

# PN205

## Darlington Phototransistor

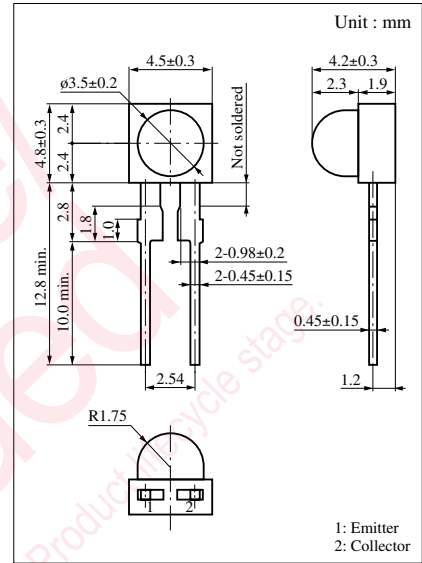
For optical control systems

### ■ Features

- Darlington output, high sensitivity
- Easy to combine light emission and photodetection on same printed circuit board
- Small size, thin side-view type package

### ■ 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

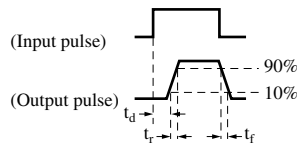
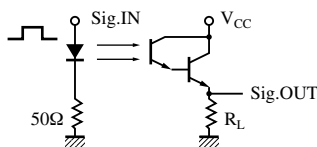


### ■ Electro-Optical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	$I_{CEO}$	$V_{CE} = 10V$		0.1	0.5	$\mu A$
Collector photo current	$I_{CE(L)}$	$V_{CE} = 10V, L = 2 lx^{*1}$	0.2	1		mA
Peak sensitivity wavelength	$\lambda_p$	$V_{CE} = 10V$		800		nm
Acceptance half angle	$\theta$	Measured from the optical axis to the half power point		35		deg.
Response time	$t_r, t_f^{*2}$	$V_{CC} = 10V, I_{CE(L)} = 5mA, R_L = 100\Omega$		100		$\mu s$
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 1mA, L = 100 lx^{*1}$		0.7	1.5	V

\*1 Measurements were made using a tungsten lamp (color temperature T = 2856K) as a light source.

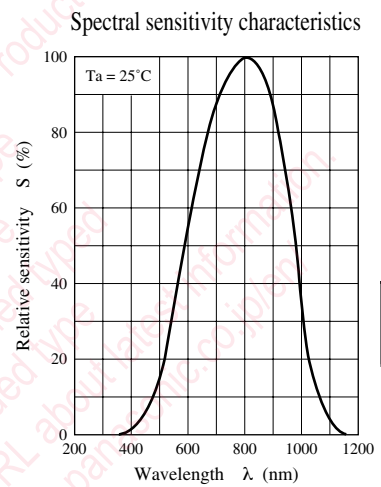
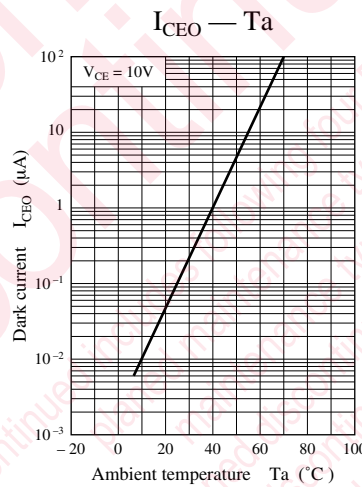
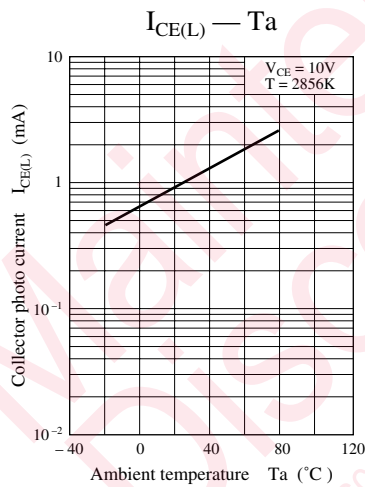
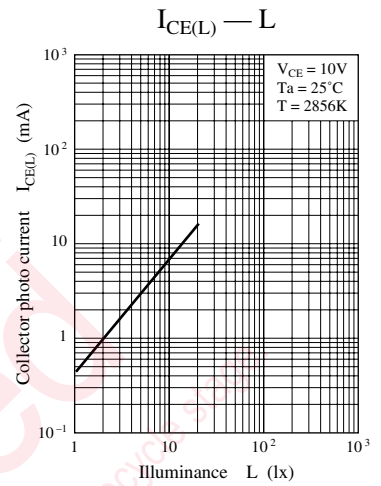
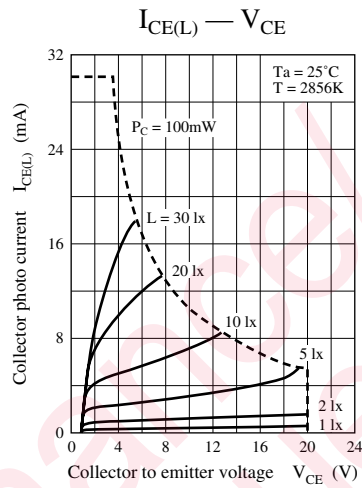
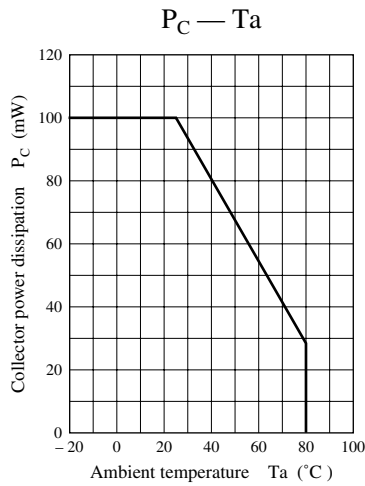
\*2 Switching time measurement circuit



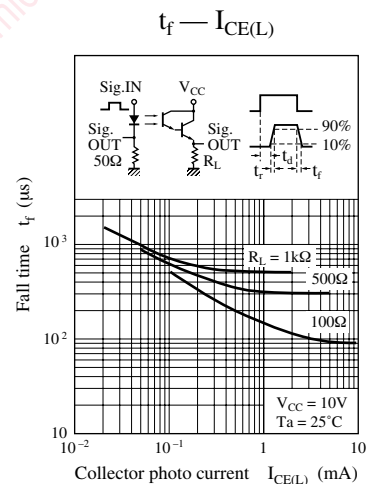
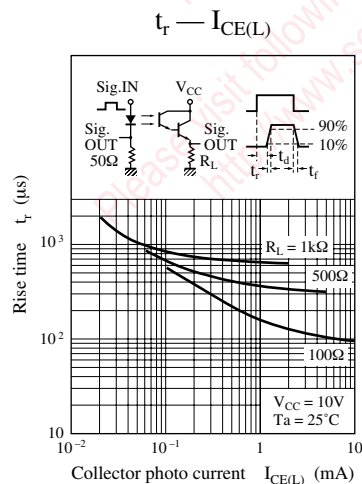
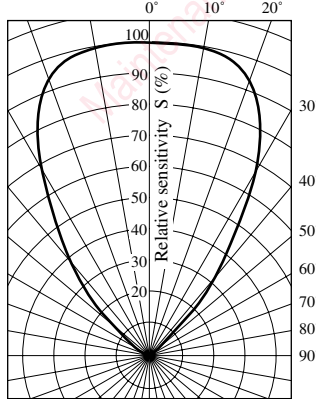
$t_d$  : Delay time

$t_r$  : 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)



### Directivity characteristics



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