## Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 35V)
- Output voltage accuracy: tolerance ±2%
- TO92,SOT89 and SOT23-3 package

## Applications

- Battery-powered equipment
- Communication equipment
- Audio/Video equipment

## General Description

The H75XX-2 series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 35V. They are available with several fixed output voltages ranging from 3.0V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

## Selection Table

| Part No. | Output Voltage | Package | Marking |
|---|---|---|---|
| H7530-2 | 3.0V | TO92<br>SOT89<br>SOT23-3 | 75XX-H#(for TO92)<br>75XX-H#(for SOT89)<br>XX-H(for SOT23-3) |
| H7533-2 | 3.3V | | |
| H7536-2 | 3.6V | | |
| H7544-2 | 4.4V | | |
| H7550-2 | 5.0V | | |

Note: "XX" stands for output voltages. Other voltages can be specially customized.
TO92 & SOT89 packages will add a "#" mark at the end of the marking.

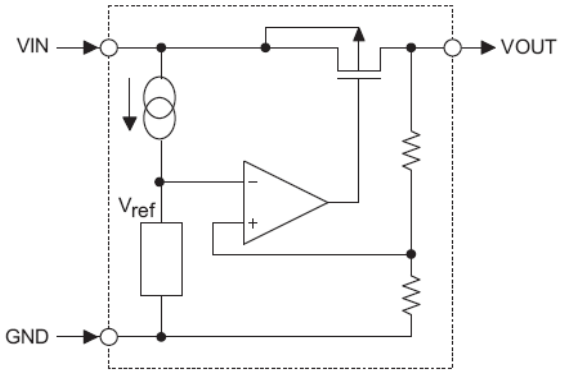


## Order Information

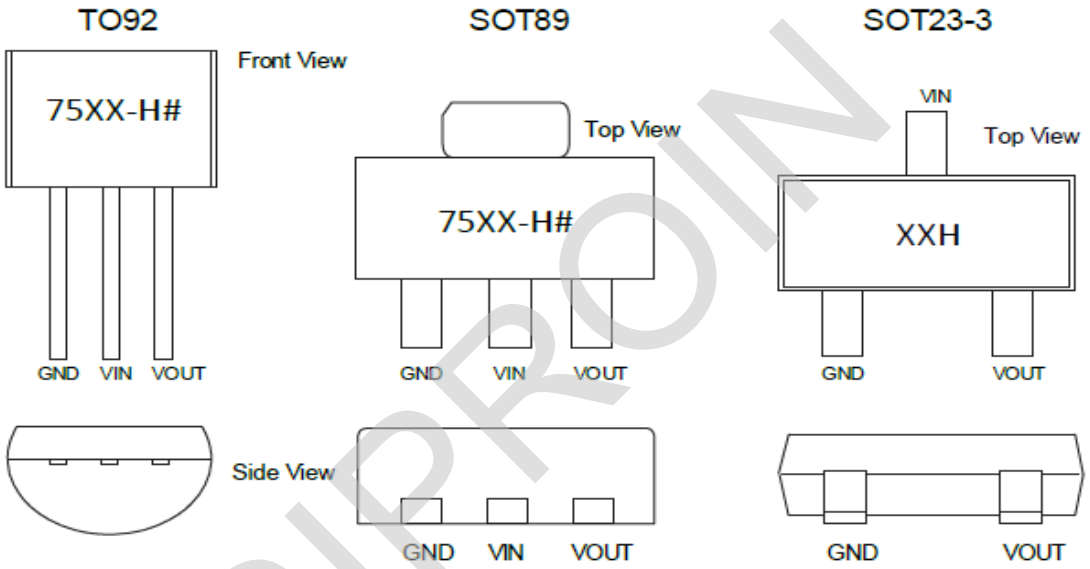
H75①②③④⑤

| Designator | Symbol | Description |
|---|---|---|
| ① ② | Integer | Output Voltage(3.0~5.0V) |
| ③ | -2 | Standard |
| ④ | T | Package:TO-92 |
| | P | Package:SOT89 |
| | M | Package:SOT23-3 |
| ⑤ | R | RoHS / Pb Free |
| | G | Halogen Free |

## Block Diagram




## Pin Assignment




## Absolute Maximum Ratings

Supply Voltage .....-0.3V to 35V  Storage Temperature .....-50℃ to 125℃

Operating Temperature .....-40℃ to 85℃

Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

## Thermal Information

| Symbol | Parameter | Package | Max. | Unit |
|---|---|---|---|---|
| $\theta_{JA}$ | Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink) | TO92 | 200 | ℃/W |
| | | SOT89 | 200 | ℃/W |
| | | SOT23 | 500 | ℃/W |
| $P_D$ | Power Dissipation | TO92 | 0.50 | W |
| | | SOT89 | 0.50 | W |
| | | SOT23 | 0.20 | W |

Note: $P_D$ is measured at Ta= 25℃

## Electrical Characteristics

### H7530-2, +3.0V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| | | $V_{IN}$ | Conditions | | | | |
| $V_{OUT}$ | Output Voltage | 8V | $I_{OUT}$=10mA | 2.94 | 3.00 | 3.06 | V |
| $I_{OUT}$ | Output Current | 6V | - | - | 200 | - | mA |
| $\Delta V_{OUT}$ | Load Regulation | 8V | 1mA≤$I_{OUT}$≤20mA | - | 40 | 60 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | - | $I_{OUT}$=1mA, $\Delta V_{OUT}$=2% | - | 10 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 2.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 4V≤$V_{IN}$≤35V<br>$I_{OUT}$=1mA | - | 0.3 | - | %/V |
| $V_{IN}$ | Input Voltage | - | - | - | - | 35 | V |
| $\frac{\Delta V_{OUT}}{\Delta Ta}$ | Temperature Coefficient | 8V | $I_{OUT}$=10mA<br>0℃<Ta<100℃ | - | ±0.12 | - | mV/℃ |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN}$ = $V_{OUT}$+2V with a fixed load.

### H7533-2, +3.3V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| | | $V_{IN}$ | Conditions | | | | |
| $V_{OUT}$ | Output Voltage | 8V | $I_{OUT}$=10mA | 3.234 | 3.300 | 3.366 | V |
| $I_{OUT}$ | Output Current | 6.3V | - | - | 200 | - | mA |
| $\Delta V_{OUT}$ | Load Regulation | 8V | 1mA≤$I_{OUT}$≤20mA | - | 40 | 60 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | - | $I_{OUT}$=1mA, $\Delta V_{OUT}$=2% | - | 10 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 2.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 4.5V≤$V_{IN}$≤35V<br>$I_{OUT}$=1mA | - | 0.3 | - | %/V |
| $V_{IN}$ | Input Voltage | - | - | - | - | 35 | V |
| $\frac{\Delta V_{OUT}}{\Delta Ta}$ | Temperature Coefficient | 8V | $I_{OUT}$=10mA<br>0℃<Ta<100℃ | - | ±0.12 | - | mV/℃ |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN}$ = $V_{OUT}$+2V with a fixed load.

**H7536-2, +3.6V Output Type**

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| | | $V_{IN}$ | Conditions | | | | |
| $V_{OUT}$ | Output Voltage | 8V | $I_{OUT}$=10mA | 3.528 | 3.600 | 3.672 | V |
| $I_{OUT}$ | Output Current | 6.6V | - | - | 200 | - | mA |
| $\Delta V_{OUT}$ | Load Regulation | 8V | 1mA≤$I_{OUT}$≤20mA | - | 40 | 60 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | - | $I_{OUT}$=1mA, $\Delta V_{OUT}$=2% | - | 10 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 2.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 4.6V≤$V_{IN}$≤35V<br>$I_{OUT}$=1mA | - | 0.3 | - | %/V |
| $V_{IN}$ | Input Voltage | - | - | - | - | 35 | V |
| $\frac{\Delta V_{OUT}}{\Delta Ta}$ | Temperature Coefficient | 8V | $I_{OUT}$=10mA<br>0℃<Ta<100℃ | - | ±0.12 | - | mV/℃ |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN}$ = $V_{OUT}$+2V with a fixed load.

**H7544-2, +4.4V Output Type**

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| | | $V_{IN}$ | Conditions | | | | |
| $V_{OUT}$ | Output Voltage | 8V | $I_{OUT}$=10mA | 4.312 | 4.400 | 4.488 | V |
| $I_{OUT}$ | Output Current | 7.4V | - | - | 200 | - | mA |
| $\Delta V_{OUT}$ | Load Regulation | 8V | 1mA≤$I_{OUT}$≤20mA | - | 40 | 60 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | - | $I_{OUT}$=1mA, $\Delta V_{OUT}$=2% | - | 10 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 2.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 5.4V≤$V_{IN}$≤35V<br>$I_{OUT}$=1mA | - | 0.3 | - | %/V |
| $V_{IN}$ | Input Voltage | - | - | - | - | 35 | V |
| $\frac{\Delta V_{OUT}}{\Delta Ta}$ | Temperature Coefficient | 8V | IOUT=10mA<br>0℃<Ta<100℃ | - | ±0.12 | - | mV/℃ |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN}$ = $V_{OUT}$+2V with a fixed load.

**H7550-2, +5.0V Output Type**

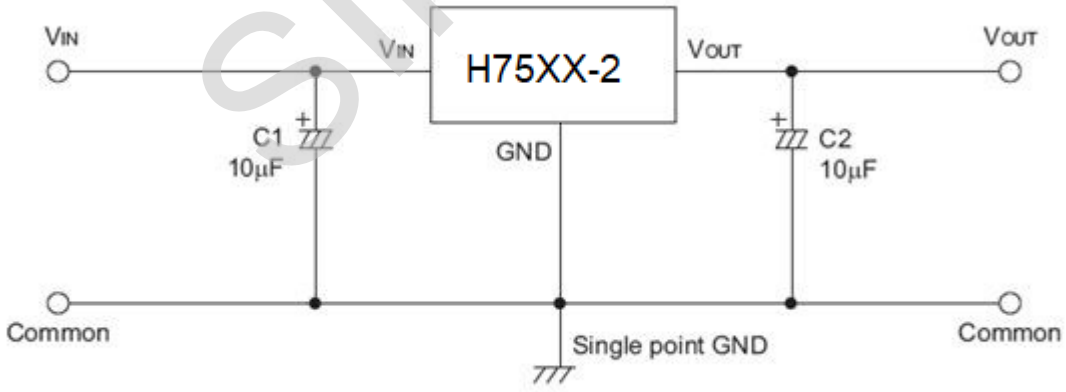
| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| | | $V_{IN}$ | Conditions | | | | |
| $V_{OUT}$ | Output Voltage | 8V | $I_{OUT}$=10mA | 4.90 | 5.00 | 5.10 | V |
| $I_{OUT}$ | Output Current | 8V | - | - | 200 | - | mA |
| $\Delta V_{OUT}$ | Load Regulation | 8V | 1mA≤$I_{OUT}$≤20mA | - | 40 | 60 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | - | $I_{OUT}$=1mA, $\Delta V_{OUT}$=2% | - | 10 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 2.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 6V≤$V_{IN}$≤35V<br>$I_{OUT}$=1mA | - | 0.3 | - | %/V |
| $V_{IN}$ | Input Voltage | - | - | - | - | 35 | V |
| $\frac{\Delta V_{OUT}}{\Delta Ta}$ | Temperature Coefficient | 8V | IOUT=10mA<br>0℃<Ta<100℃ | - | ±0.12 | - | mV/℃ |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN}$ = $V_{OUT}$+2V with a fixed load.



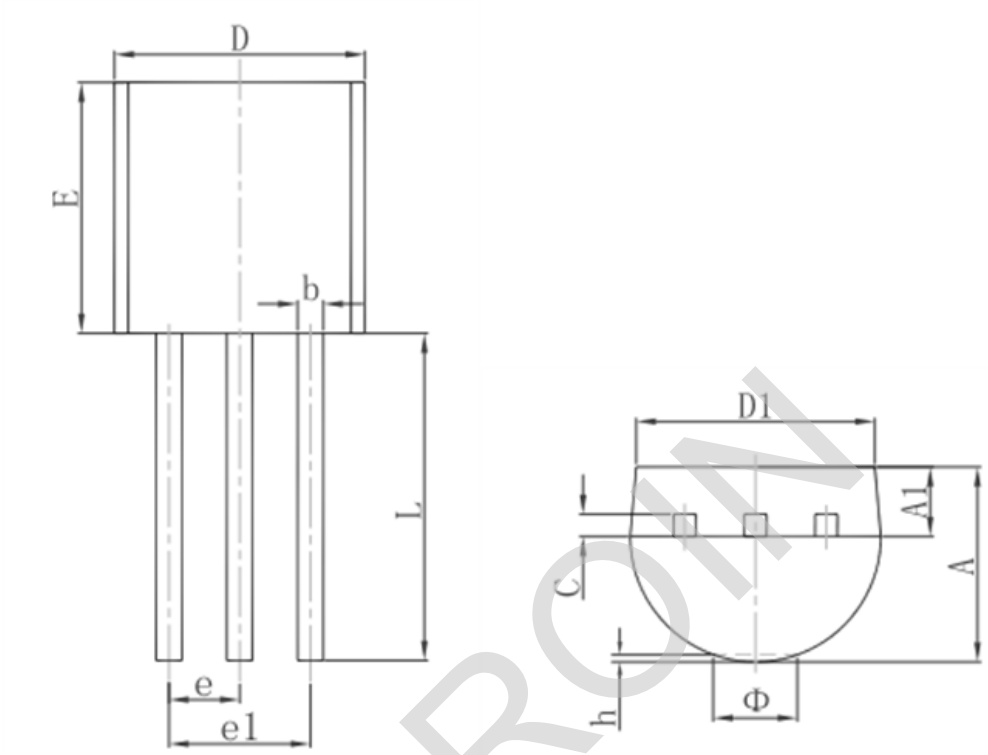
## Application Circuits

### Basic Circuits



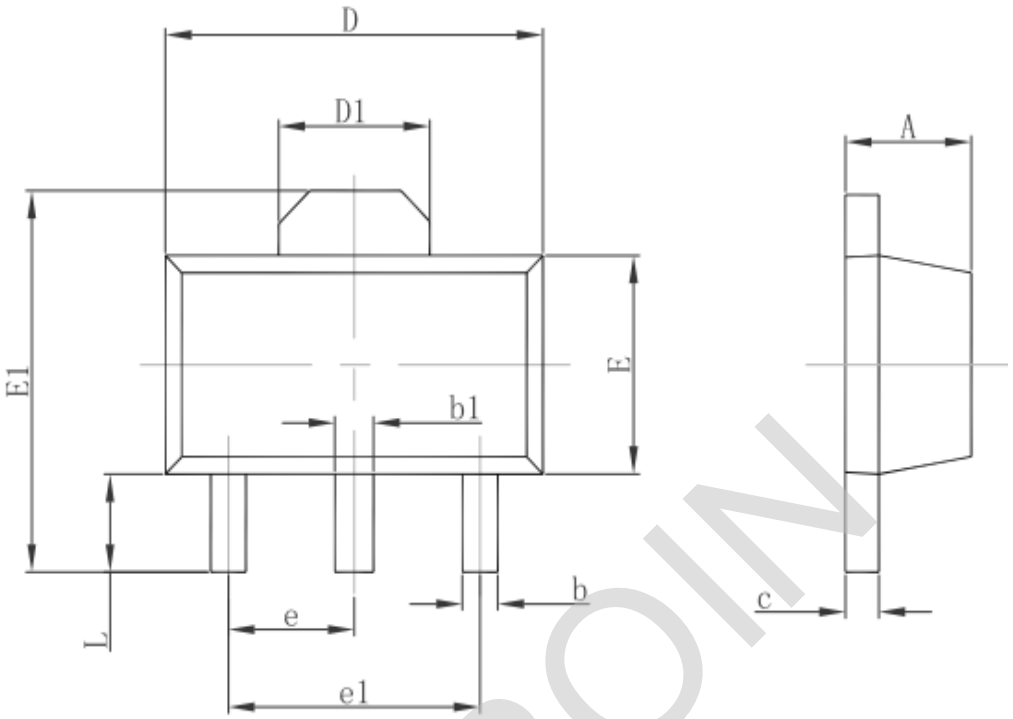
## Package Information

### 3-pin TO92 Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 3.300 | 3.700 | 0.130 | 0.146 |
| A1 | 1.100 | 1.400 | 0.043 | 0.055 |
| b | 0.380 | 0.550 | 0.015 | 0.022 |
| c | 0.360 | 0.510 | 0.014 | 0.020 |
| D | 4.300 | 4.700 | 0.169 | 0.185 |
| D1 | 3.430 | | 0.135 | |
| E | 4.300 | 4.700 | 0.169 | 0.185 |
| e | 1.270 TYP. | | 0.050 TYP. | |
| e1 | 2.440 | 2.640 | 0.096 | 0.104 |
| L | 14.100 | 14.500 | 0.555 | 0.571 |
| Φ | | 1.600 | | 0.063 |
| h | 0.000 | 0.380 | 0.000 | 0.015 |

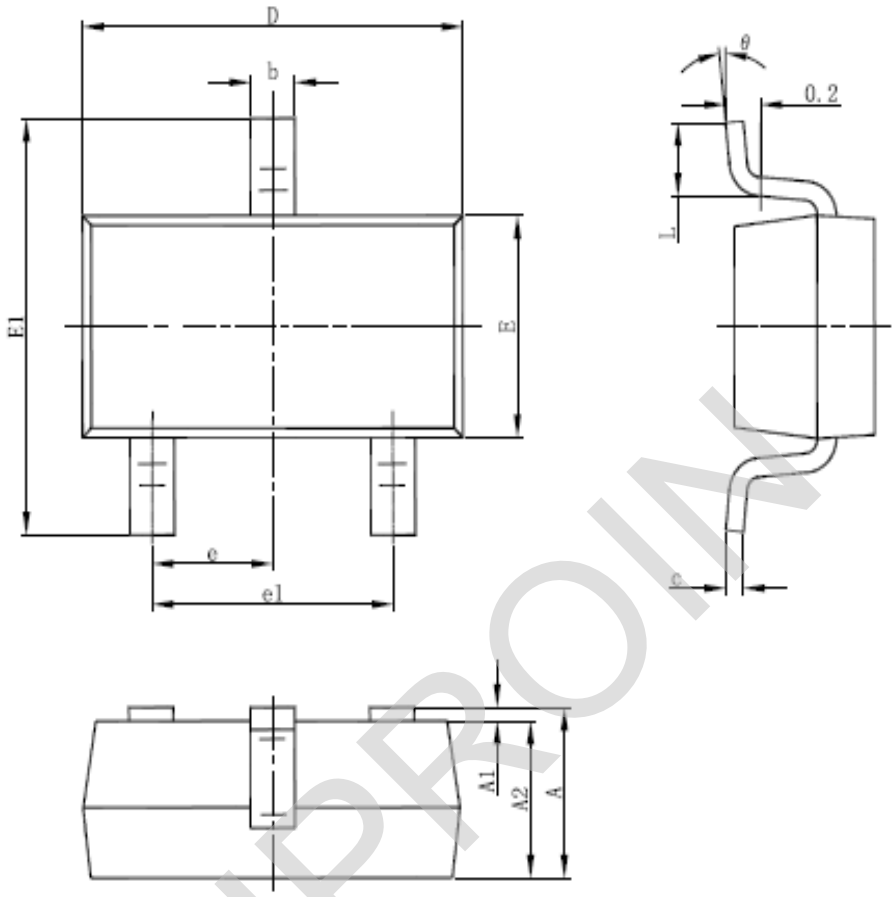
**3-pin SOT89 Outline Dimensions**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |

### 3-pin SOT23-3 Outline Dimensions

SOT-23-3L PACKAGE OUTLINE DIMENSIONS






| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |