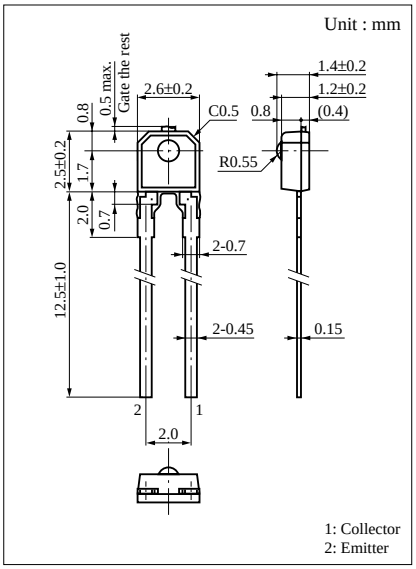
PNA1601M (PN166)

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)

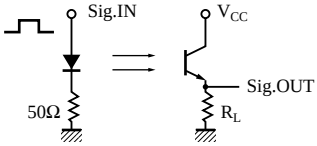
Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	20	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	50	mW
Operating ambient temperature	T_{opr}	–25 to +65	˚C
Storage temperature	T_{stg}	–30 to +85	˚C

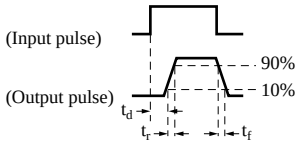
■ Electro-Optical Characteristics (Ta = 25˚C)

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 = 15μW/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 = 100Ω		4		μs
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)}$ = 10μA, H = 15μW/cm^2			0.5	V

*1 Measurements were made using infrared light (λ = 940 nm) as a light source.

*2 Switching time measuring circuit





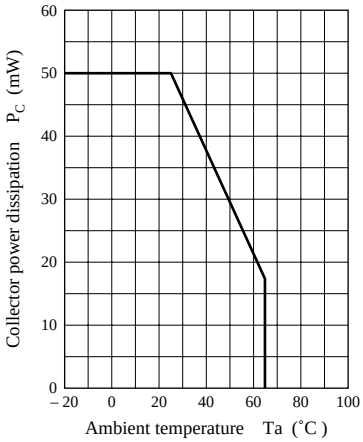
t_d: Delay time

t_r: Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)

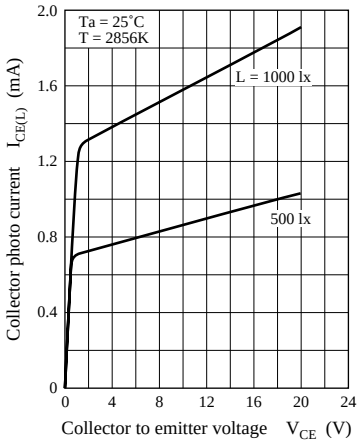
t_f: Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

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

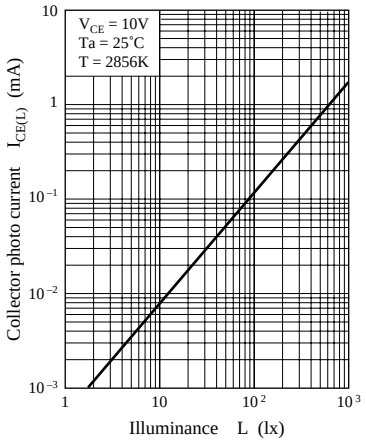
P_C — Ta



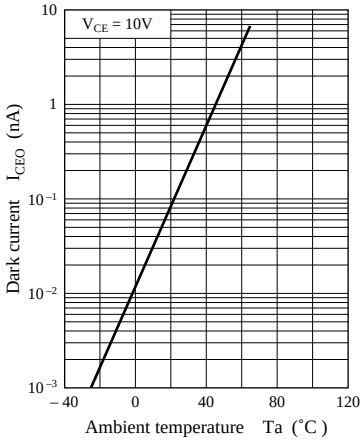
$I_{CE(L)}$ — V_{CE}



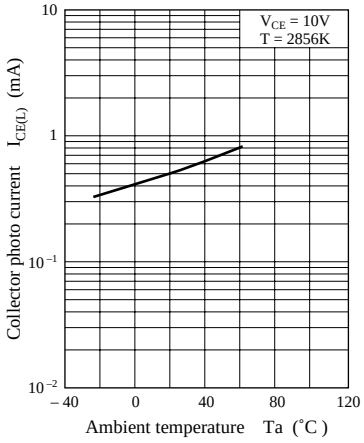
$I_{CE(L)}$ — L



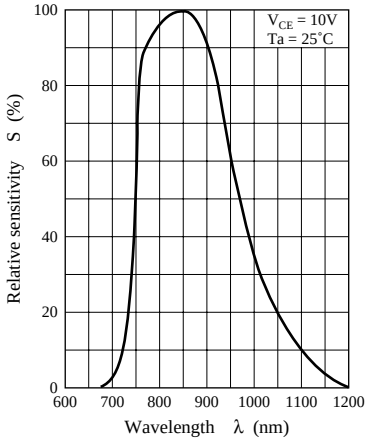
I_{CEO} — Ta



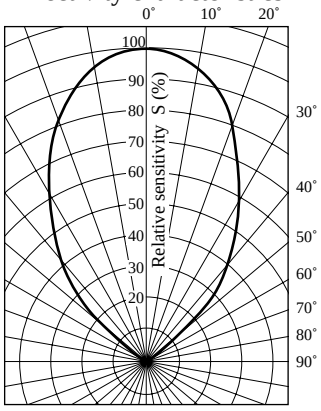
$I_{CE(L)}$ — Ta



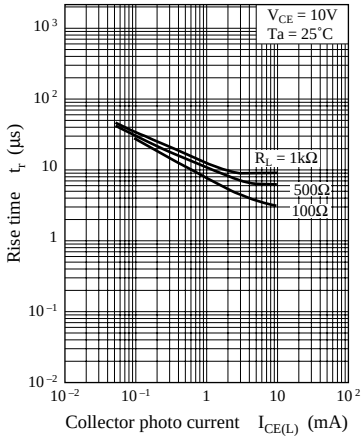
Spectral sensitivity characteristics



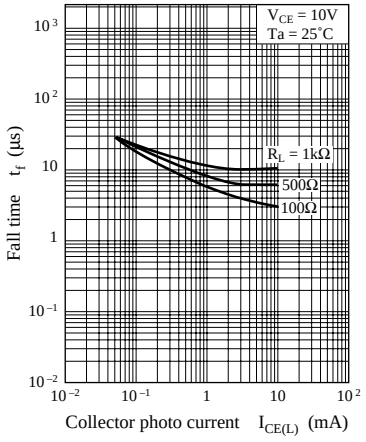
Directivity characteristics



t_r — $I_{CE(L)}$



t_f — $I_{CE(L)}$



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