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°C±3°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) *: tw ≤ 90 µs, Duty ≤ 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 V, T_a = 25°C±3°C

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

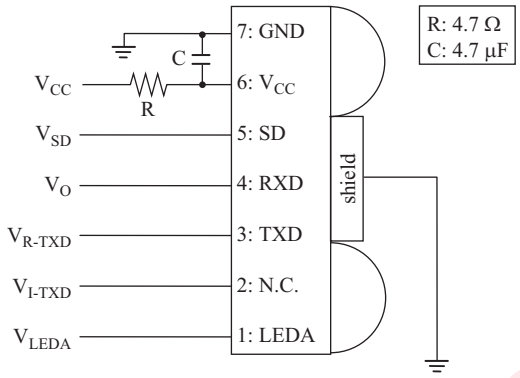
■ Electrical-Optical Characteristics (Continued) V_{CC} = 2.8 V, T_a = 25°C±3°C

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Transmitter							
Peak emission wavelength *1		λ_P	$V_{SD} \le 0.5$ V, V_{LEDA} = 3.2 V Duty 3/16	878	883	888	nm
			$V_{SD} \le 0.5$ V, V_{LEDA} = 3.2 V Duty 3/16 T_a = –20°C to +70°C	850	883	900	nm
Pulse forward current *1		I_{FP}	V_{LEDA} = 3.2 V, $V_{SD} \le 0.5$ V TXD Duty 3/16	40	60	90	mA
Center radiant intensity *1, 2, 9	θ_T = 0	I_e	V_{LEDA} = 3.2 V, $V_{SD} \le 0.5$ V TXD Duty 3/16	9	20	30	mW/sr
	θ_T = ±15	I_{e15}	V_{LEDA} = 3.2 V, $V_{SD} \le 0.5$ V TXD Duty 3/16	6	10	18	mW/sr
High level input voltage *1		V_{IH}	V_{CC} = 2.4 V to 3.3 V, $V_{SD} \le 0.5$ V	V_{CC} – 0.3		V_{CC}	V
Low level input voltage *1		V_{IL}	V_{CC} = 2.4 V to 3.3 V, $V_{SD} \le 0.5$ V	0		0.5	V
TX half-angle		θ_T		±15			°
Rise time *1, 3		t_r	V_{LEDA} = 3.2 V, t_w = 1.6 µs, R_L = 50 Ω		0.3	0.6	µs
Fall time *1, 3		t_f	V_{LEDA} = 3.2 V, t_w = 1.6 µs, R_L = 50 Ω		0.3	0.6	µs
TX wake up time *7		t_{Twu}			0.3	1	µs
Intensity delay time *1, 3		I_{DT}	V_{LEDA} = 3.2 V			200	ns
Maximum pulse width		$T_{wLEDmax}$	TXD = Low → High	20	50	100	µs
Overshoot		O_S				25	%
Edge jitter		E_J		–40		40	ns
Receiver							
Minimum input irradiance		$E_{I\,min}$	$V_{SD} \le 0.5$ V			5.8	µW/cm²
Maximum input irradiance		$E_{I\,max}$	$V_{SD} \le 0.5$ V	500			mW/cm²
High level output voltage *5		V_{OH}	Non signal condition I_{OH} = –200 µA, $V_{SD} \le 0.5$ V	V_{CC} – 0.3		V_{CC}	V
Low level output voltage *6		V_{OL}	I_{OL} = 500 µA, $V_{SD} \le 0.5$ V	0		0.5	V
RX half angle		θ_R		±15			°
RXD output pulse width		T_{WR}	C_L = 15 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 µW/cm²		200	400	µs
Receiver latency time		t_L	E_I = 8.1 µW/cm²		100	200	µs
Rise time		t_r	C_L = 15 pF		100	300	ns
Fall time		t_f	C_L = 15 pF		100	300	ns

■ Electrical-Optical Characteristics (Continued)

Note) Measuring circuit

*1:



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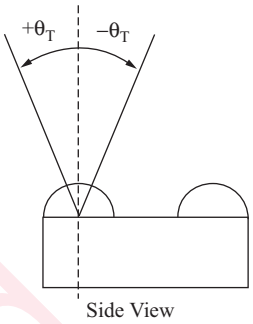

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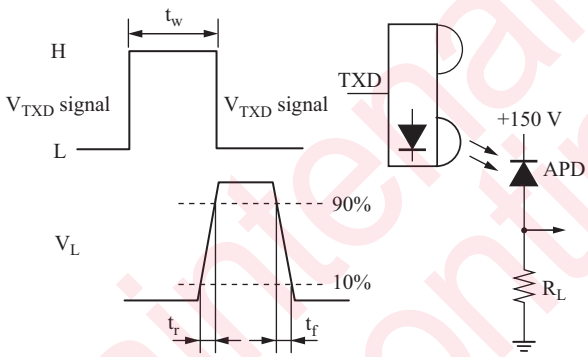

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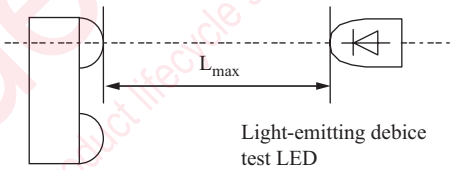
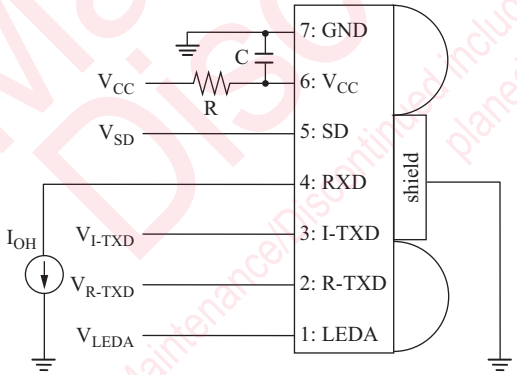


Light-emitting debice
test LED
(3.6 mW/sr)
$\theta_T = 0°\pm15°$

*5:



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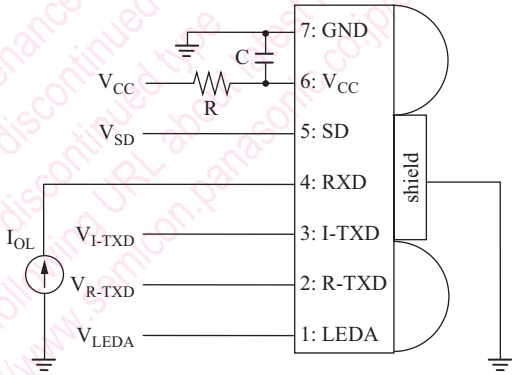
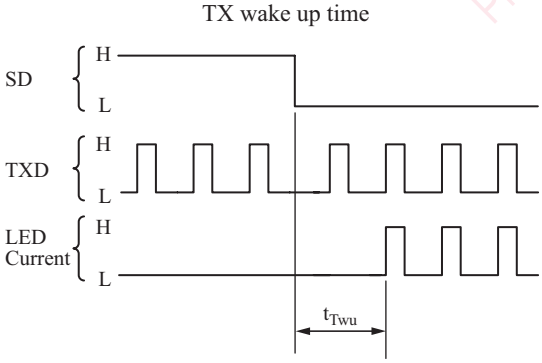
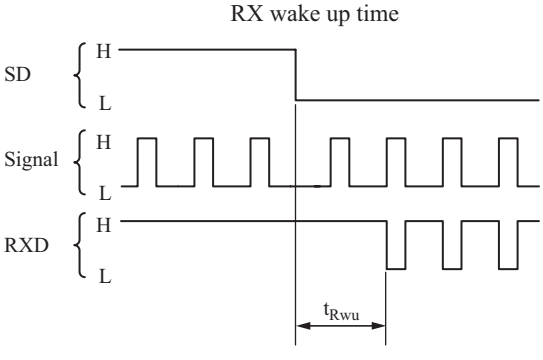


*7:



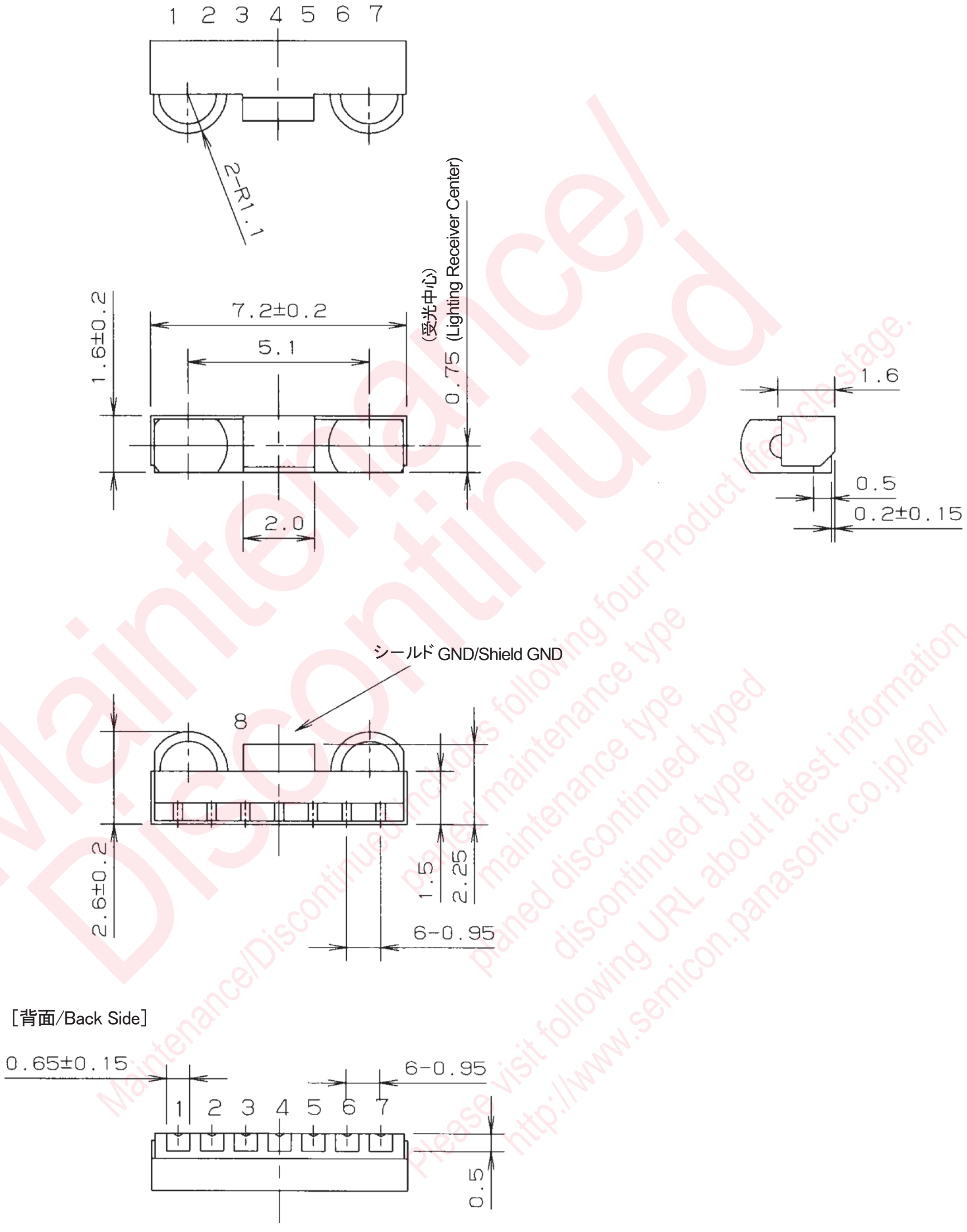
*8:



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

■ Package (Unit: mm)

KMTLSM7K0001



- Pin name

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

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