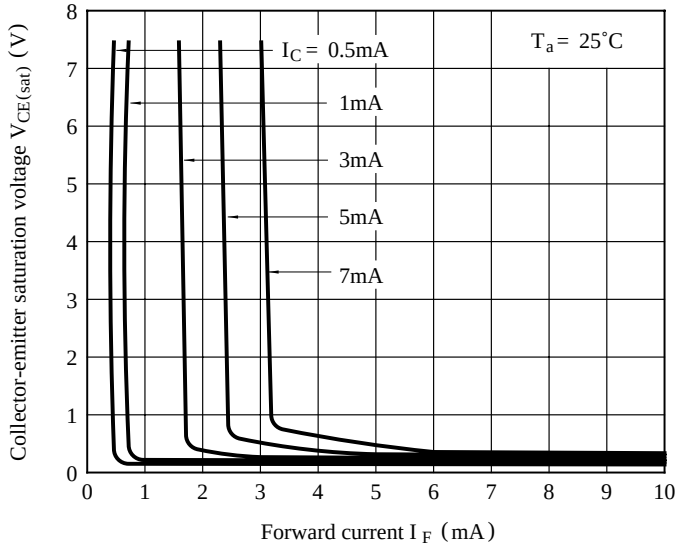
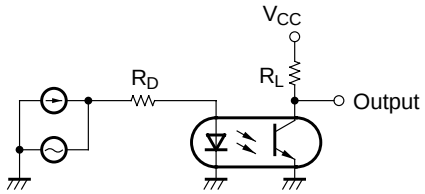


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Frepuency Response



● Please refer to the chapter "Precautions for Use"

Downloaded from Elcodis.com electronic components distributor