

|                    |                                       |
|--------------------|---------------------------------------|
| Structure          | Silicon Monolithic Integrated Circuit |
| Product            | IrDA SIR Encoder / Decoder            |
| Type               | BU92001KN                             |
| Dimensions diagram | : Figure-2                            |
| Block diagram      | : Figure-3                            |
| Function           | IrDA Controller                       |

1. UART interface
2. IrDA SIR Encode / Decode function
3. Communication rate of 2.4k ~ 115.2kbps
4.  $V_{DD}=2.5 \sim 3.5V$  ( Power supply voltage range)

note) The IC isn't designed for endurance of the radiation.

#### Absolute maximum ratings (Ta=25°C)

| Parameter             | Symbol | Limits         | Units |
|-----------------------|--------|----------------|-------|
| Supply Voltage        | Vmax   | 4.5 *1         | V     |
| Input Voltage         | Vin    | -0.3 ~ VDD+0.3 | V     |
| Operation Temperature | Topr   | -25 ~ 85       |       |
| Storage Temperature   | Tstg   | -40 ~ 100      |       |

\*1) This applies to all pins basis ground pin(9pin).

#### Recommended Operating Conditions

| Parameter       | Symbol | Min. | Typ. | Max  | Units |
|-----------------|--------|------|------|------|-------|
| Supply Voltage  | VDD    | 2.5  | 3.0  | 3.5  | V     |
| Clock frequency | fCLK   | 24.0 | 27.8 | 30.0 | MHz   |

#### Status of this document

The Japanese version of this document is the formal specification.

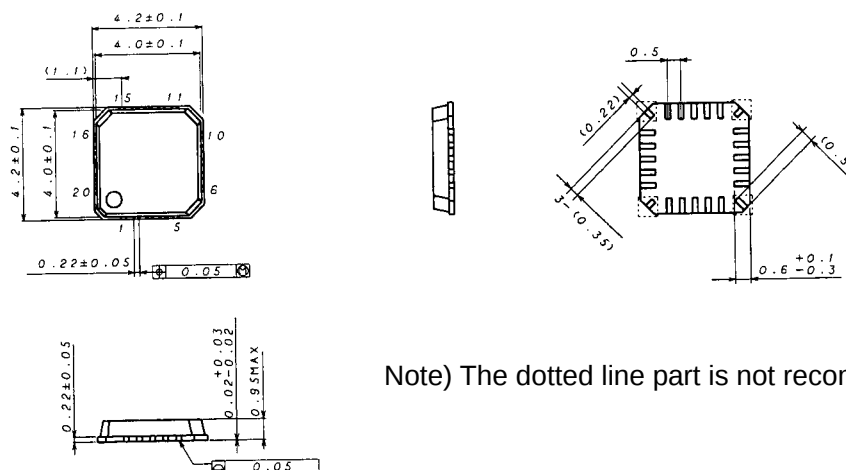
A customer may use this translation version only for a reference to help reading the formal version.

If there are any differences in translation version of this document, formal version takes priority.

• Electrical characteristics (Ta=25°C, VDD=3.0V, GND=0V)

| Parameter                 | Symbol | MIN              | TYP | MAX              | Units | Condition                                      |
|---------------------------|--------|------------------|-----|------------------|-------|------------------------------------------------|
| Consumption Current1      | IDD1   | -                | 0.1 | 3.0              | μA    | All the input 0V, Output load-less             |
| Consumption Current2      | IDD2   | -                | 2.0 | 4.0              | mA    | Input PIN=0V, CLK=27.8MHz,<br>Output load-less |
| High level input voltage  | VIH    | $0.8 \times VDD$ | -   | -                | V     |                                                |
| Low level input voltage   | VIL    | -                | -   | $0.2 \times VDD$ | V     |                                                |
| High level input current  | IIH    | -                | -   | 10               | μA    |                                                |
| Low level input current   | IIL    | -                | -   | 10               | μA    |                                                |
| High level output voltage | VOH1   | VDD-0.6          | -   | -                | V     | IOH= - 1mA                                     |
| Low level output voltage  | VOL1   | -                | -   | 0.6              | V     | IOL=1mA                                        |

# • Dimensions Diagram (VQFN20)



Note) The dotted line part is not recommend mounting.

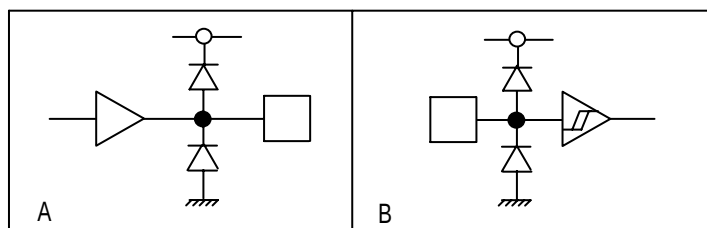
Fig.1

(Units:mm)

# • Pin Descriptions

| Pin No. | Terminal Name | I/O | Function                                 | Terminal Equivalent Circuit |
|---------|---------------|-----|------------------------------------------|-----------------------------|
| 1       | U_TXD         | I   | UART TXD signal input                    | B                           |
| 2       | U_RXD         | O   | UART TXD signal output                   | A                           |
| 3       | -             | -   | N.C                                      | -                           |
| 4       | BRSET         | I   | Setup of baud rate (active Hi)           | B                           |
| 5       | CLK           | I   | Clock input (27.8MHz)                    | B                           |
| 6       | -             | -   | N.C                                      | -                           |
| 7       | CLKSEL0       | I   | Input clock selection                    | B                           |
| 8       | CLKSEL1       | I   | Input clock selection                    | B                           |
| 9       | GND           | -   | Ground                                   | -                           |
| 10      | -             | -   | N.C                                      | -                           |
| 11      | CLK47OUT      | O   | The 1/47 clock output of the clock input | A                           |
| 12      | CLK2OUT       | O   | The 1/2 clock output of the clock input  | A                           |
| 13      | -             | -   | N.C                                      | -                           |
| 14      | IR_RXD        | I   | IrDA RXD signal input                    | B                           |
| 15      | IR_TXD        | O   | IrDA TXD signal output                   | A                           |
| 16      | -             | -   | N.C                                      | -                           |
| 17      | VDD           | -   | Power supply voltage (2.5V ~ 3.5V)       | -                           |
| 18      | RST           | I   | Reset input (active Hi)                  | B                           |
| 19      | -             | -   | N.C                                      | -                           |
| 20      | -             | -   | N.C                                      | -                           |

# • Terminal equivalent circuit diagram



- Notes for use

- (1) Absolute Maximum Ratings

- We are careful enough for quality control about this IC. So, there is no problem under normal operation, excluding that it exceeds the absolute maximum ratings. However, this IC might be destroyed when the absolute maximum ratings, such as impressed voltages or the operating temperature range, is exceeded, and whether the destruction is short circuit mode or open circuit mode cannot be specified. Please take into consideration the physical countermeasures for safety, such as fusing, if a particular mode that exceeds the absolute maximum rating is assumed.

- (2) GND Potential

- Make setting of the potential of the GND terminal so that it will be maintained at the minimum in any operating state.

- (3) Short circuit mode between terminals and wrong mounting

- In order to mount the IC on a set PCB, pay thorough attention to the direction and offset of the ICs. Erroneous mounting can destroy the IC. Furthermore, if a short circuit occurs due to foreign matters entering between terminals or between the terminal and the power supply or the GND terminal, the IC can destroy

- (4) Operation in supply voltage range

- Functional Circuit operation is guaranteed within operation ambient temperature, as long as it is within operation supply voltage range. The electrical characteristics standard value cannot be guaranteed.

- However, there is no drastic variation in these values, as long as it is within operation supply voltage range.

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