

# PNA2602M

## Darlington Phototransistor

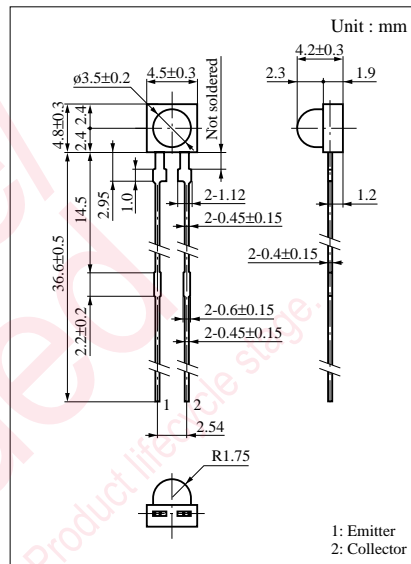
For optical control systems

### ■ 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

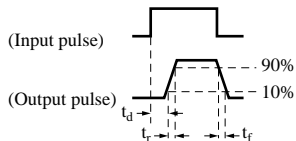
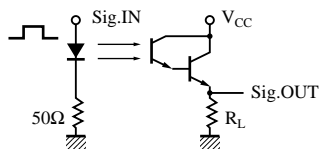


### ■ Electro-Optical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	$I_{CEO}$	$V_{CE} = 10V$			0.5	$\mu A$
Sensitivity to infrared emitters	$S_{IR}^{*1}$	$V_{CE} = 10V, H = 3.75 \mu W/cm^2$	0.1		3.0	mA
Peak sensitivity wavelength	$\lambda_p$	$V_{CE} = 10V$		850		nm
Acceptance half angle	$\theta$	Measured from the optical axis to the half power point		35		deg.
Response time	$t_r, t_f^{*2}$	$V_{CC} = 10V, I_C = 1mA, R_L = 100\Omega$		150		$\mu s$
Collector saturation voltage	$V_{CE(sat)}^{*1}$	$I_C = 100\mu A, H = 3.75 \mu W/cm^2$			1.5	V

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

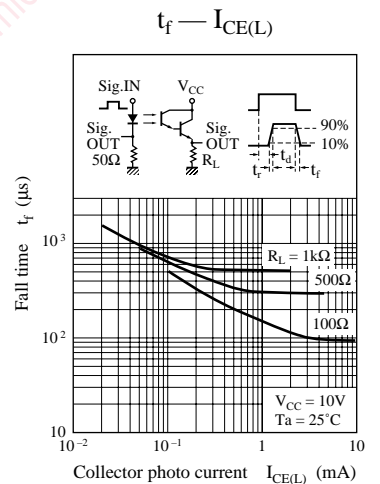
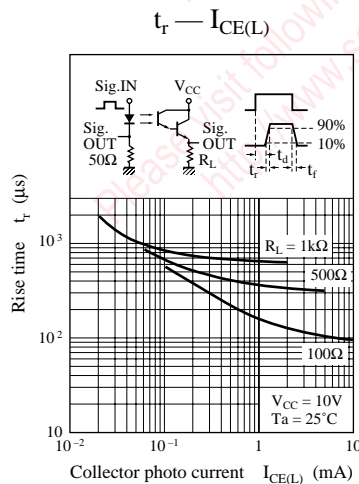
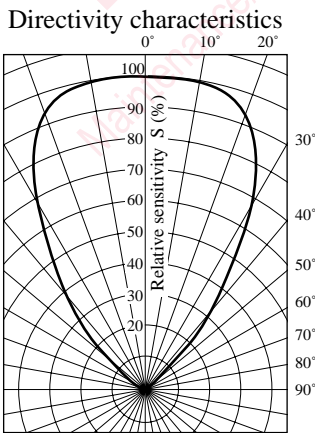
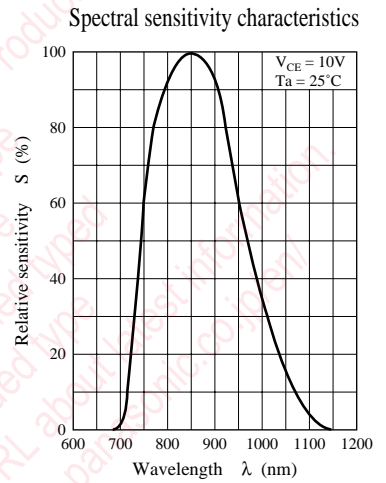
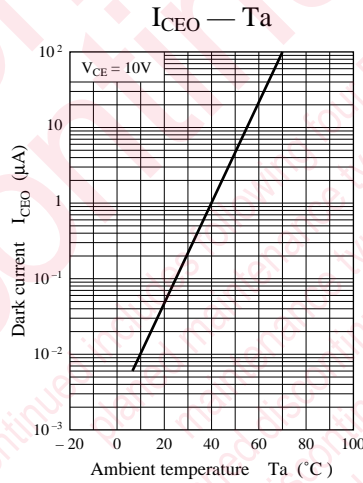
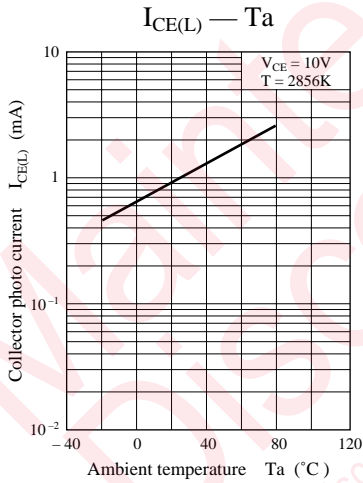
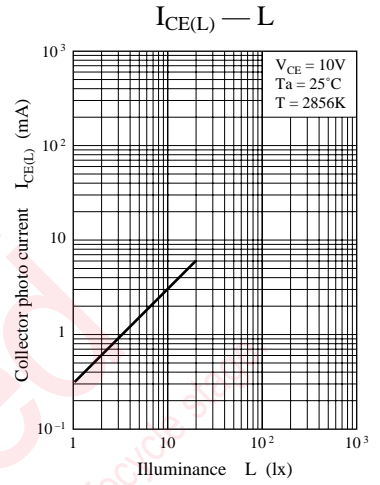
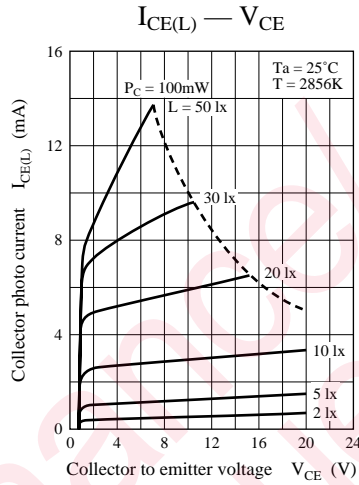
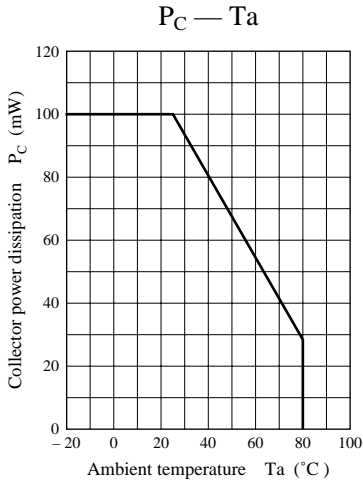
\*2 Switching time measurement circuit



$t_d$ : 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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