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PC813 Series

AC Input Type & High Noise Reduction Type Photocoupler

■ Features

1. High instantaneous common mode rejection voltage (CM_H : TYP.2kV/μs)
2. AC input response
3. Compact dual-in-line package **PC813** (1ch), **PC823** (2ch), **PC843** (4ch)
4. High isolation voltage between input and output (V_{iso} : 5 000V_{rms})
5. Recognized by UL, file No. E64380

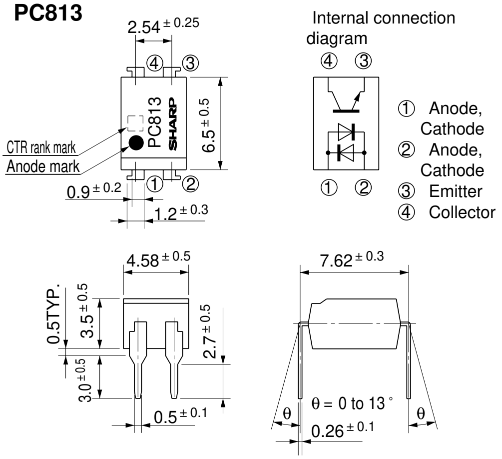
■ Applications

1. Telephones (**PC813**)
2. Programmable controllers (**PC823/PC843**)
3. System appliances, measuring instruments
4. Signal transmission between circuits of different potentials and impedances

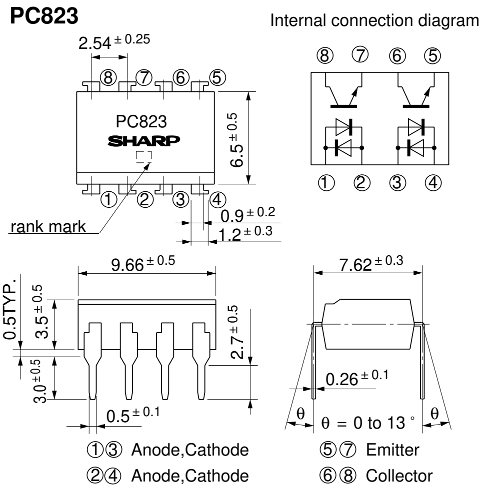
■ Outline Dimensions

(Unit : mm)

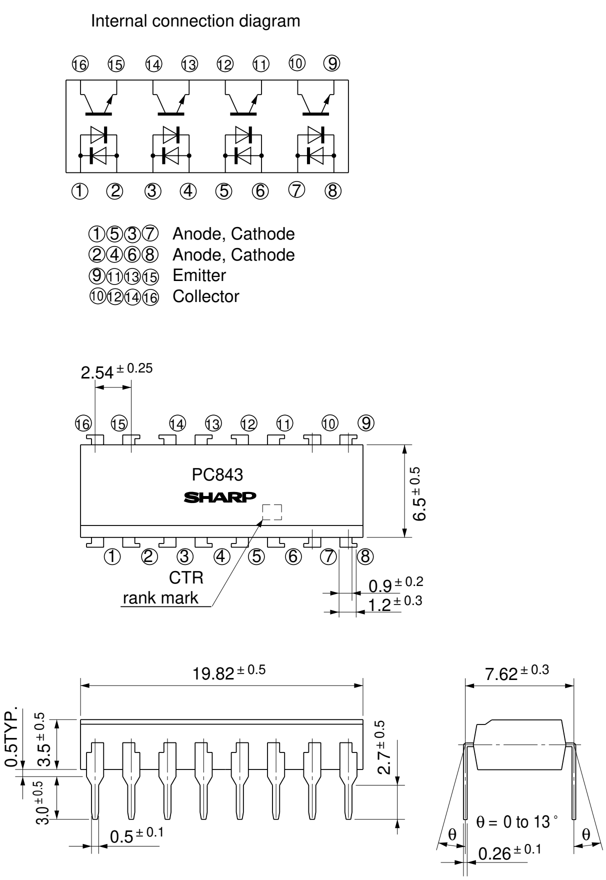
PC813



PC823



PC843



■ Absolute Maximum Ratings

(Ta= 25˚C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	± 50	mA
	*1Peak forward current	I_{FM}	± 1	A
	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

■ Electro-optical Characteristics

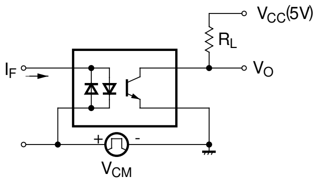
(Ta= 25˚C)

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
	Terminal capacitance		C_t	V = 0, f = 1kHz	-	50	250	pF
Output	Collector dark current		I_{CEO}	V_{CE} = 20V, I_F = 0	-	-	10^{-7}	A
Transfer charac-teristics	*4Current transfer ratio		CTR	I_F = ± 1mA, V_{CE} = 5V	20	-	200	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F = ± 20mA, I_C = 1mA	-	0.1	0.2	V
	Isolation voltage		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
	Response time	Rise time	t_r	V_{CE} = 2V, I_C = 2mA	-	4	18	μs
		Fall time	t_f	R_L = 100Ω	-	5	20	μs
	*5Instantaneous common mode rejection voltage "Output : high level"		CM_H	V_{CM} = 600V, I_F = 0 V_O = 2V, R_L = 1.9kΩ,Vcc=5V	-	2	-	kV/ μs
	*5Instantaneous common mode rejection voltage "Output : low level"		CM_L	V_{CM} = 600V, I_F = 16mA V_O = 0.8V, R_L = 1.9kΩ,Vcc=5V	-	2	-	kV/ μs

*4 Classification table of current transfer ratio is shown below

Model No.	Rank Mark	CTR (%)
PC813A	A	50 to 150%
PC823A		
PC843A		
PC813	A or no mark	20 to 200%
PC823		
PC843		

*5 Test Circuit for instantaneous common mode rejection voltage



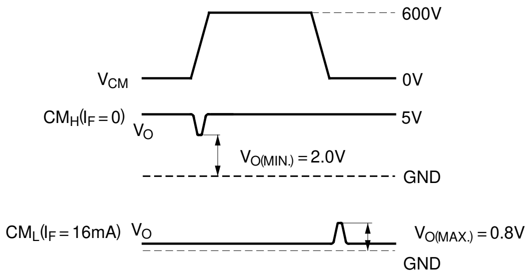


Fig. 1 Forward Current vs. Ambient Temperature

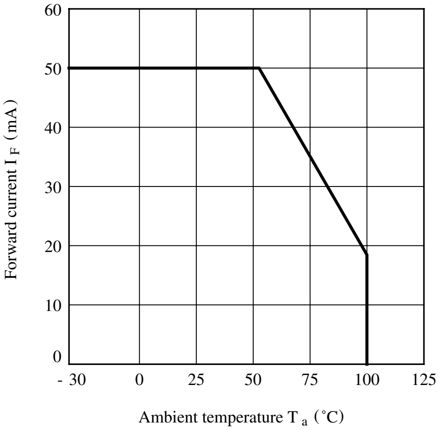


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

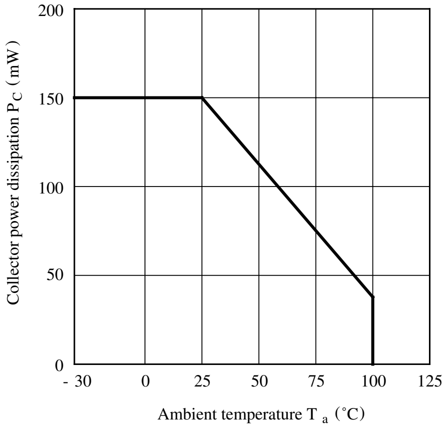


Fig. 3 Peak Forward Current vs. Duty Ratio

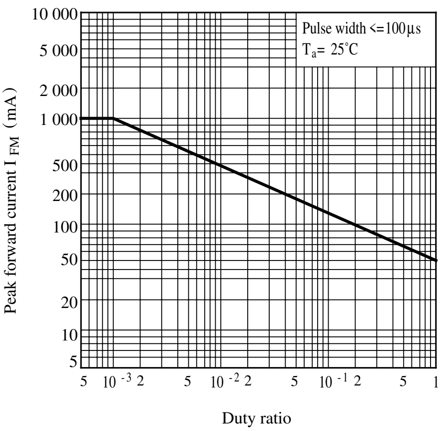


Fig. 4 Forward Current vs. Forward Voltage

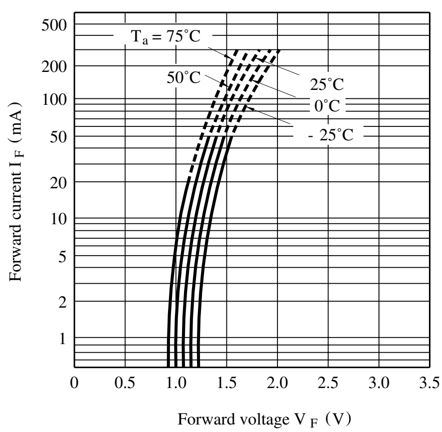


Fig. 5 Current Transfer Ratio vs. Forward Current

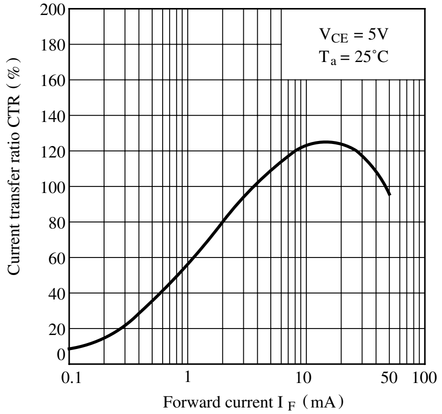


Fig. 6 Collector Current vs. Collector-emitter Voltage

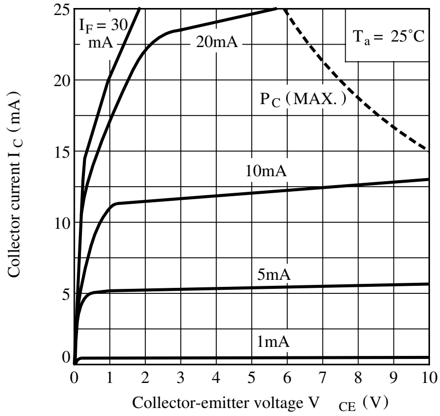


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

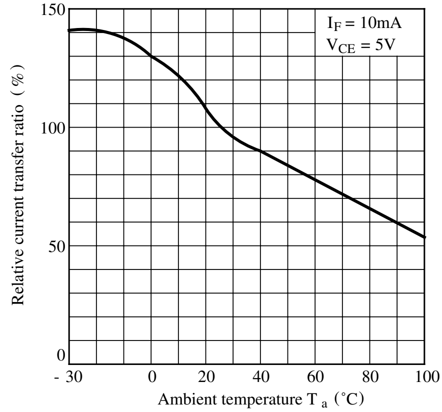


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

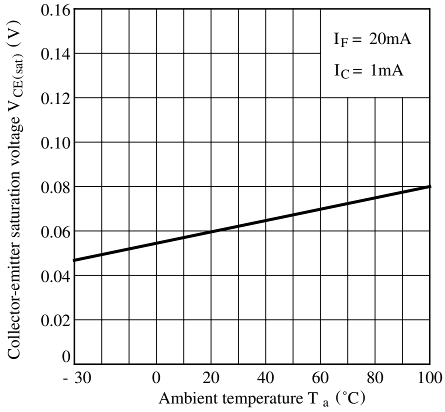


Fig. 9 Collector Dark Current vs. Ambient Temperature

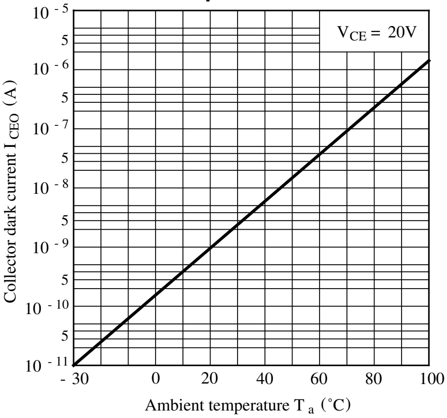


Fig.10 Response Time vs. Load Resistance

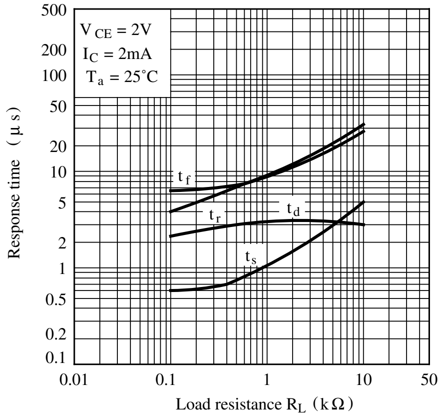
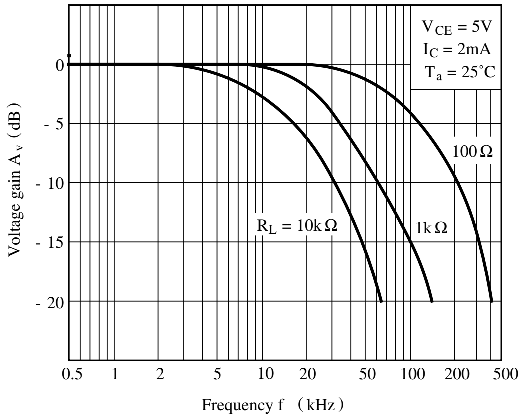


Fig.11 Frequency Response



Test Circuit for Response Time

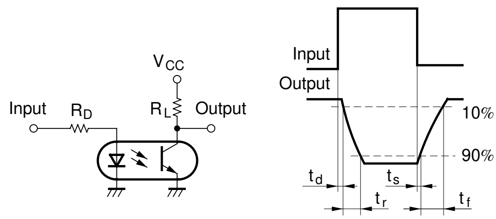
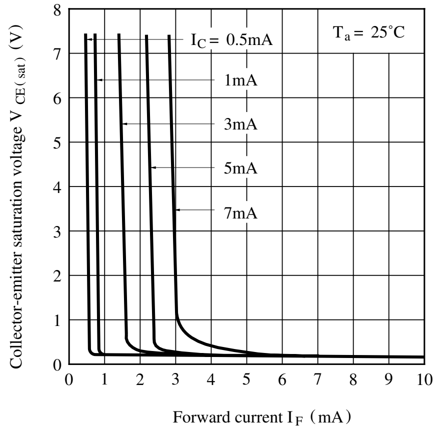
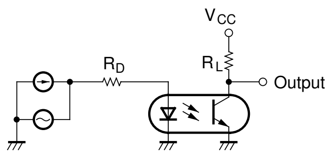


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Frepuency Response



●Please refer to the chapter “Precautions for Use ”

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— Office automation equipment
— Telecommunication equipment [terminal]
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