

PC356NT/PC358

Mini-Flat Package, High Collector-emitter Voltage Type Photocoupler

■ Features

1. High collector-emitter voltage
(**PC358** $\cdots V_{CEO} : 120V$, **PC356NT** $\cdots V_{CEO} : 80V$)
2. Opaque type, mini-flat package
PC356NT/PC358 (1-channel)
3. Subminiature type
(The volume is smaller than that of our conventional DIP type by as far as 30%)
4. Isolation voltage between input and output
PC356NT/PC358 $\cdots V_{iso} : 3\ 750V_{rms}$
5. Recognized by UL (No. E64380)

■ Applications

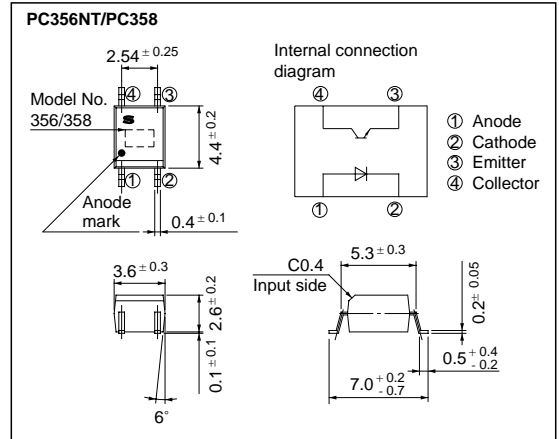
1. Hybrid substrates that require high density mounting
2. Programmable controllers

■ Package Specifications

Model No.	Package specifications
PC356NT	Taping reel diameter 178mm (750pcs.)
PC358	Taping reel diameter 370mm (3000pcs.)

■ Outline Dimensions

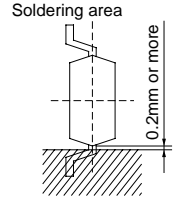
(Unit : mm)



Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit	
Input	Forward current	I _F	50	mA	
	^{*1} Peak forward current	I _{FM}	1	A	
	Reverse voltage	V _R	6	V	
	Power dissipation	P	70	mW	
Output	Collector-emitter voltage	V _{CEO}	PC356NT	80	V
			PC358	120	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	
	^{*2} Isolation voltage	V _{iso}	3 750	V _{rms}	
Operating temperature	T _{opr}	- 30 to + 100	°C		
Storage temperature	T _{stg}	- 40 to + 125	°C		
^{*3} Soldering 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		
	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}	PC356NT	V _{CE} = 20V, I _F = 0	-	-	1 x 10 ⁻⁷	A	
			PC358	V _{CE} = 40V, I _F = 0	-	-	-	-	
	Collector-emitter breakdown voltage	BV _{CEO}	I _C = 0.1mA, I _F = 0	PC356NT	80	-	-	V	
PC358				120	-	-	-		
Emitter-collector breakdown voltage	BV _{ECO}	I _E = 10 μA, I _F = 0	6	-	-	V			
Transfer-characteristics	Current transfer ratio	CTR	PC356NT	I _F = 1mA, V _{CE} = 5V	100	-	400	%	
			PC358	I _F = 5mA, V _{CE} = 5V	50	-	600	%	
	Collector-emitter saturation voltage	V _{CE(sat)}	I _F = 20mA, I _C = 1mA	-	-	0.2	V		
	Isolation resistance	R _{iso}	DC500V, 40 to 60% RH	5 x 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 = 2mA R _L = 100Ω	PC356NT	-	6	-	μs
					PC358	-	4	18	μs
Fall time		t _f	PC356NT		-	8	-	μs	
			PC358		-	3	18	μs	

Fig. 1 Forward Current vs. Ambient Temperature

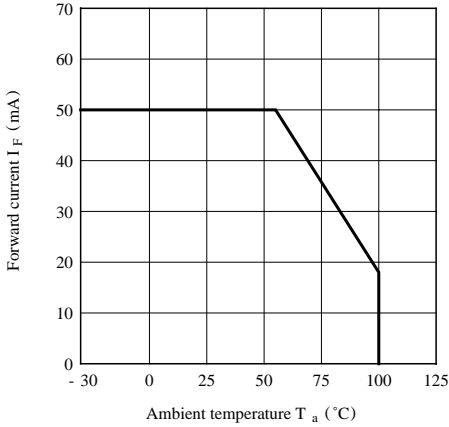


Fig. 2 Diode Power Dissipation vs. Ambient Temperature

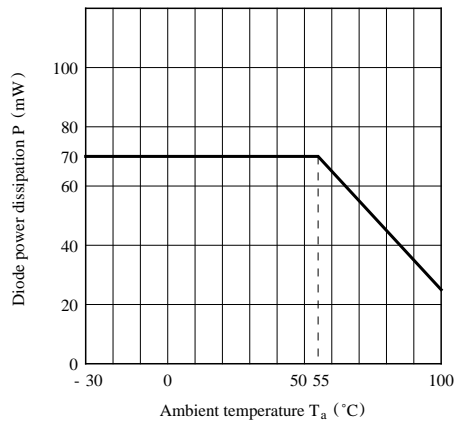


Fig. 3 Collector Power Dissipation vs. Ambient Temperature

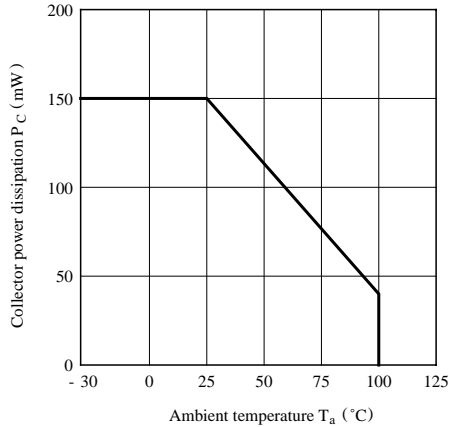


Fig. 4 Total Power Dissipation vs. Ambient Temperature

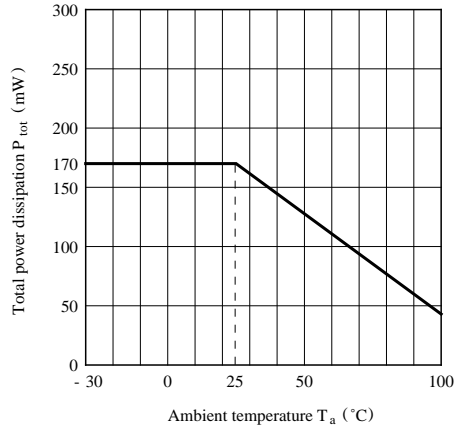


Fig. 5 Peak Forward Current vs. Duty Ratio

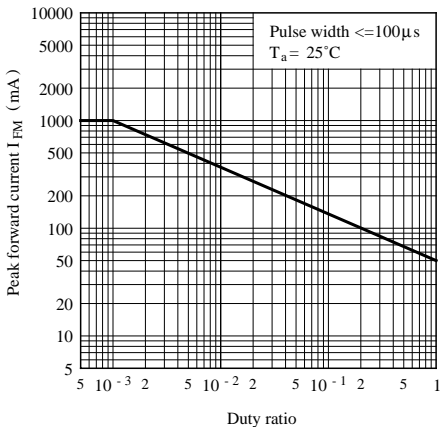


Fig. 6 Forward Current vs. Forward Voltage

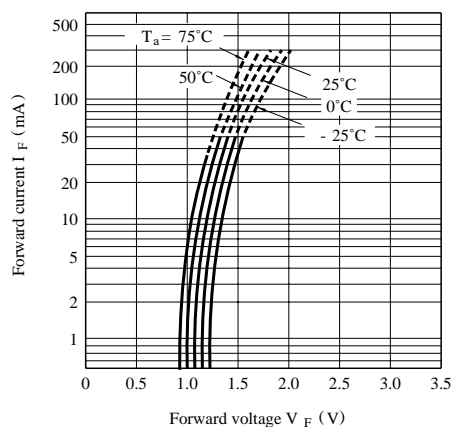


Fig. 7-a Current Transfer Ratio vs. Forward Current (PC356NT)

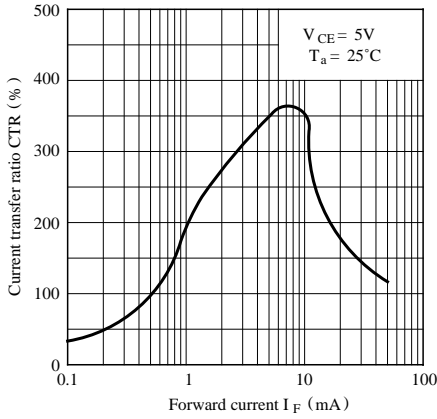


Fig. 7-b Current Transfer Ratio vs. Forward Current (PC358)

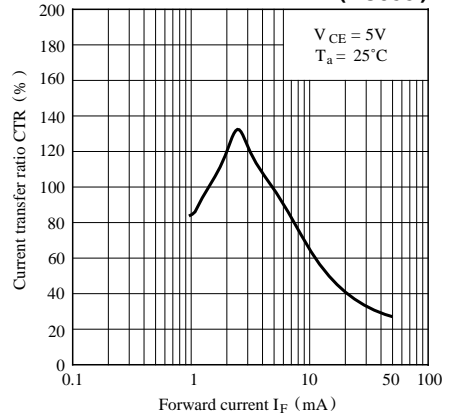


Fig. 8-a Collector Current vs. Collector-emitter Voltage (PC356NT)

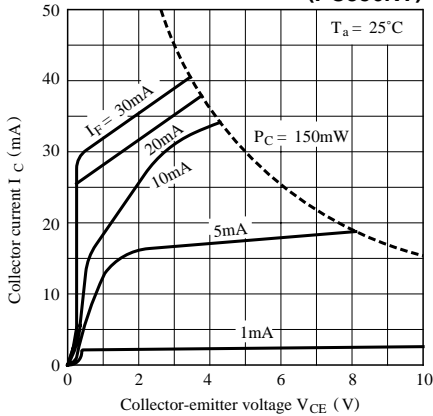


Fig. 8-b Collector Current vs. Collector-emitter Voltage (PC358)

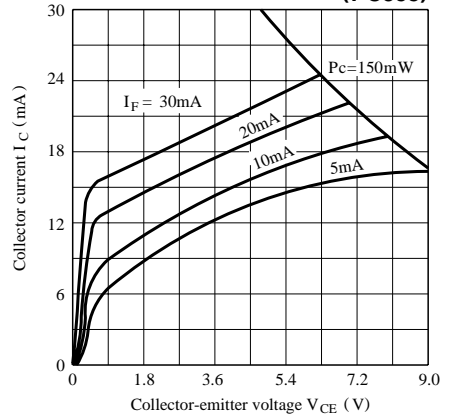


Fig. 9-a Relative Current Transfer Ratio vs. Ambient Temperature (PC356NT)

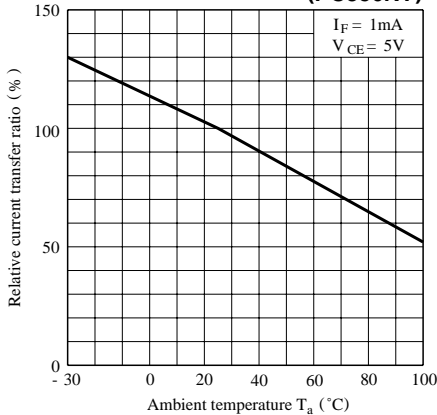


Fig. 9-b Relative Current Transfer Ratio vs. Ambient Temperature (PC358)

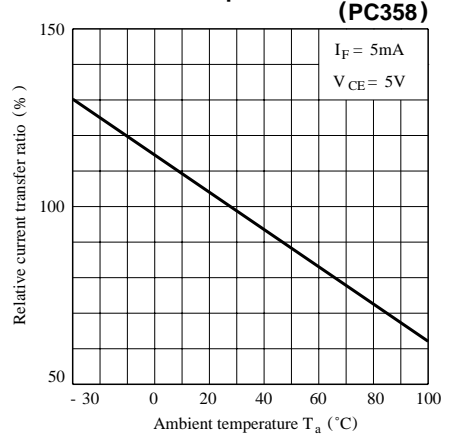


Fig.10-a Collector-emitter Saturation Voltage vs. Ambient Temperature (PC356NT)

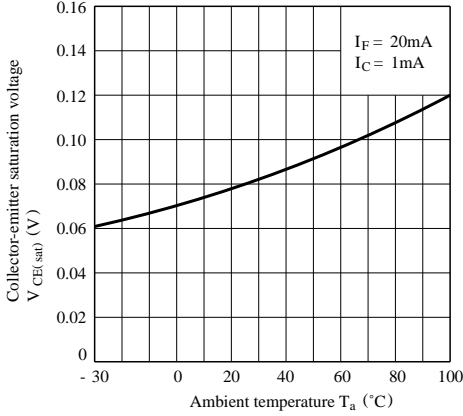


Fig.10-b Collector-emitter Saturation Voltage vs. Ambient Temperature (PC358)

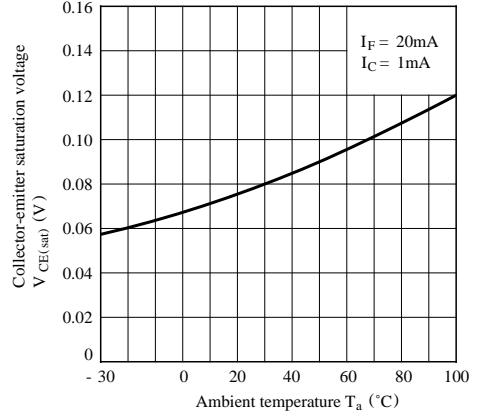


Fig.11-a Collector Dark Current vs. Ambient Temperature (PC356NT)

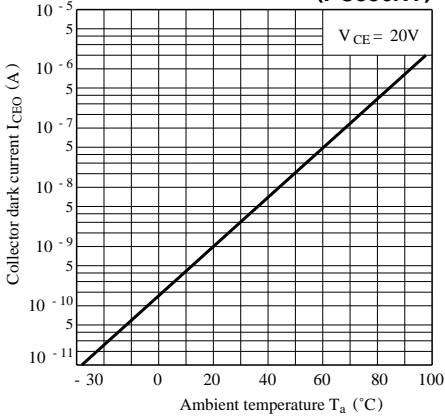


Fig.11-b Collector Dark Current vs. Ambient Temperature (PC358)

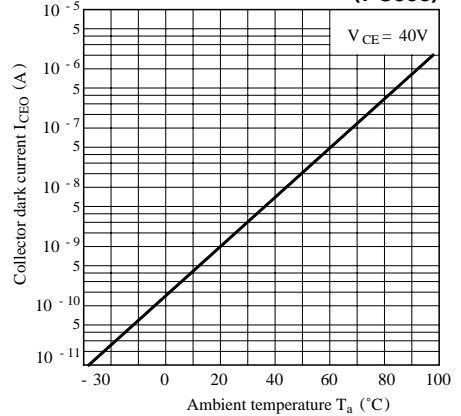


Fig.12-a Response Time vs. Load Resistance (PC356NT)

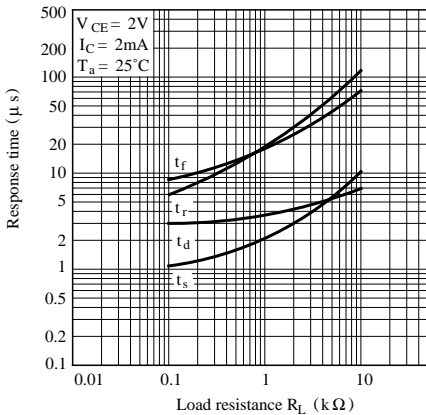
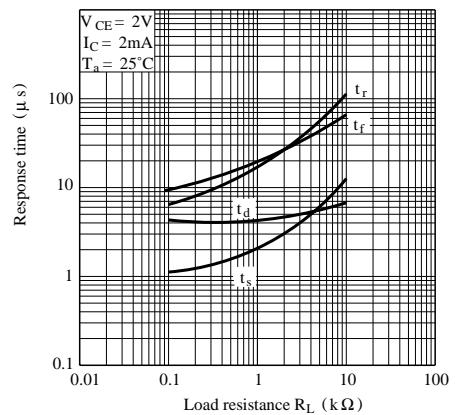


Fig.12-b Response Time vs. Load Resistance (PC358)



Test Circuit for Response Time

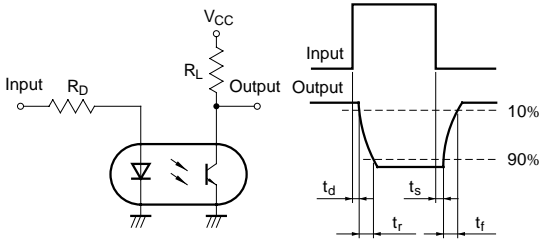


Fig.13-a Collector-emitter Saturation Voltage vs. Forward Current (PC356NT)

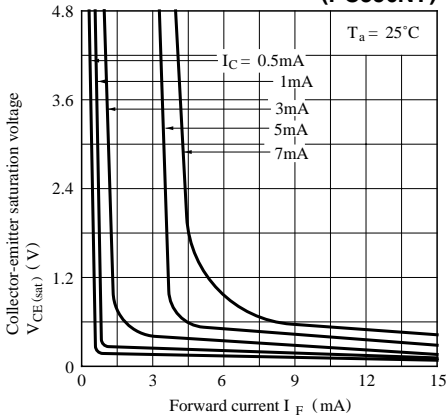
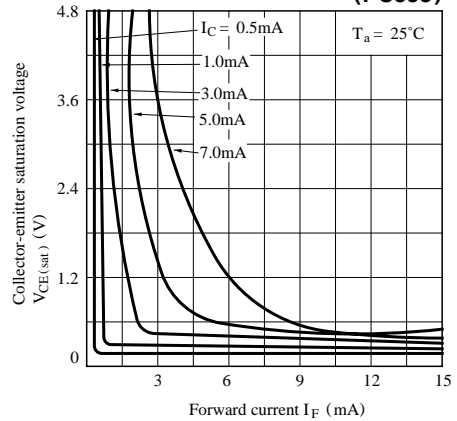
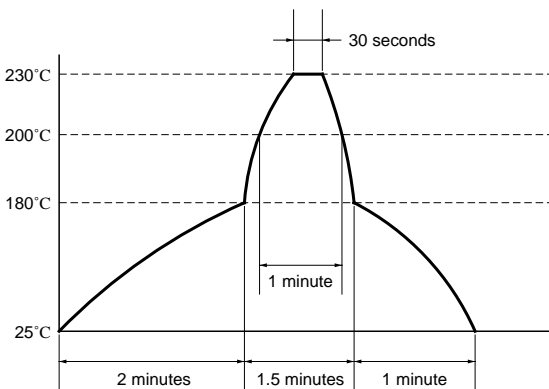


Fig.13-b Collector-emitter Saturation Voltage vs. Forward Current (PC358)



Temperature Profile of Soldering Reflow



- (1) One time soldering reflow is recommended within the condition of temperature and time profile shown below.
- (2) When using another soldering method such as infrared ray lamp, the temperature may rise partially in the mold of the device. Keep the temperature on the package of the device within the condition of above (1).

● Please refer to the chapter “Precautions for Use”.