

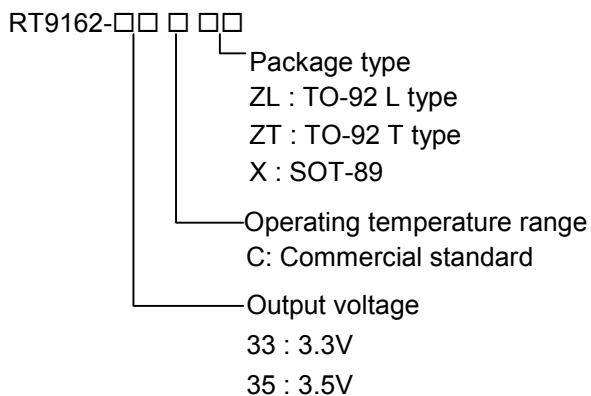
# 300mA Low Dropout Positive Voltage Regulator

## General Description

The RT9162 is a positive low dropout regulator designed for applications requiring low dropout performance at full rated current. The device is available in fixed output voltages of 3.3V and 3.5V. The RT9162 provides excellent regulation over line, load, and temperature variations.

The other features include low dropout performance at a maximum of 1.3V at 300mA, fast transient response, internal current limiting, and thermal shutdown protection of the output devices. The RT9162 is a three-terminal regulators compatible with industrial 78XX series and available in surface mount SOT-89 packages.

## Ordering Information



## Marking Information

| Part Number  | Marking |
|--------------|---------|
| RT9162-33CZT | RTA4    |
| RT9162-33CZL | RTA2    |
| RT9162-33CX  | A0      |
| RT9162-35CZT | RTA5    |
| RT9162-35CX  | RTA3    |
| RT9162-35CX  | A1      |

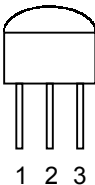
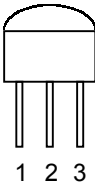
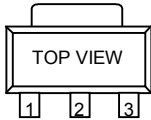
## Features

- Low Dropout, Maximum 1.3V at 300mA
- Fast Transient Response
- $\pm 2\%$  Total Output Regulation
- 0.4% Line Regulation
- 0.4% Load Regulation
- SOT-89 and TO-92 Packages

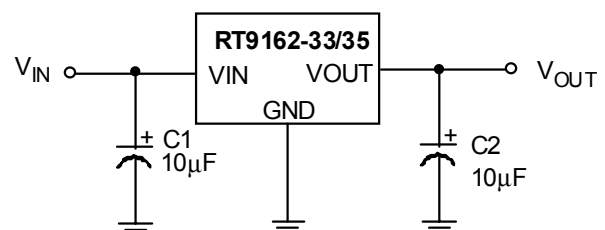
## Applications

- 5V to 3.3V Linear Regulator
- Low Voltage Microcontroller, DSF, ... etc. Power Supply
- Linear Regulator for LAN Card and CD-ROM

## Pin Configurations

| Part Number                                     | Pin Configurations                                                                                                                                                              |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RT9162-33CZL<br>RT9162-35CZL<br>(Plastic TO-92) |  <ol style="list-style-type: none"> <li>1. VIN</li> <li>2. GND</li> <li>3. VOUT</li> </ol>  |
| RT9162-33CZT<br>RT9162-35CZT<br>(Plastic TO-92) |  <ol style="list-style-type: none"> <li>1. GND</li> <li>2. VIN</li> <li>3. VOUT</li> </ol> |
| RT9162-33CX<br>RT9162-35CX<br>(Plastic SOT-89)  |  <ol style="list-style-type: none"> <li>1. VOUT</li> <li>2. GND</li> <li>3. VIN</li> </ol> |

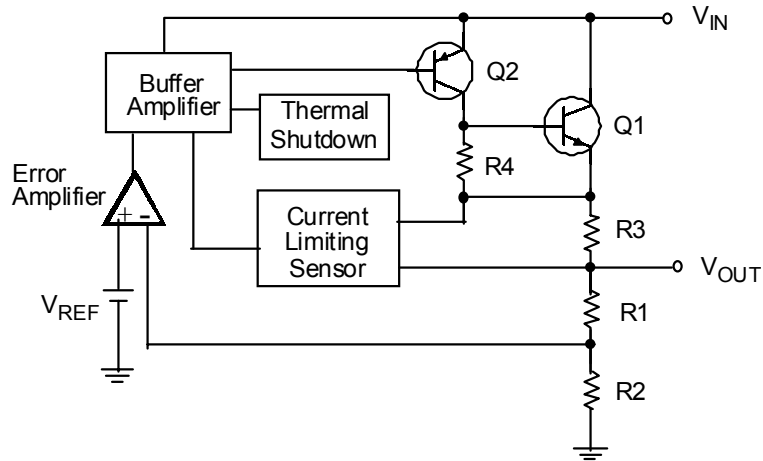
## Typical Application Circuit



## Pin Description

| Pin Name | Pin Function             |
|----------|--------------------------|
| VOUT     | Output Pin               |
| GND      | Power Ground Pin         |
| VIN      | Positive Power Input Pin |

## Function Block Diagram



## Absolute Maximum Ratings

- Input Voltage  $V_{IN}$  ..... 15V
- Power Dissipation  
TO-92 ..... 0.6W  
SOT-89 ..... 0.5W
- Operating Junction Temperature Range .....  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Storage Temperature Range .....  $-50^{\circ}\text{C}$  to  $150^{\circ}\text{C}$

## Electrical Characteristics

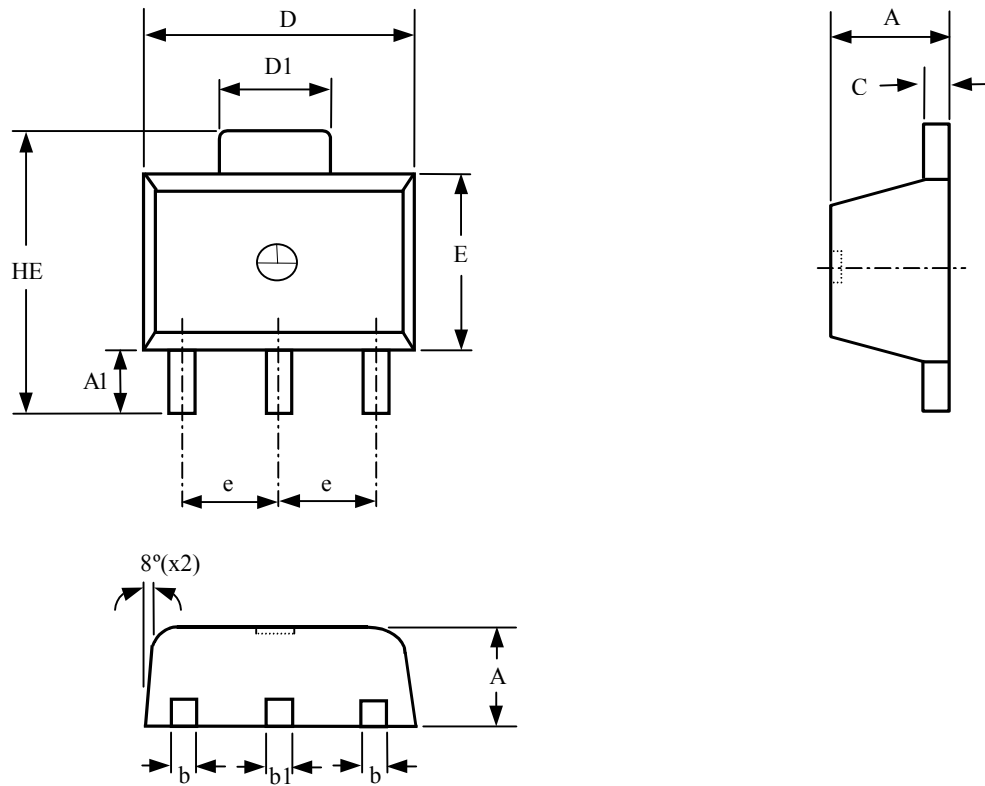
( $V_{IN}=5.0\text{V}$ ,  $T_A=25^{\circ}\text{C}$ , unless otherwise specified )

| Parameter                       |           | Symbol | Test Conditions                 | Min   | Typ   | Max   | Units                 |
|---------------------------------|-----------|--------|---------------------------------|-------|-------|-------|-----------------------|
| Output Voltage <sup>(1)</sup>   | RT9162-33 |        |                                 | 3.235 | 3.300 | 3.365 | V                     |
|                                 | RT9162-35 |        |                                 | 3.430 | 3.500 | 3.570 |                       |
| Line Regulation <sup>(1)</sup>  |           |        | $V_{IN} = 5\text{V}-15\text{V}$ | --    | 0.1   | 0.4   | %                     |
| Load Regulation <sup>(1)</sup>  |           |        | $I_L = 0 - 300\text{mA}$        | --    | 0.2   | 0.4   | %                     |
| Dropout Voltage <sup>(2)</sup>  |           |        | $\Delta V_{OUT} = 1\%$          | --    | 1.2   | 1.3   | V                     |
| Current Limit                   |           |        | --                              | 400   | --    | --    | mA                    |
| Quiescent Current               |           |        | --                              | --    | 4.5   | 8     | mA                    |
| Temperature Coefficient         |           |        | --                              | --    | 0.005 | --    | $\%/^{\circ}\text{C}$ |
| Temperature Stability           |           |        | --                              | --    | 0.5   | --    | %                     |
| RMS Output Noise <sup>(3)</sup> |           |        | --                              | --    | 0.003 | --    | $\%/V_{OUT}$          |

Notes:

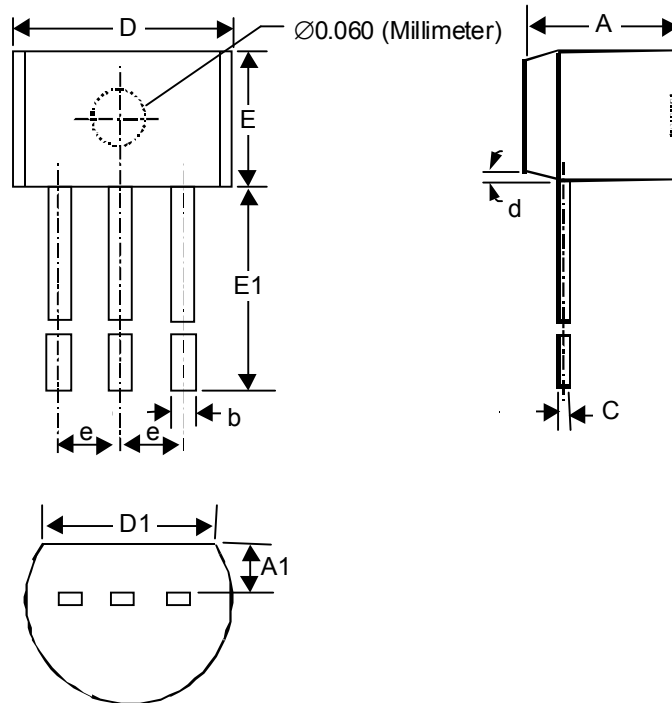
- (1) Low duty cycle pulse testing with Kelvin connections required.
- (2) Dropout voltage is defined as the input to output differential at which the output voltage drops 1% below the value measured with a 2V differential.
- (3) Bandwidth of 10 Hz to 10 kHz.

## Package Information



| Symbols | Dimensions In Millimeters |      |      | Dimensions In Inches |       |       |
|---------|---------------------------|------|------|----------------------|-------|-------|
|         | Min                       | Typ  | Max  | Min                  | Typ   | Max   |
| A       | 1.40                      | 1.50 | 1.60 | 0.055                | 0.059 | 0.063 |
| A1      | 0.90                      | 1.00 | 1.10 | 0.035                | 0.039 | 0.043 |
| b       | 0.36                      | 0.42 | 0.48 | 0.014                | 0.016 | 0.018 |
| b1      | 0.41                      | 0.42 | 0.53 | 0.016                | 0.018 | 0.020 |
| C       | 0.38                      | 0.40 | 0.43 | 0.014                | 0.015 | 0.017 |
| D       | 4.20                      | 4.50 | 4.60 | 0.173                | 0.177 | 0.181 |
| D1      | 1.40                      | 1.60 | 1.75 | 0.055                | 0.062 | 0.069 |
| HE      | --                        | --   | 4.25 | --                   | --    | 0.167 |
| E       | 2.40                      | 2.50 | 2.60 | 0.094                | 0.098 | 0.102 |
| e       | 1.45                      | 1.50 | 1.55 | 0.057                | 0.059 | 0.061 |

### 3-Lead SOT-89 Surface Mount



| Symbols | Dimensions In Millimeters |      |      | Dimensions In Inches |       |       |
|---------|---------------------------|------|------|----------------------|-------|-------|
|         | Min                       | Typ  | Max  | Min                  | Typ   | Max   |
| A       | 3.48                      | 3.56 | 3.61 | 0.137                | 0.140 | 0.142 |
| A1      | --                        | 1.30 | --   | --                   | 0.051 | --    |
| C       | --                        | 0.38 | --   | --                   | 0.015 | --    |
| D       | 4.19                      | 4.45 | 4.70 | 0.165                | 0.175 | 0.185 |
| D1      | --                        | 4.29 | --   | --                   | 0.169 | --    |
| E       | 3.99                      | 4.24 | 4.50 | 0.157                | 0.167 | 0.177 |
| E1      | 14.00                     | --   | --   | 0.551                | --    | --    |
| b       | --                        | 0.38 | --   | --                   | 0.015 | --    |
| e       | --                        | 1.27 | --   | --                   | 0.050 | --    |
| δ       | --                        | 5°   | --   | --                   | 5°    | --    |

### 3-Lead TO-92 Package

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