

PNA1601M (PN166)

Silicon NPN Phototransistor

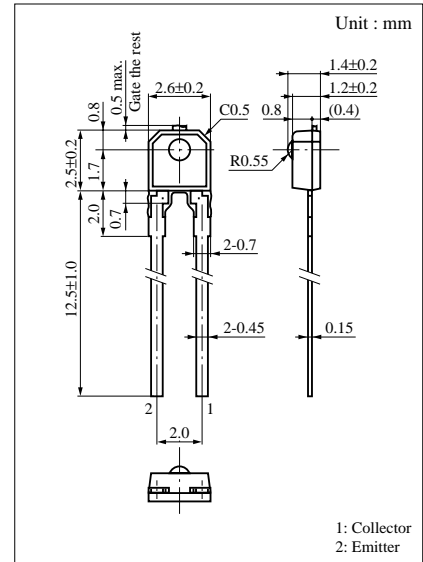
For optical control systems

■ Features

- High sensitivity
- Wide spectral sensitivity, suited for detecting various kinds of LEDs
- Ultraminiature, thin side-view type package

■ Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	20	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	50	mW
Operating ambient temperature	T_{opr}	-25 to +65	°C
Storage temperature	T_{stg}	-30 to +85	°C

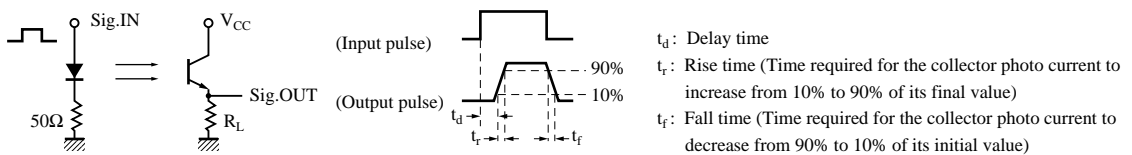


■ Electro-Optical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{CE} = 10V$			0.2	μA
Sensitivity to infrared emitters	S_{IR}^{*1}	$V_{CE} = 10V, H = 15\mu W/cm^2$	3			μA
Peak sensitivity wavelength	λ_P	$V_{CE} = 10V$		850		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		35		deg.
Rise time	t_r^{*2}	$V_{CC} = 10V, I_{CE(L)} = 5mA$		4		μs
Fall time	t_f^{*2}		$R_L = 100\Omega$		4	
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 10\mu A, H = 15\mu W/cm^2$			0.5	V

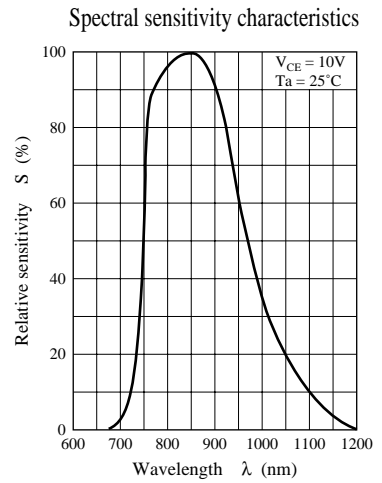
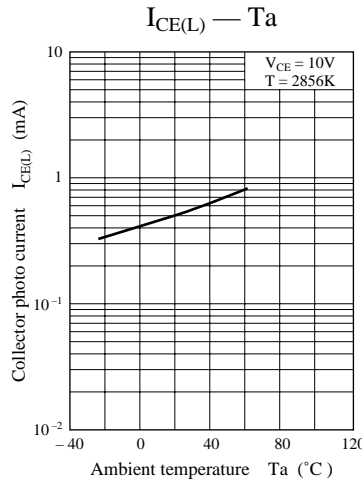
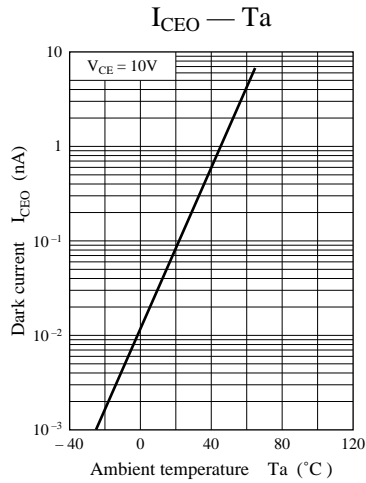
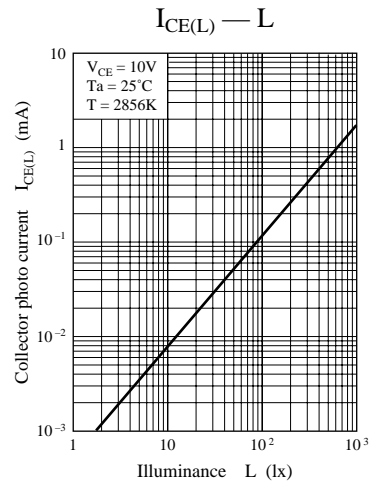
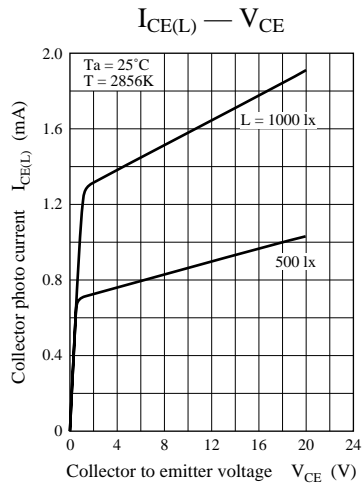
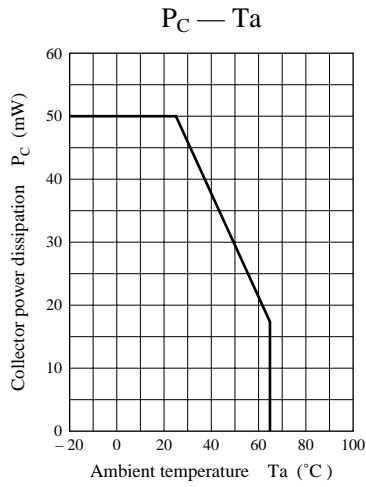
*1 Measurements were made using infrared light ($\lambda = 940\text{ nm}$) as a light source.

*2 Switching time measuring circuit

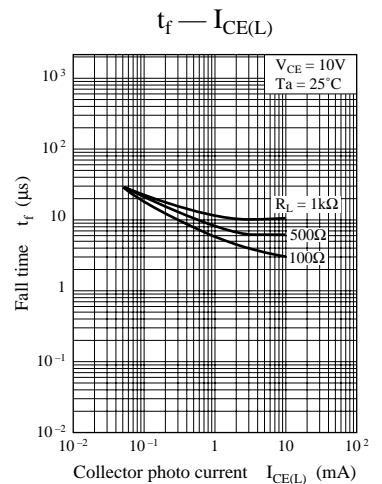
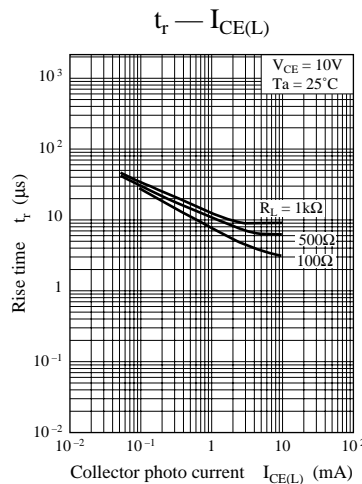
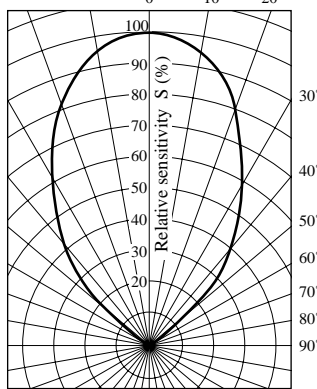


t_d : Delay time
 t_r : Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)
 t_f : Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

(Note) The part number in the parenthesis shows conventional part number.



Directivity characteristics



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