

PNZ120S (PN120S)

Silicon NPN Phototransistor

For optical control systems

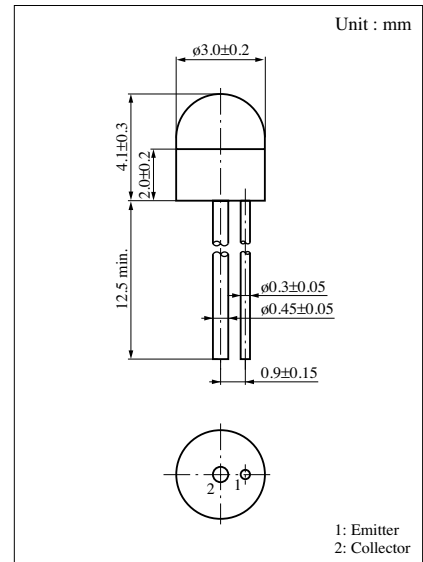
Can be combined with LN62S to form an optical controller

Features

- High sensitivity
- Wide directional sensitivity for easy use
- Fast response : $t_r, t_f = 3 \mu\text{s}$ (typ.)
- Small size ($\phi 3$) ceramic package

Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	30	V
Emitter to collector voltage	V_{ECO}	5	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	50	mW
Operating ambient temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-30 to +100	°C

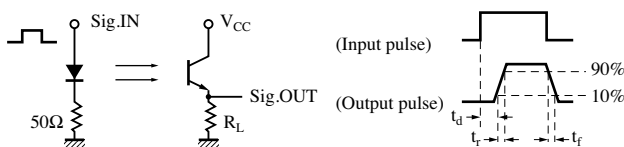


Electro-Optical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{CE} = 10\text{V}$		5	500	nA
Collector photo current	$I_{CE(L)1}$	$V_{CE} = 10\text{V}, L = 2 \text{ lx}^{*1}$	3	*3		μA
	$I_{CE(L)2}$	$V_{CE} = 10\text{V}, L = 500 \text{ lx}^{*1}$		*3		mA
Peak sensitivity wavelength	λ_p	$V_{CE} = 10\text{V}$		800		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		50		deg.
Response time	t_r, t_f^{*2}	$V_{CC} = 10\text{V}, I_{CE(L)} = 5\text{mA}, R_L = 100\Omega$		3		μs
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 1\text{mA}, L = 1000 \text{ lx}^{*1}$		0.2	0.5	V

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

*2 Switching time measurement circuit



t_d : Delay time

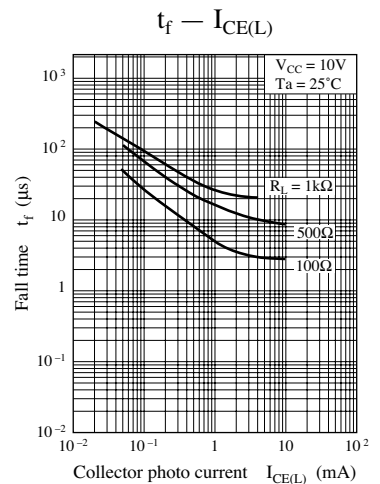
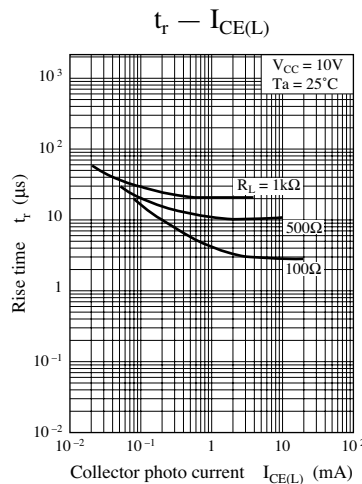
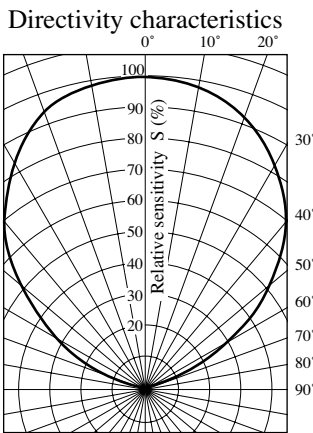
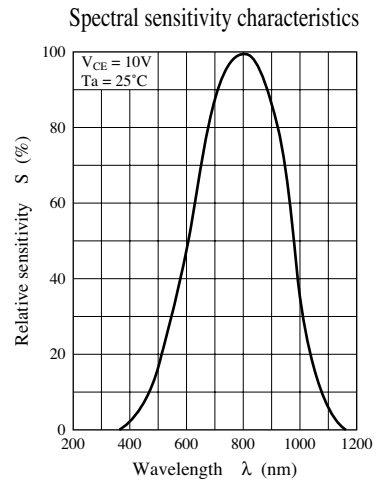
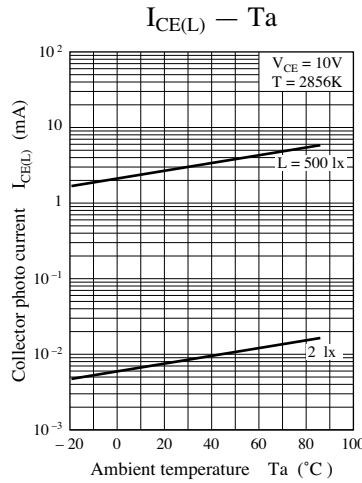
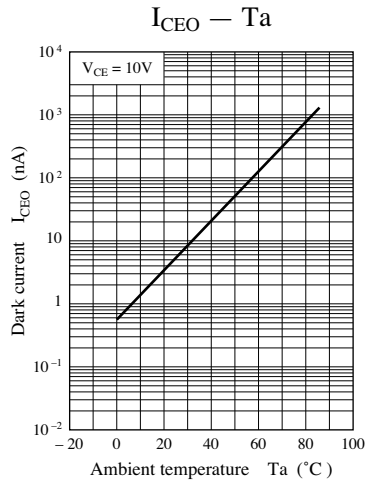
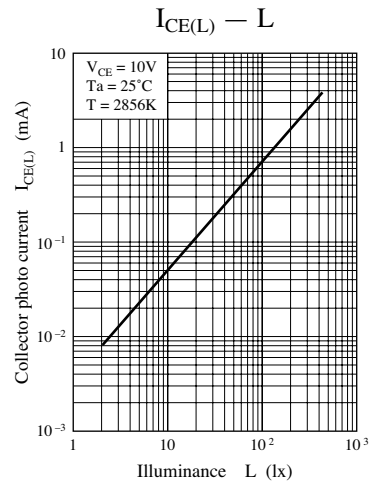
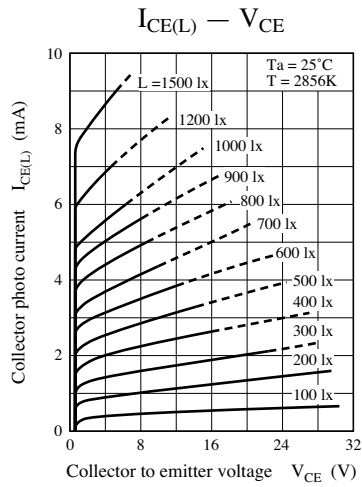
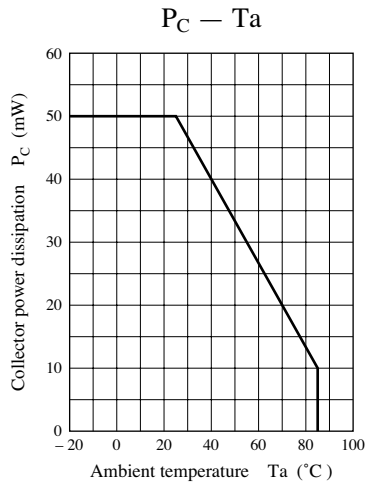
t_r : Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)

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

*3 $I_{CE(L)}$ Classifications

Class	QL	RL	SL
$I_{CE(L)1}$ (μA)	3 to 16	10 to 30	>24
$I_{CE(L)2}$ (mA)	5 typ.	6 typ.	8 typ.

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



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