



**ISOCOM**  
COMPONENTS

## IS1100

### DESCRIPTION

The IS1100 series optocoupler consists of an infrared emitting diode optically coupled to an NPN silicon photo transistor.

This device belongs to Isocom Compact Range of Optocouplers.

### FEATURES

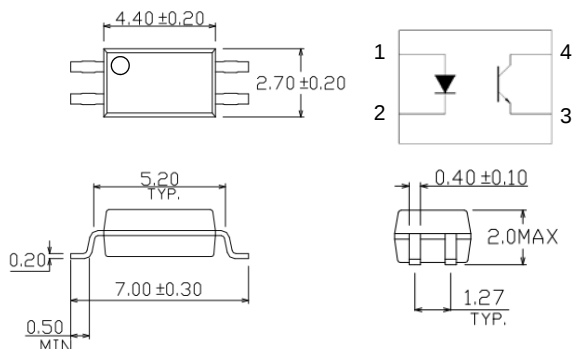
- Half Pitch 1.27mm
- High AC Isolation voltage 3750V<sub>RMS</sub>
- CTR Selections Available
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231, Model THP

### APPLICATIONS

- Switching Mode Power Supply
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Different Potentials and Impedances

### ORDER INFORMATION

- Available in Tape and Reel with 1000pcs per reel



All dimensions in mm.

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

#### Input Diode

|                   |      |
|-------------------|------|
| Forward Current   | 50mA |
| Reverse Voltage   | 6V   |
| Power dissipation | 70mW |

#### Output Transistor

|                                                |       |
|------------------------------------------------|-------|
| Collector to Emitter Voltage BV <sub>CEO</sub> | 80V   |
| Emitter to Collector Voltage BV <sub>ECO</sub> | 7V    |
| Collector Current                              | 50mA  |
| Power Dissipation                              | 150mW |

#### Total Package

|                                  |                      |
|----------------------------------|----------------------|
| Isolation Voltage                | 3750V <sub>RMS</sub> |
| Total Power Dissipation          | 200mW                |
| Operating Temperature            | -55 to 110 °C        |
| Storage Temperature              | -55 to 125 °C        |
| Lead Soldering Temperature (10s) | 260°C                |

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## IS1100

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

#### INPUT

| Parameter         | Symbol   | Test Condition                        | Min | Typ. | Max | Unit          |
|-------------------|----------|---------------------------------------|-----|------|-----|---------------|
| Forward Voltage   | $V_F$    | $I_F = 20\text{mA}$                   |     | 1.2  | 1.4 | V             |
| Reverse Current   | $I_R$    | $V_R = 4\text{V}$                     |     |      | 10  | $\mu\text{A}$ |
| Input Capacitance | $C_{IN}$ | $V_F = 0\text{V}$ , $f = 1\text{KHz}$ |     | 30   | 250 | pF            |

#### OUTPUT

| Parameter                           | Symbol     | Test Condition                             | Min | Typ. | Max | Unit |
|-------------------------------------|------------|--------------------------------------------|-----|------|-----|------|
| Collector-Emitter breakdown Voltage | $BV_{CEO}$ | $I_C = 0.1\text{mA}$ , $I_F = 0\text{mA}$  | 80  |      |     | V    |
| Emitter-Collector breakdown Voltage | $BV_{ECO}$ | $I_E = 0.1\text{mA}$ , $I_F = 0\text{mA}$  | 7   |      |     | V    |
| Collector-Emitter Dark Current      | $I_{CEO}$  | $V_{CE} = 20\text{V}$ , $I_F = 0\text{mA}$ |     |      | 100 | nA   |



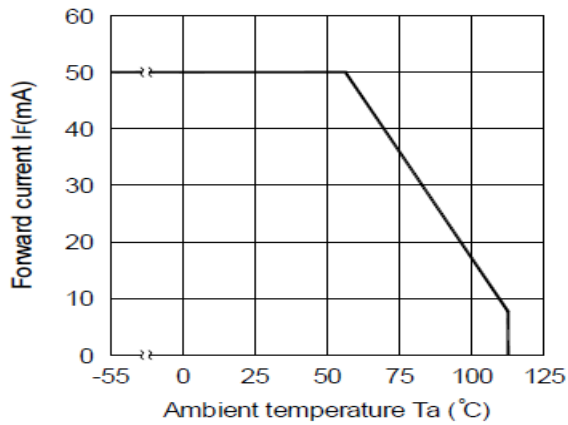
## IS1100

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

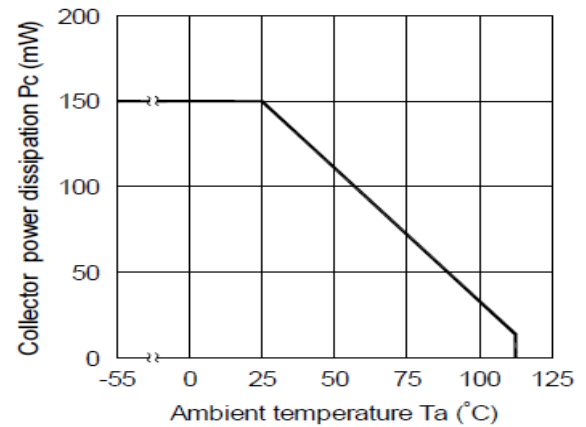
#### COUPLED

| Parameter                            | Symbol        | Test Condition                                                   | Min                | Typ. | Max | Unit          |
|--------------------------------------|---------------|------------------------------------------------------------------|--------------------|------|-----|---------------|
| Current transfer ratio               | CTR           | $I_F = 5\text{mA}$ , $V_{CE} = 5\text{V}$<br>IS1100              | 50                 |      | 600 | %             |
|                                      |               | $I_F = 10\text{mA}$ , $V_{CE} = 5\text{V}$<br>IS1101             | 40                 |      | 80  |               |
|                                      |               | IS1102                                                           | 63                 |      | 125 |               |
|                                      |               | IS1103                                                           | 100                |      | 200 |               |
|                                      |               | IS1104                                                           | 160                |      | 320 |               |
|                                      |               | $I_F = 10\text{mA}$ , $V_{CE} = 5\text{V}$<br>IS1105             | 50                 |      | 150 |               |
|                                      |               | IS1106                                                           | 100                |      | 300 |               |
|                                      |               | IS1107                                                           | 80                 |      | 160 |               |
|                                      |               | IS1108                                                           | 130                |      | 260 |               |
|                                      |               | IS1109                                                           | 200                |      | 400 |               |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_F = 10\text{mA}$ , $I_C = 1\text{mA}$                         |                    | 0.1  | 0.2 | V             |
| Input to Output Isolation Voltage    | $V_{ISO}$     | See note 1                                                       | 3750               |      |     | $V_{RMS}$     |
| Input to Output Isolation Resistance | $R_{ISO}$     | $V_{IO} = 500\text{V}$<br>See note 1                             | $5 \times 10^{10}$ |      |     | $\Omega$      |
| Floating Capacitance                 | $C_f$         | $V_F = 0\text{V}$ , $f = 1\text{MHz}$                            |                    | 0.3  |     | pF            |
| Output Rise Time                     | $t_r$         | $V_{CE} = 2\text{V}$ , $I_c = 2\text{mA}$ ,<br>$R_L = 100\Omega$ |                    | 6    | 18  | $\mu\text{s}$ |
| Output Fall Time                     | $t_f$         | $V_{CE} = 2\text{V}$ , $I_c = 2\text{mA}$ ,<br>$R_L = 100\Omega$ |                    | 6    | 18  | $\mu\text{s}$ |

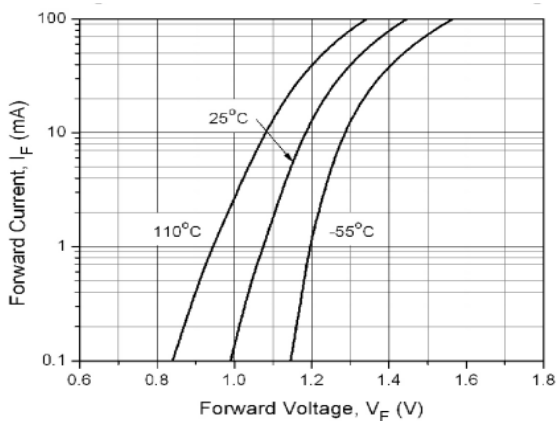
Note 1 : Measured with input leads shorted together and output leads shorted together, R.H 40% to 60%



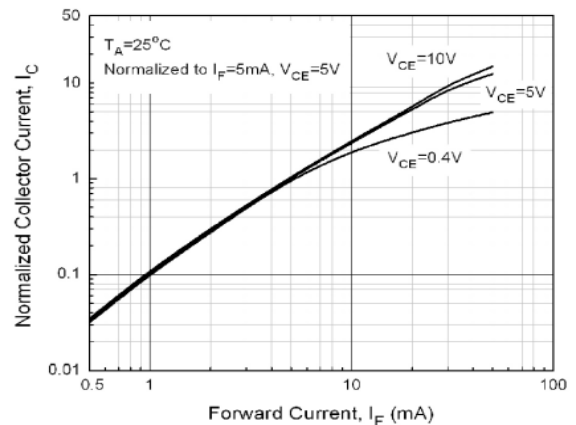
**Fig 1 Forward Current vs Ambient Temperature**



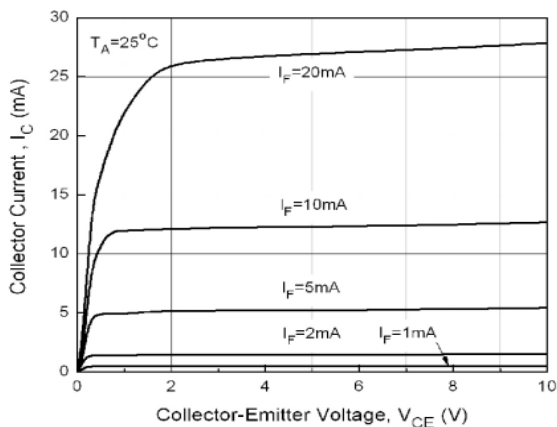
**Fig 2 Collector Power Dissipation vs  $T_A$**



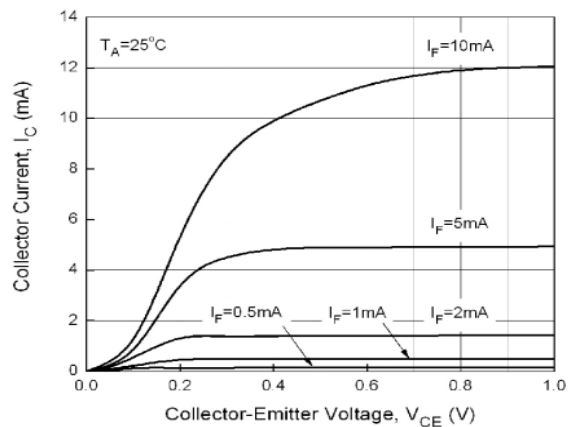
**Fig 3 Forward Current vs Forward Voltage**



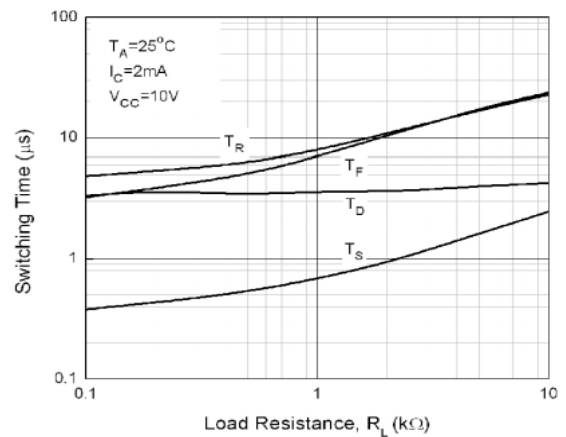
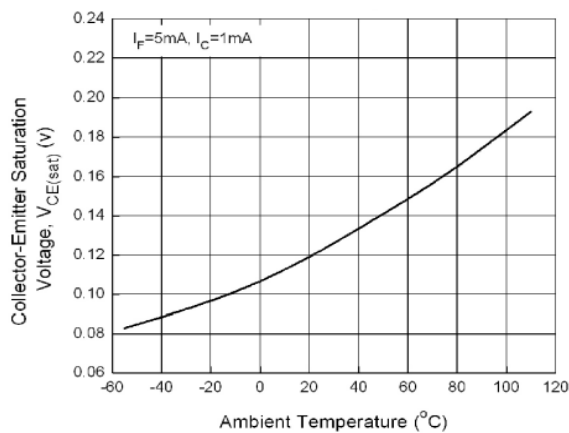
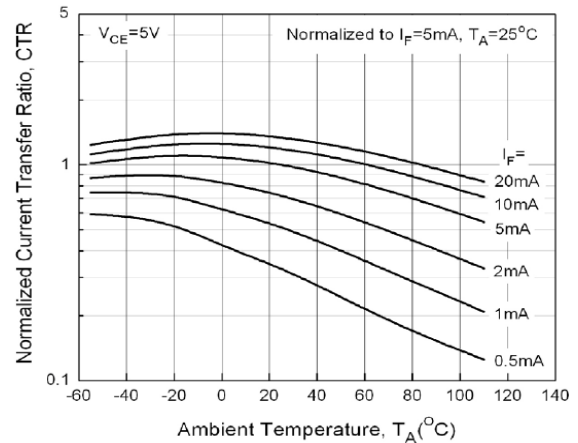
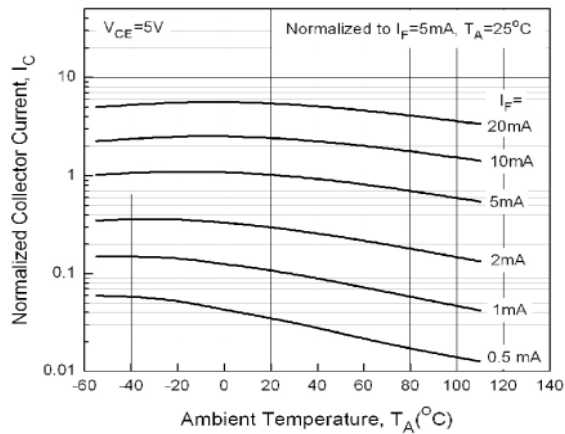
**Fig 4 Normalized Collector Current vs Forward Current**



**Fig 5 Collector Current vs Collector-Emitter Voltage (1)**

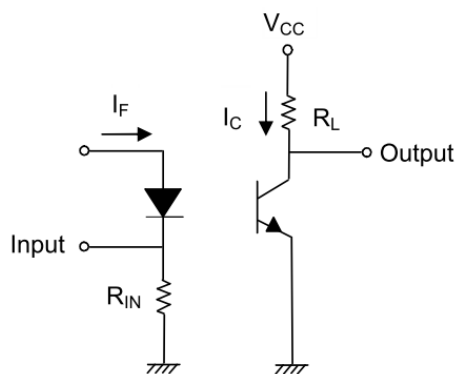


**Fig 6 Collector Current vs Collector-Emitter Voltage (2)**

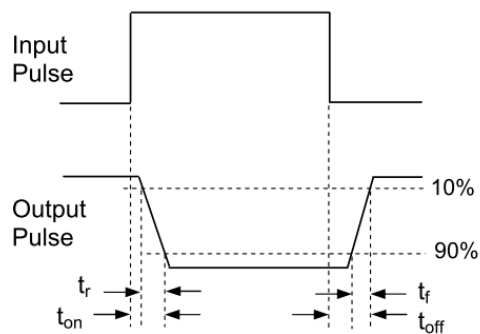


**Fig 9 Collector-Emitter Voltage vs Ambient Temperature**

**Fig 10 Switching Time vs Load Resistance**



**Switching Time Test Circuit**





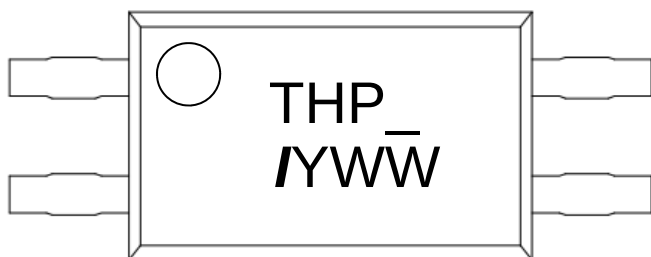
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### ORDER INFORMATION

| IS1100        |                                                                         |                           |                   |
|---------------|-------------------------------------------------------------------------|---------------------------|-------------------|
| After PN      | PN                                                                      | Description               | Packing quantity  |
| None          | IS1100                                                                  | Surface Mount Tape & Reel | 1000 pcs per reel |
| Any CTR Grade | IS1101, IS1102, IS1103, IS1104, IS1105, IS1106, IS1107, IS1108, IS1109, | Surface Mount Tape & Reel | 1000 pcs per reel |

### Device Marking

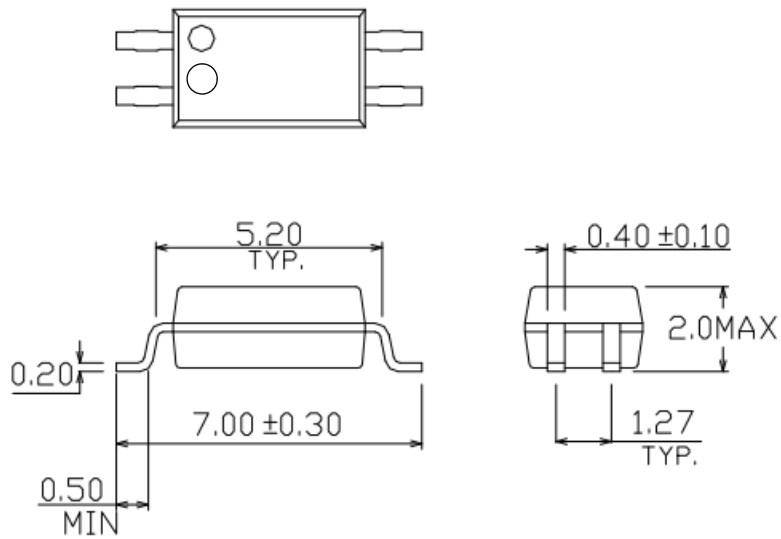


THP\_ denotes Device Part Number where “\_” denoted CTR Grade  
/ denotes Isocom  
Y denotes 1 digit Year code  
WW denotes 2 digit Week code

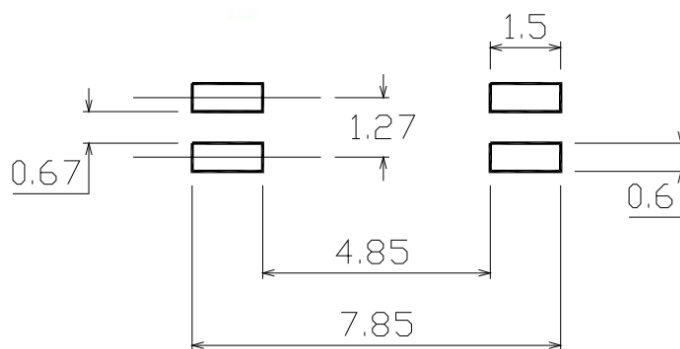


## IS1100

### PACKAGE DIMENSIONS (mm)

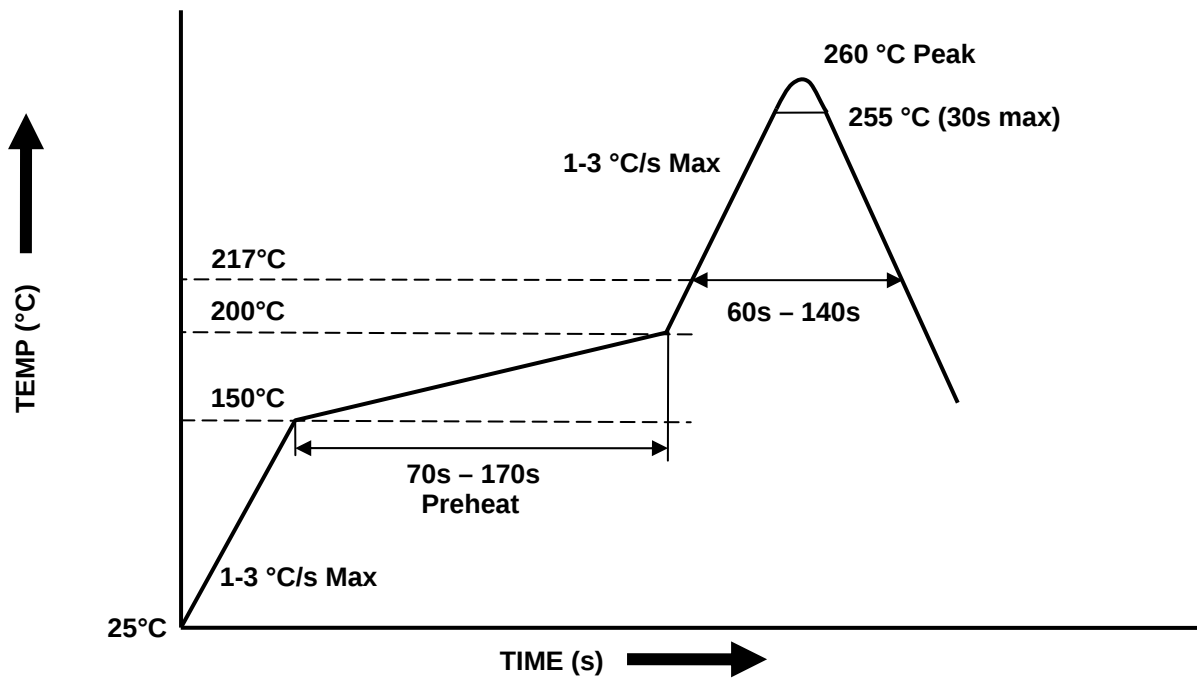


### Recommended Solder Pad Layout (mm)





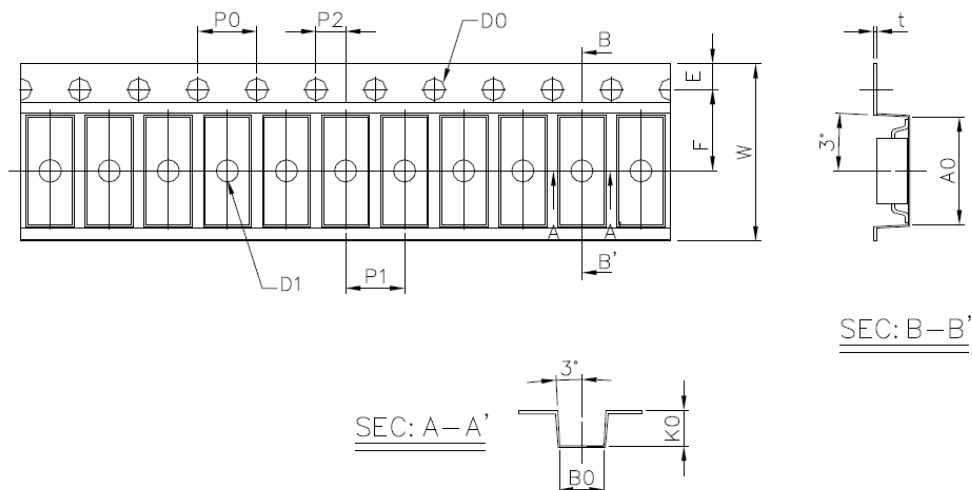
**IR REFLOW SOLDERING TEMPERATURE PROFILE**  
(One Time Reflow Soldering is Recommended)





## IS1100

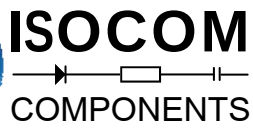
### Tape and Reel Packaging



| Dimension No.  | A             | B             | Do             | D1            | E              | F             |
|----------------|---------------|---------------|----------------|---------------|----------------|---------------|
| Dimension (mm) | $3.0 \pm 0.1$ | $7.3 \pm 0.1$ | $1.5 + 0.1/-0$ | $1.5 \pm 0.1$ | $1.75 \pm 0.1$ | $5.5 \pm 0.1$ |

| Dimension No.  | Po             | P1            | P2            | t               | W              | K             |
|----------------|----------------|---------------|---------------|-----------------|----------------|---------------|
| Dimension (mm) | $4.0 \pm 0.15$ | $4.0 \pm 0.1$ | $2.0 \pm 0.1$ | $0.25 \pm 0.03$ | $12.0 \pm 0.2$ | $2.4 \pm 0.1$ |



# IS1100

### Notes:

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.
- When requiring a device for any "specific" application, please contact our sales for advice.
- The contents described herein are subject to change without prior notice.
- Do not immerse device body in solder paste.