

Glossary

Common characteristics in devices and sensors

Characteristics	Symbol	Unit	Explanation
Absolute Maximum Ratings	–	–	Maximum value of limit per each item
Operating Temperature	T _{opr}	(°C)	maximum Temperature at driving of semiconductor
Storage Temperature	T _{stg}	(°C)	maximum Temperature at non-operation of semiconductor
Soldering Temperature	T _{sol}	(°C)	Acceptable soldering temperature at maximum

Characteristics in LED

Characteristics	Symbol	Unit	Explanation
Power Dissipation	P	(mW)	Permissible Power dissipation between Anode and cathode
Forward Voltage	V _F	(V)	Voltage between Anode and cathode at forward current drive
Forward Current	I _F	(mA)	Forward current between Anode and cathode at LED drive
Pulse Forward Current	I _{FP}	(mA)	Maximum Forward current between Anode and cathode at LED pulse drive
Reverse Voltage	V _R	(V)	Permissible Reverse direct voltage from cathode to Anode at LED drive
Reverse Current	I _R	(μ A)	Permissible Reverse direct current from cathode to Anode at LED drive
Radiant Flux	Φ_e	(mW)	Radiant energy per time / square emitted from LED
Power Output	P _o	(mW)	Amount of power of radiant flux that LED produces at its output
Peak Wavelength	λ_p	(nm)	Peak wavelength in emitting wavelength region
Spectral Half Width	$\Delta\lambda$	(nm)	Wavelength band which becomes half level of energy to peak wavelength
Half Angle	$\Delta\theta$	(°)	Beam angle which becomes over half level of energy to that of peak position

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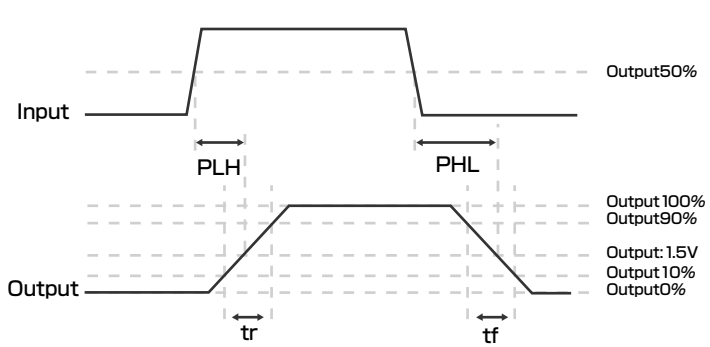
Photo detector characteristics (PD,PT_r,PhotoIC)

Characteristics		Symbol	Unit	Explanation
Power Dissipation	Photo Transistor	PC	(mW)	Permissible Power dissipation between collector and emitter
	Photo Diode	PD	(mW)	Permissible Power dissipation between Anode and cathode
Collector-Emitter Voltage		V _{CEO}	(V)	Direct Voltage between Collector and emitter at base open and light detecting
Emitter-Collector Voltage		V _{ECO}	(V)	Direct Voltage between emitter and collector at base open and light detecting
Reverse Voltage	Photo Diode	V _R	(V)	Permissible Reverse direct voltage from cathode to Anode at light detecting
Light Current	Photo Transistor	I _C	(μ A) (mA)	Direct current to be forwarded to collector at light detecting
	Photo Diode	I _{SC}	(nA) (μ A)	Direct short current to be forwarded at light detecting
Dark Current	Photo Transistor	I _{CEO}	(nA) (μ A)	Direct current between collector and emitter in dark and at superimposed voltage
	Photo Diode	I _D	(nA) (μ A)	Direct current forwarded to photodiode in dark and at superimposed voltage in reverse direction
Illumination		E _V	(lx)	the luminous flux per unit area on an intercepting surface
Collector-Emitter Saturation Voltage		V _{CE(sat)}	(V)	Voltage between Collector and emitter at saturated light detecting
Peak Spectral response		λ_p	(nm)	Wavelength which has relative peak sensitivity in sensing wavelength region
Half Angle		$\Delta\theta$	(°)	Sensitive angle which becomes over half level of energy detection to that of peak position
Low Level Output Voltage		V _{OL}	(V)	Direct Voltage to output at level of output current is low
High Level Output Voltage		V _{OH}	(V)	Direct Voltage to output at level of output current is high
Low Level Output Current		I _{OL}	(mA)	Direct output current forwarded at superimposed voltage of low level
High Level Output Current		I _{OH}	(mA)	Direct output current forwarded at superimposed voltage of high level

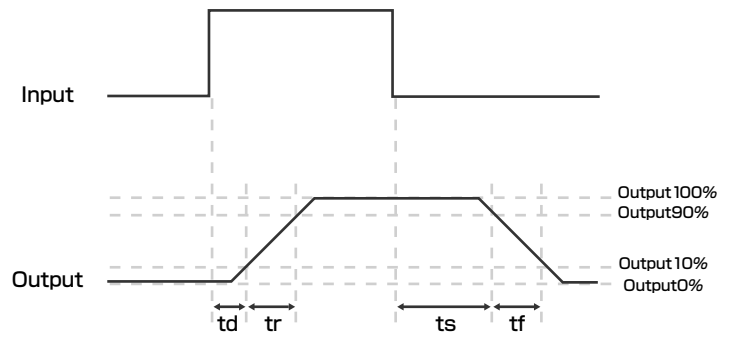
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Photo detector characteristics (PD, PTr, PhotoIC)

Characteristics	Symbol	Unit	Explanation
Low Level Supply Current	ICCL	(mA)	Supply current at drive of low level output current
High Level Supply Current	ICCH	(mA)	Supply current at drive of high level output current
Response Time	Rise Time	tr (ns) (μs)	Refer to the figure below.
	Delay Time	td (ns) (μs)	//
	Fall Time	tf (ns) (μs)	//
	Storage Time	ts (ns) (μs)	//
	Propagation Time Low to High	tPLH (ns) (μs)	//
	Propagation Time High to Low	tPHL (ns) (μs)	//



Response time measurement circuit
Input / Output
(Photo IC)



Response time measurement circuit
Input / Output
(Photo Transistor / PhotoDiode)

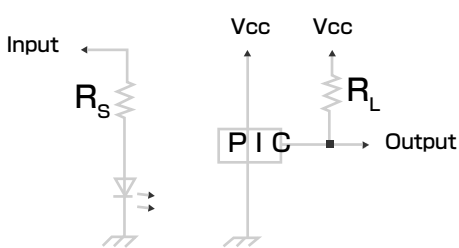


Photo IC
Response time measurement circuit

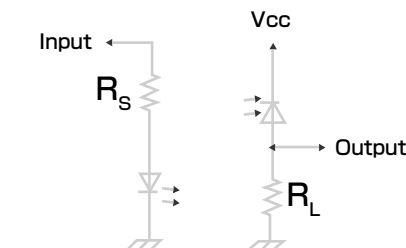


Photo Transistor
Response time measurement circuit

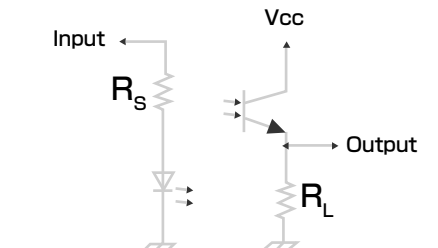


Photo Diode
Response time measurement Circuit