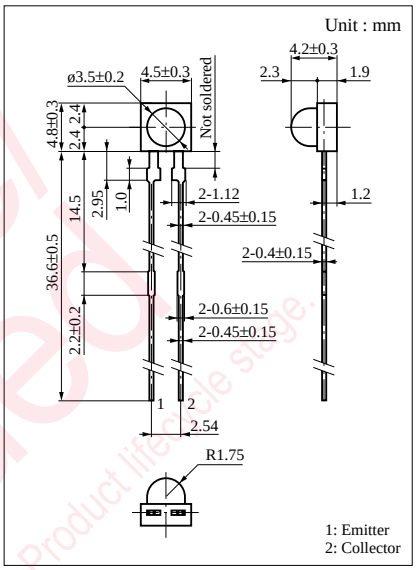
PNA2602M

Darlington Phototransistor

For optical control systems



Features

- Darlington output, high sensitivity
- Easy to combine light emission and photodetection on same printed circuit board
- Small size, thin side-view type package
- Long lead and visible light cutoff design with PN205

Absolute Maximum Ratings (Ta = 25˚C)

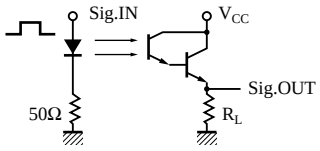
Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	20	V
Emitter to collector voltage	V_{ECO}	5	V
Collector current	I_C	30	mA
Collector power dissipation	P_C	100	mW
Operating ambient temperature	T_{opr}	–25 to +80	˚C
Storage temperature	T_{stg}	–30 to +100	˚C

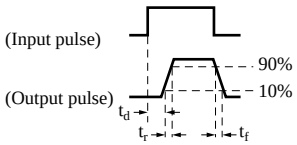
Electro-Optical Characteristics (Ta = 25˚C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	V_{CE} = 10V			0.5	µA
Sensitivity to infrared emitters	S_{IR} *1	V_{CE} = 10V, H = 3.75 µW/cm^2	0.1		3.0	mA
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.
Response time	t_r, t_f *2	V_{CC} = 10V, I_C = 1mA, R_L = 100Ω		150		µs
Collector saturation voltage	$V_{CE(sat)}$ *1	I_C = 100µA, H = 3.75 µW/cm^2			1.5	V

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

*2 Switching time measurement circuit

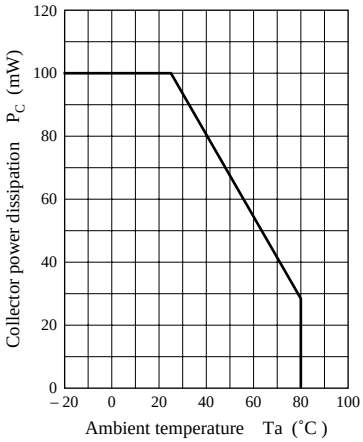




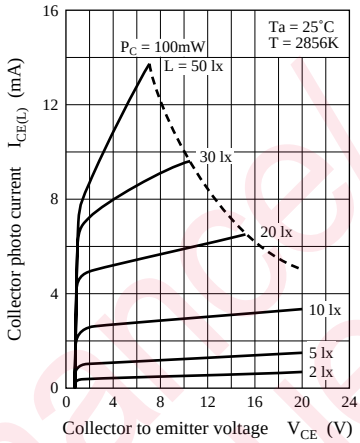
t_d: Delay time
t_r: Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)
t_f: Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

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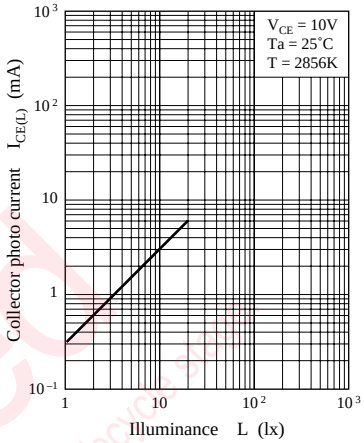
P_C — Ta



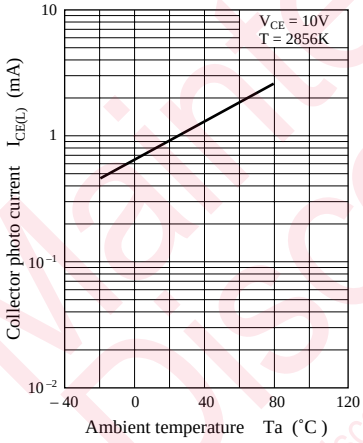
$I_{CE(L)}$ — V_{CE}



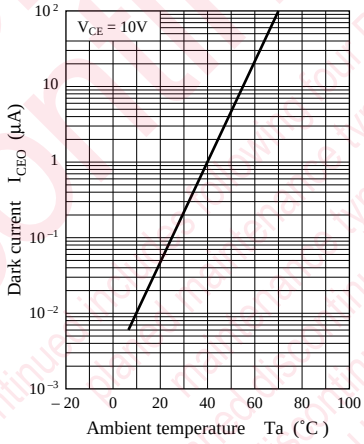
$I_{CE(L)}$ — L



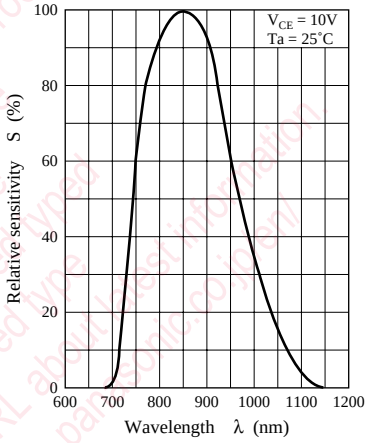
$I_{CE(L)}$ — Ta



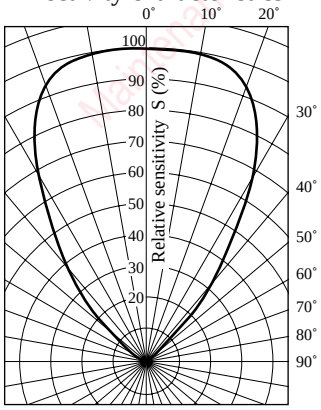
I_{CEO} — Ta



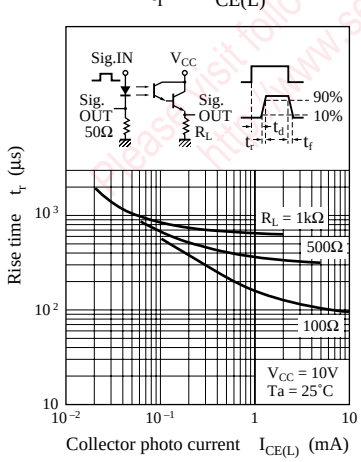
Spectral sensitivity characteristics



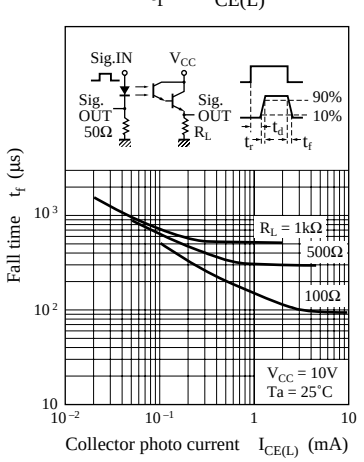
Directivity characteristics



t_r — $I_{CE(L)}$



t_f — $I_{CE(L)}$



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