

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: [info@chipsmall.com](mailto:info@chipsmall.com) Web: [www.chipsmall.com](http://www.chipsmall.com)

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# CND0208A

## Infrared Optocal Module (IrDA)

Infrared data link for cellular phones, peripheral devices

### ■ Features

- Compliant with IrDA Ver.1.2
- Reception distance: 50 cm
- Corresponding reflow solder (260°C)
- Ultra-small top view package (2.0 mm × 7.2 mm × 1.7 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 *	$I_{FP}$	300	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  $\leq 25\%$

### ■ 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	$V_{LEDA}$		2.6		4.2	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	$I_{CCH}$	$V_{TXD} = 0.5 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$		90	120	$\mu\text{A}$
Low level supply current *1	$I_{CCL}$	$V_{TXD} = 0.5 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$		150	360	$\mu\text{A}$
Shut down supply current *1	$I_{CCSD}$	$V_{CC} \geq V_{SD} \geq V_{CC} - 0.3$ (SD = High) $V_{TXD} = 0.5 \text{ V}$		10	200	nA
Maximum reception distance *4	$L_{max}$	$V_{LEDA} = V_{CC} = 2.6 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$ , External components	50			cm
Data Rates	—		9.6		115.2	kbps

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

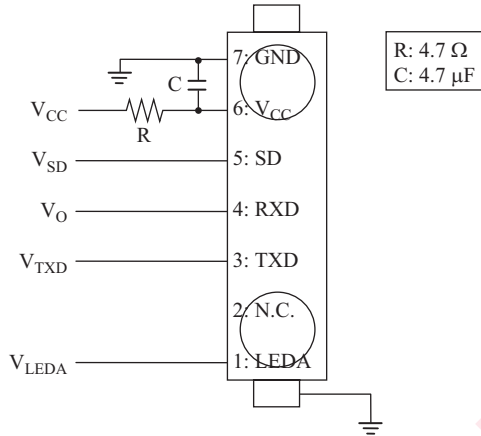
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Transmitter</b>						
Peak emission wavelength *1	$\lambda_p$	$V_{SD} \leq 0.5 \text{ V}$ , $V_{LEDA} = 3.2 \text{ V}$ Duty 3/16	878	883	888	nm
		$V_{SD} \leq 0.5 \text{ V}$ , $V_{LEDA} = 3.2 \text{ V}$ Duty 3/16 $T_a = -20^\circ\text{C}$ to $+70^\circ\text{C}$	850	883	900	nm
Pulse forward current *1	$I_{FP}$	$V_{LEDA} = V_{CC} = 3.1 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$ TXD Duty 3/16	100	135	150	mA
Center radiant intensity *1, 2, 9	$\theta_T = 0$	$V_{LEDA} = V_{CC} = 2.6 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$ TXD Duty 3/16	20	35		mW/sr
	$\theta_T = \pm 15$	$V_{LEDA} = V_{CC} = 2.6 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$ TXD Duty 3/16	14.5			mW/sr
High level input voltage *1	$V_{IH}$	$V_{LEDA} = 3.2 \text{ V}$	$V_{CC} - 0.3$		$V_{CC}$	V
Low level input voltage *1	$V_{IL}$	$V_{LEDA} = 3.2 \text{ V}$	0		0.5	V
TX half-angle	$\theta_T$		$\pm 15$			°
Rise time *1, 3	$t_r$	$V_{LEDA} = 3.2 \text{ V}$ , $t_w = 1.6 \mu\text{s}$ , $R_L = 50 \Omega$		0.3	0.6	$\mu\text{s}$
Fall time *1, 3	$t_f$	$V_{LEDA} = 3.2 \text{ V}$ , $t_w = 1.6 \mu\text{s}$ , $R_L = 50 \Omega$		0.3	0.6	$\mu\text{s}$
TX wake up time *7	$t_{T_wu}$			0.3	1	$\mu\text{s}$
Intensity delay time *1, 3	$I_{DT}$	$V_{LEDA} = 3.2 \text{ V}$			200	ns
Maximum pulse width	$T_{wLEDmax}$	TXD = Low $\rightarrow$ High	20	50	100	$\mu\text{s}$
Overshoot	$O_S$				25	%
Edge jitter	$E_J$		-40		40	ns
<b>Receiver</b>						
Minimum input irradiance	$E_{Imin}$	$V_{LEDA} = V_{CC} = 2.6 \text{ V}$ , $V_{SD} \leq 0.5 \text{ V}$			5.8	$\mu\text{W}/\text{cm}^2$
Maximum input irradiance	$E_{Imax}$	$V_{SD} \leq 0.5 \text{ V}$	500			$\text{mW}/\text{cm}^2$
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	$\theta_R$		$\pm 15$			°
RXD output pulse width	$T_{WR}$	$C_L = 15 \text{ pF}$ , 9.6 kbps to 115.2 kbps	1.0	2.3	4.2	$\mu\text{s}$
RX wake up time *8	$t_{R_wu}$	$E_I = 8.1 \mu\text{W}/\text{cm}^2$		200	400	$\mu\text{s}$
Receiver latency time	$t_L$	$E_I = 8.1 \mu\text{W}/\text{cm}^2$		100	200	$\mu\text{s}$
Rise time	$t_r$	$C_L = 15 \text{ pF}$			300	ns
Fall time	$t_f$	$C_L = 15 \text{ pF}$			300	ns



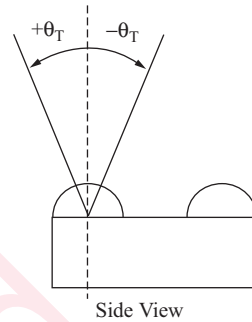
■ Electrical-Optical Characteristics (Continued)

Note) Measuring circuit

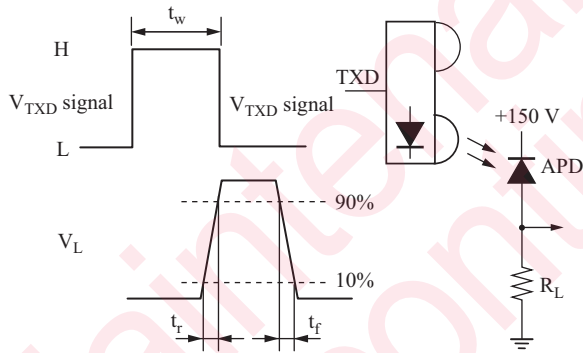
\*1:



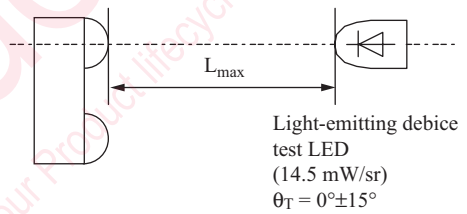
\*2:



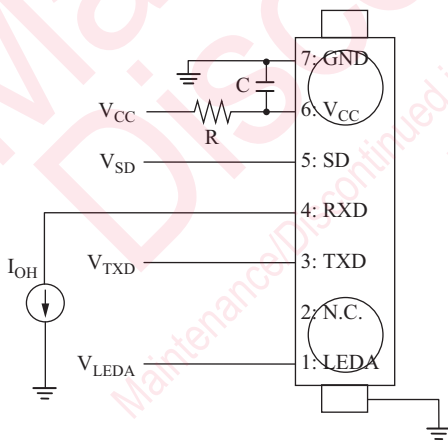
\*3:



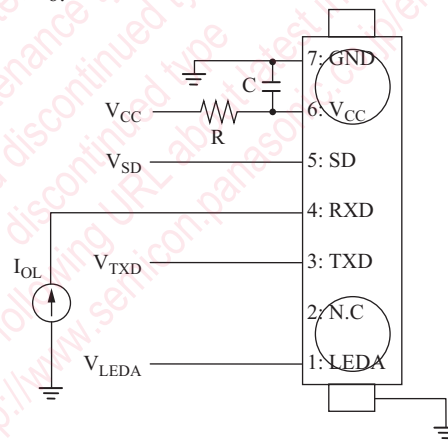
\*4:



\*5:

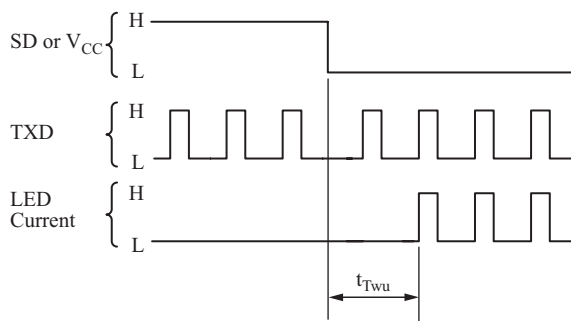


\*6:



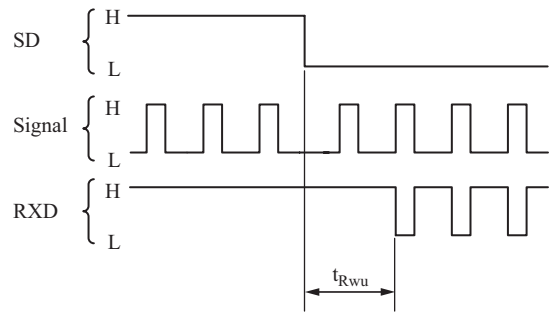
\*7:

TX wake up time



\*8:

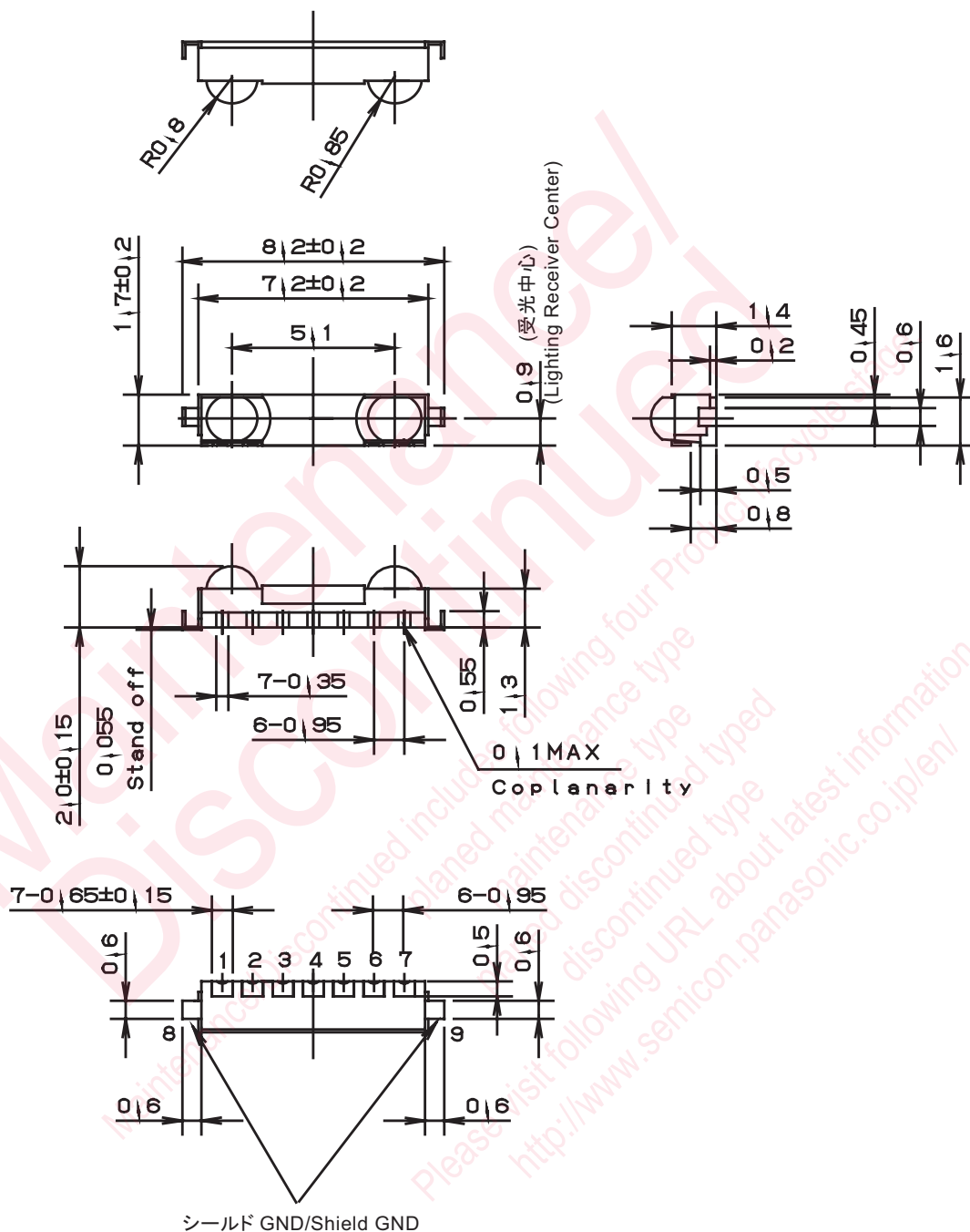
RX wake up time



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

■ Package (Unit: mm)

KMTLTM7K0001



• Pin name

- |         |                    |
|---------|--------------------|
| 1. LEDA | 6. V <sub>CC</sub> |
| 2. N.C. | 7. GND             |
| 3. TXD  | 8. Shield GND      |
| 4. RXD  | 9. Shield GND      |
| 5. SD   |                    |

## Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).  
Consult our sales staff in advance for information on the following applications:
  - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
  - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
  - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of our company.