

CND0204A

Infrared Optocal Module (IrDA)

Infrared data link for cellular phones, peripheral devices

■ Features

- Compliant with IrDA Ver.1.2
- Corresponding reflow solder (260°C)
- Ultra-small side view package (1.6 mm × 7.2 mm × 2.6 mm)

■ Type

- GaAlAs LED + IC + PIN Photodiode

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Operating supply voltage	V_{CC}	-0.5 to +3.8	V
Output voltage	V_O	-0.5 to +3.8	V
Input voltage	V_I	-0.5 to +3.8	V
Shutdown input voltage	V_{SD}	-0.5 to +3.8	V
LED operating supply voltage	V_{LEDA}	-0.5 to +7.0	V
Pulse forward current *	I_{FP}	200	mA
Low level output current	I_{OL}	10	mA
Operating ambient temperature	T_{opr}	-20 to +70	°C
Storage temperature	T_{stg}	-30 to +85	°C

Note) *: $t_w \leq 90 \mu\text{s}$, Duty $\leq 20\%$

■ Operating Condition

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating supply voltage	V_{CC}		2.4	2.8	3.3	V
LED operating supply voltage	V_{LEDA}		2.8		4.5	V

■ Electrical-Optical Characteristics $V_{CC} = 2.8 \text{ V}$, $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
High level supply current * ¹	I_{CCH}	$E_I = 0$, $V_I = 0.5 \text{ V}$, $V_{SD} \leq 0.5 \text{ V}$		90	120	μA
Low level supply current * ¹	I_{CCL}	$E_I = 3 \text{ mW/cm}^2$, $V_I = 0.5 \text{ V}$, $V_{SD} \leq 0.5 \text{ V}$		150	360	μA
Shut down supply current * ¹	I_{CCSD}	$V_{CC} \geq V_{SD} \geq V_{CC} - 0.3$ (SD = High) $V_{I-TXD} = V_{R-TXD} = 0.5 \text{ V}$		10	200	nA
Maximum reception distance * ⁴	L_{max}	$V_{LED} = 3.2 \text{ V to } 4.3 \text{ V}$, $V_{SD} \leq 0.5 \text{ V}$, External components	25	42		cm
Data Rates	—		9.6		115.2	kbps

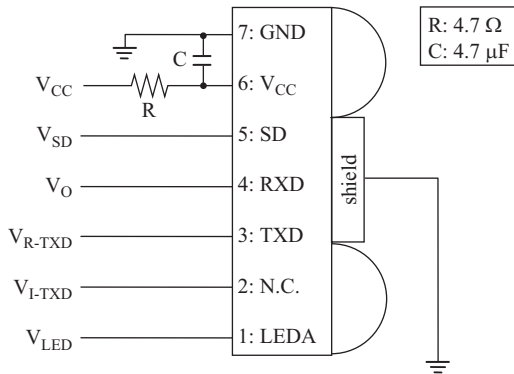
■ Electrical-Optical Characteristics (Continued) $V_{CC} = 2.8 \text{ V}$, $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Transmitter						
Peak emission wavelength *1	λ_p	$V_{SD} \leq 0.5 \text{ V}$, $V_{LED} = 3.2 \text{ V}$ Duty 3/16	878	883	888	nm
		$V_{SD} \leq 0.5 \text{ V}$, $V_{LED} = 3.2 \text{ V}$ Duty 3/16 $T_a = -20^\circ\text{C}$ to $+70^\circ\text{C}$	850	883	900	nm
Pulse forward current *1	I_{FP}	$V_{LED} = 3.2 \text{ V}$, $V_{SD} \leq 0.5 \text{ V}$ TXD Duty 3/16	40	60	90	mA
Center radiant intensity *1, 2, 9	$\theta_T = 0$	$V_{LED} = 3.2 \text{ V}$, $V_{SD} \leq 0.5 \text{ V}$ TXD Duty 3/16	9	20	30	mW/sr
	$\theta_T = \pm 15$	$V_{LED} = 3.2 \text{ V}$, $V_{SD} \leq 0.5 \text{ V}$ TXD Duty 3/16	6	10	18	mW/sr
High level input voltage *1	V_{IH}	$V_{CC} = 2.4 \text{ V}$ to 3.3 V , $V_{SD} \leq 0.5 \text{ V}$	$V_{CC} - 0.3$		V_{CC}	V
Low level input voltage *1	V_{IL}	$V_{CC} = 2.4 \text{ V}$ to 3.3 V , $V_{SD} \leq 0.5 \text{ V}$	0		0.5	V
TX half-angle	θ_T		± 15			°
Rise time *1, 3	t_r	$V_{LED} = 3.2 \text{ V}$, $t_w = 1.6 \mu\text{s}$, $R_L = 50 \Omega$		0.3	0.6	μs
Fall time *1, 3	t_f	$V_{LED} = 3.2 \text{ V}$, $t_w = 1.6 \mu\text{s}$, $R_L = 50 \Omega$		0.3	0.6	μs
TX wake up time *7	t_{TWU}			0.3	1	μs
Intensity delay time *1, 3	I_{DT}	$V_{LED} = 3.2 \text{ V}$			200	ns
Maximum pulse width	$T_{wLEDmax}$	TXD = Low \rightarrow High	20	50	100	μs
Overshoot	O_S				25	%
Edge jitter	E_J		-40		40	ns
Receiver						
Minimum input irradiance	E_{Imin}	$V_{SD} \leq 0.5 \text{ V}$			5.8	$\mu\text{W}/\text{cm}^2$
Maximum input irradiance	E_{Imax}	$V_{SD} \leq 0.5 \text{ V}$	500			mW/cm^2
High level output voltage *5	V_{OH}	Non signal condition $I_{OH} = -200 \mu\text{A}$, $V_{SD} \leq 0.5 \text{ V}$	$V_{CC} - 0.3$		V_{CC}	V
Low level output voltage *6	V_{OL}	$I_{OL} = 500 \mu\text{A}$, $V_{SD} \leq 0.5 \text{ V}$	0		0.5	V
RX half angle	θ_R		± 15			°
RXD output pulse width	T_{WR}	$C_L = 15 \text{ pF}$, 9.6 kbps to 115.2 kbps	1.3	2.3	4.2	μs
RX wake up time *8	t_{RWU}	$E_I = 8.1 \mu\text{W}/\text{cm}^2$		200	400	μs
Receiver latency time	t_L	$E_I = 8.1 \mu\text{W}/\text{cm}^2$		100	200	μs
Rise time	t_r	$C_L = 15 \text{ pF}$		100	300	ns
Fall time	t_f	$C_L = 15 \text{ pF}$		100	300	ns

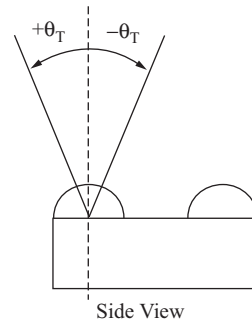
■ Electrical-Optical Characteristics (Continued)

Note) Measuring circuit

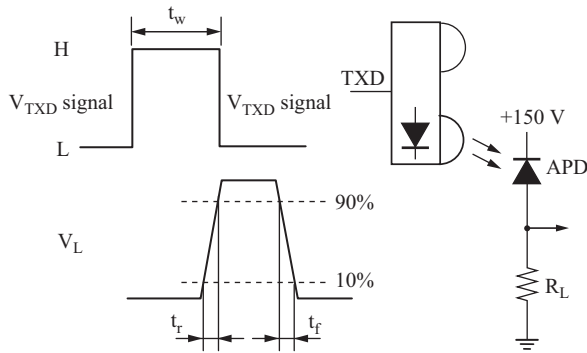
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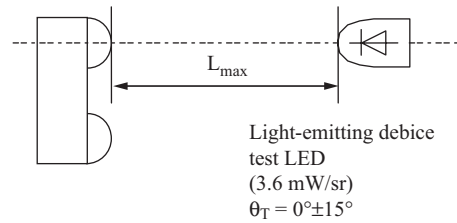
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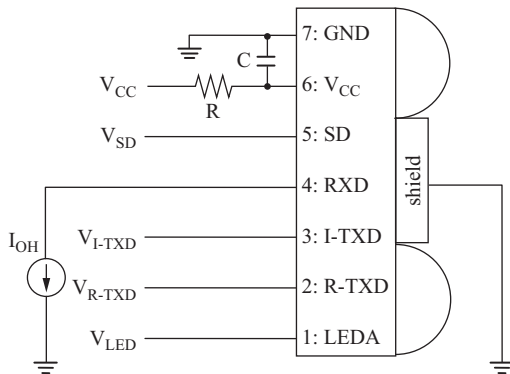
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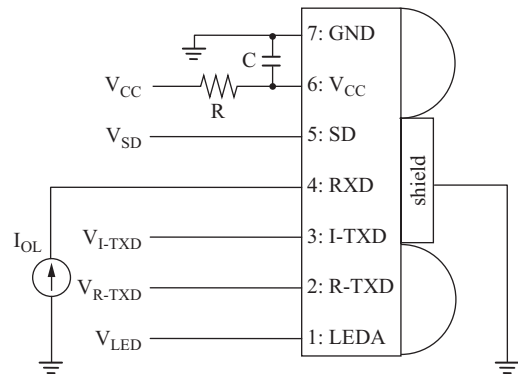
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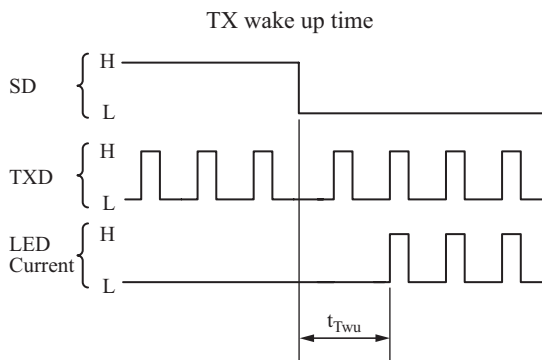
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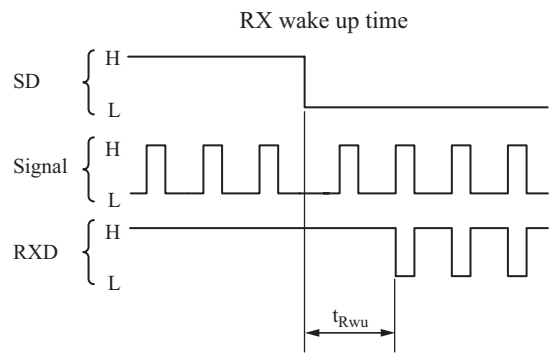
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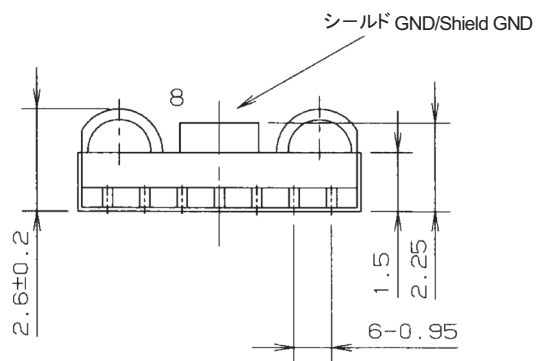
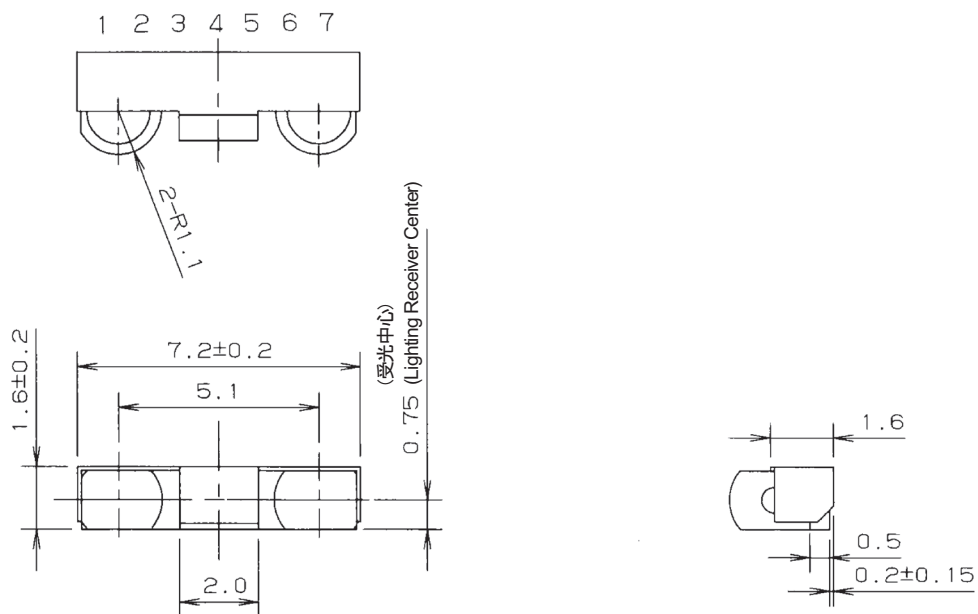


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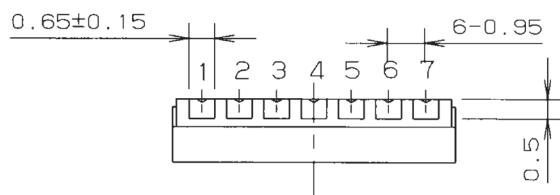


*9: Eye-Safety IEC60825-1 Class1 Eye safe

■ Package (Unit: mm)



[背面/Back Side]



• Pin name

- | | |
|---------|--------------------|
| 1. LEDA | 5. SD |
| 2. N.C. | 6. V _{CC} |
| 3. TXD | 7. GND |
| 4. RXD | 8. Shield GND |

Caution for Safety

 **DANGER**

■ This product contains Gallium Arsenide (GaAs).

GaAs powder and vapor are hazardous to human health if inhaled or ingested. Do not burn, destroy, cut, cleave off, or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

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