

■ FEATURES

- Low Dropout Voltage of 470mV at 300mA Output Current (3.0V Output Version).
- Guaranteed 300mA Output Current.
- Low Ground Current at 55 μ A.
- 2% Accuracy Output Voltage of 1.8V/ 2.0V /2.5V /2.7V/ 3.0V/ 3.3V/ 3.5V/ 3.7V/ 3.8V/ 5.0V/ 5.2V.
- Only needs 1 μ F Output Capacitor for Stability.
- Current and Thermal Limiting.

■ APPLICATIONS

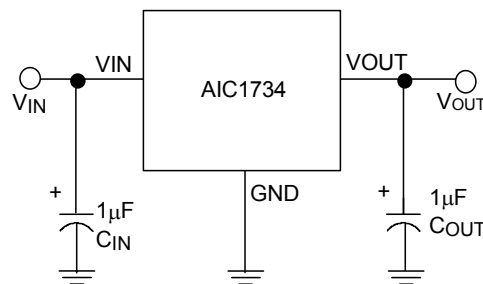
- CD-ROM Drivers.
- LAN Cards.
- Microprocessor.
- RAM Module.
- Wireless Communication Systems.
- Battery Powered Systems.

■ DESCRIPTION

The AIC1734 is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1734 include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 55 μ A, for loading ranging from zero to maximum. Dropout voltage at 300mA output current is exceptionally low. Built-in output current limiting and thermal limiting provide maximal protection to the AIC1734 against fault conditions.

The AIC1734 is available in popular SOT-23, SOT-89 and TO-92 packages.

■ TYPICAL APPLICATION CIRCUIT



Low Dropout Linear Regulator

ORDERING INFORMATION

AIC1734-XXXXX XX

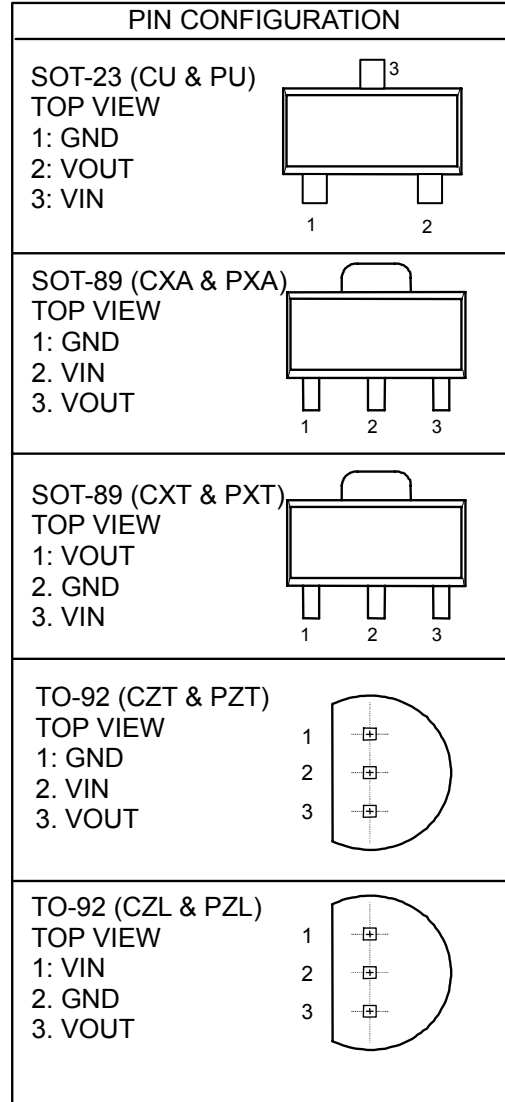
PACKING TYPE
TR: TAPE & REEL
BG: BAG

PACKAGE TYPE
U: SOT-23
XA: SOT-89
XT: SOT-89
ZT: TO-92
ZL: TO-92

C: Commercial
P: Lead Free Commercial

OUTPUT VOLTAGE
18: 1.8V
20: 2.0V
25: 2.5V
27: 2.7V
30: 3.0V
33: 3.3V
35: 3.5V
37: 3.7V
38: 3.8V
50: 5.0V
52: 5.2V

Example: AIC1734-18CXATR
→ 1.8V Version, in SOT-89 Package & Tape & Reel Packing Type
AIC1734-18PXATR
→ 1.8V Version, in SOT-89 Lead Free Package & Tape & Reel Packing Type



SOT-23 MARKING

| Part No. | CU | PU | Part No. | CU | PU |
|--------------|------|-------|--------------|------|-------|
| AIC1734-18XU | CD18 | CD18P | AIC1734-35XU | CD35 | CD35P |
| AIC1734-20XU | CD20 | CD20P | AIC1734-37XU | CD37 | CD37P |
| AIC1734-25XU | CD25 | CD25P | AIC1734-38XU | CD38 | CD38P |
| AIC1734-27XU | CD27 | CD27P | AIC1734-50XU | CD50 | CD50P |
| AIC1734-30XU | CD30 | CD30P | AIC1734-52XU | CD52 | CD52P |
| AIC1734-33XU | CD33 | CD33P | | | |

● **SOT-89 MARKING**

| Part No. | CXA | PXA | Part No. | CXT | PXT |
|---------------|------|-------|---------------|------|-------|
| AIC1734-18XXA | CA18 | CA18P | AIC1734-18XXT | CB18 | CB18P |
| AIC1734-20XXA | CA20 | CA20P | AIC1734-20XXT | CB20 | CB20P |
| AIC1734-25XXA | CA25 | CA25P | AIC1734-25XXT | CB25 | CB25P |
| AIC1734-27XXA | CA27 | CA27P | AIC1734-27XXT | CB27 | CB27P |
| AIC1734-30XXA | CA30 | CA30P | AIC1734-30XXT | CB30 | CB30P |
| AIC1734-33XXA | CA33 | CA33P | AIC1734-33XXT | CB33 | CB33P |
| AIC1734-35XXA | CA35 | CA35P | AIC1734-35XXT | CB35 | CB35P |
| AIC1734-37XXA | CA37 | CA37P | AIC1734-37XXT | CB37 | CB37P |
| AIC1734-38XXA | CA38 | CA38P | AIC1734-38XXT | CB38 | CB38P |
| AIC1734-50XXA | CA50 | CA50P | AIC1734-50XXT | CB50 | CB50P |
| AIC1734-52XXA | CA52 | CA52P | AIC1734-52XXT | CB52 | CB52P |

■ **ABSOLUTE MAXIMUM RATINGS**

Input Supply Voltage.....-0.3 ~12V
 Operating Temperature Range.....-40°C~ 85°C
 Storage Temperature Range-65°C~150°C
 Maximum Junction Temperature.....125°C
 Lead Temperature (Soldering) 10 sec.....260°C

Thermal Resistance Junction to Ambient SOT-89 Package.....160°C/W
 (Assume no Ambient Airflow, no Heatsink) TO-92 Package.....150°C/W
 SOT-23 Package.....180°C/W

Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

■ **TEST CIRCUIT**

Refer to the TYPICAL APPLICATION CIRCUIT

■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, $C_{IN}=1\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, unless otherwise specified.)

| PARAMETER | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT | |
|---|---|---|-------|-------|-------------------------|---------------|
| Output Voltage | No Load | | | | | |
| | AIC1734-52 | $V_{IN}=5.5\sim 12\text{V}$ | 5.100 | 5.200 | 5.300 | V |
| | AIC1734-50 | $V_{IN}=5.5\sim 12\text{V}$ | 4.900 | 5.000 | 5.100 | |
| | AIC1734-38 | $V_{IN}=4.1\sim 12\text{V}$ | 3.725 | 3.800 | 3.875 | |
| | AIC1734-37 | $V_{IN}=4.0\sim 12\text{V}$ | 3.625 | 3.700 | 3.775 | |
| | AIC1734-35 | $V_{IN}=4.0\sim 12\text{V}$ | 3.430 | 3.500 | 3.570 | |
| | AIC1734-33 | $V_{IN}=4.0\sim 12\text{V}$ | 3.235 | 3.300 | 3.365 | |
| | AIC1734-30 | $V_{IN}=4.0\sim 12\text{V}$ | 2.940 | 3.000 | 3.060 | |
| | AIC1734-27 | $V_{IN}=4.0\sim 12\text{V}$ | 2.646 | 2.700 | 2.754 | |
| | AIC1734-25 | $V_{IN}=4.0\sim 12\text{V}$ | 2.450 | 2.500 | 2.550 | |
| | AIC1734-20 | $V_{IN}=4.0\sim 12\text{V}$ | 1.960 | 2.000 | 2.040 | |
| AIC1734-18 | $V_{IN}=4.0\sim 12\text{V}$ | 1.764 | 1.800 | 1.836 | | |
| Output Voltage Temperature Coefficiency | (Note 1) | | 50 | | PPM/ $^{\circ}\text{C}$ | |
| Line Regulation | $I_L=1\text{mA}$, $1.4\text{V}\leq V_{OUT}\leq 3.2\text{V}$ | $V_{IN}=4\text{V}\sim 12\text{V}$ | | 3 | 10 | mV |
| | $3.3\text{V}\leq V_{OUT}\leq 5.2\text{V}$ | $V_{IN}=5.5\text{V}\sim 12\text{V}$ | | 3 | 10 | |
| Load Regulation (Note 2) | $I_L=0.1\sim 300\text{mA}$, $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$ | $V_{IN}=5\text{V}$ | | 7 | 20 | mV |
| | $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ | $V_{IN}=7\text{V}$ | | 15 | 40 | |
| Current Limit (Note 3) | $V_{IN}=7\text{V}$, $V_{OUT}=0\text{V}$ | | 300 | | mA | |
| Dropout Voltage (Note 4) | $I_L=300\text{mA}$ | $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ | | 400 | | mV |
| | | $3.0\text{V}\leq V_{OUT}\leq 3.9\text{V}$ | | 470 | | |
| | | $2.5\text{V}\leq V_{OUT}\leq 2.9\text{V}$ | | 570 | | |
| | | $2.0\text{V}\leq V_{OUT}\leq 2.4\text{V}$ | | 800 | | |
| | | $1.4\text{V}\leq V_{OUT}\leq 1.9\text{V}$ | | 1260 | | |
| Ground Current | $I_O=0.1\text{mA}\sim I_{MAX}$, $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$ | $V_{IN}=5\sim 12\text{V}$ | | 55 | 80 | μA |
| | $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ | $V_{IN}=7\sim 12\text{V}$ | | 55 | 80 | |

Note 1: Guaranteed by design.

Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.

Note 3: Current limit is measured by pulsing a short time.

Note 4: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV.

Note5: Specifications are guaranteed by Statistical Quality Controls (SQC), with no production test proved, when operating temperature ranges from -40°C to 85°C .

TYPICAL PERFORMANCE CHARACTERISTICS

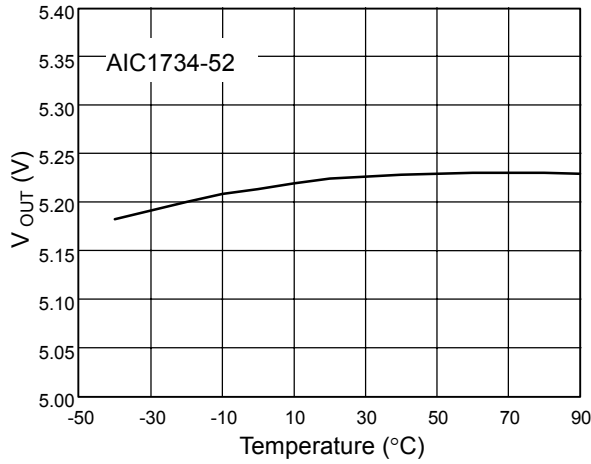


Fig. 1 V_{OUT} vs. Temperature

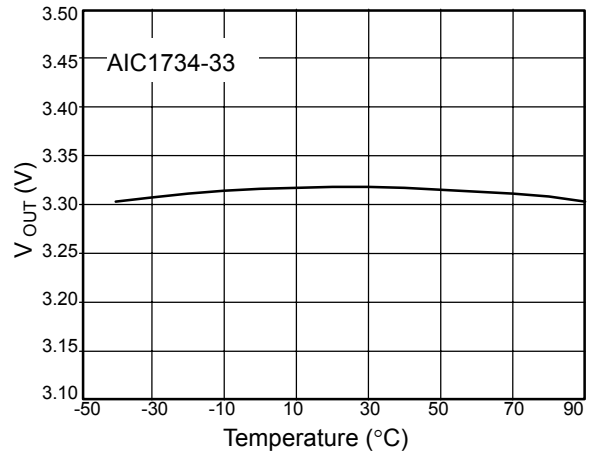


Fig. 2 V_{OUT} vs. Temperature

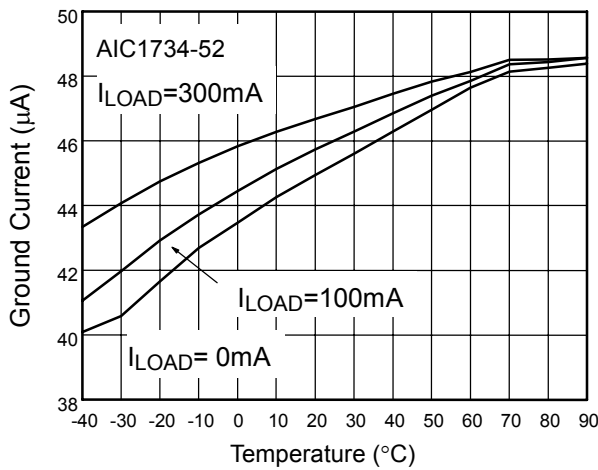


Fig. 3 Ground Current vs. Temperature

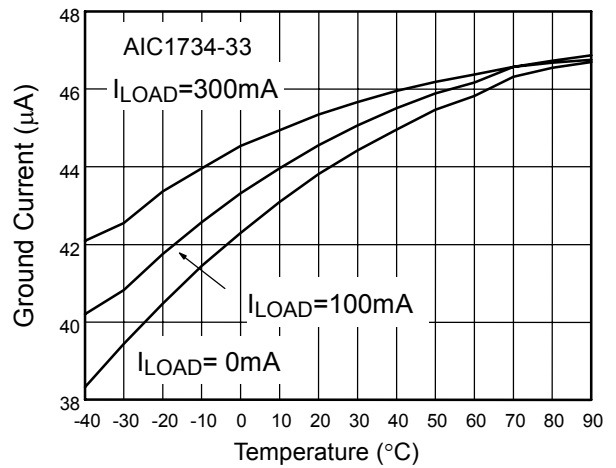


Fig. 4 Ground Current vs. Temperature

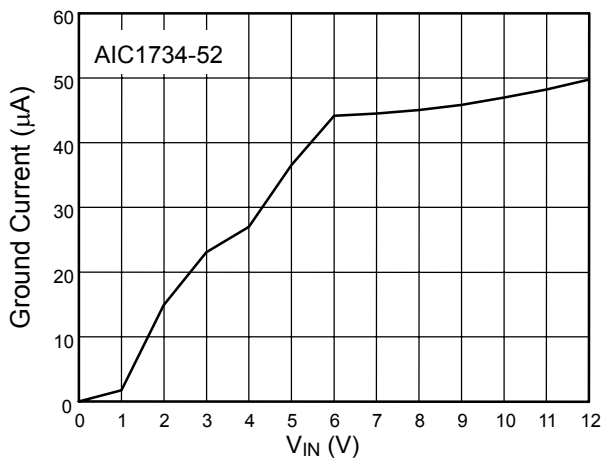


Fig. 5 Ground Current vs. V_{IN}

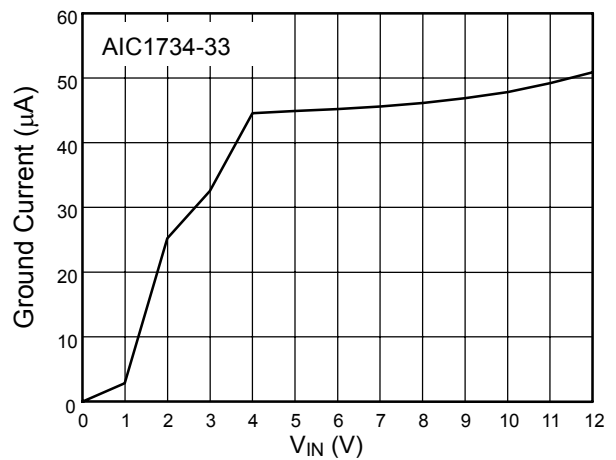


Fig. 6 Ground Current vs. V_{IN}

■ TYPICAL PERFORMANCE CHARACTERISTIC (Continued)

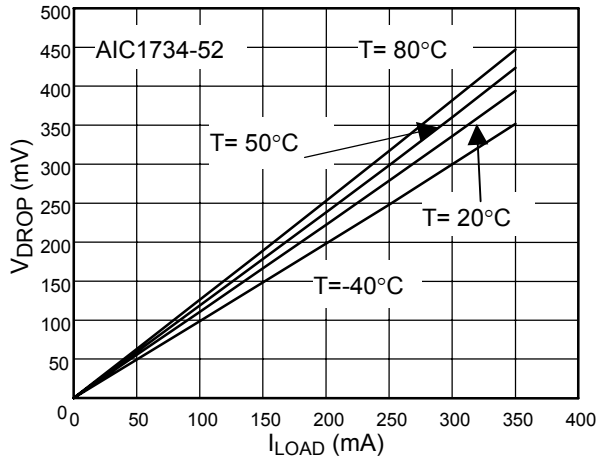


Fig. 7 V_{DROP} vs. I_{LOAD}

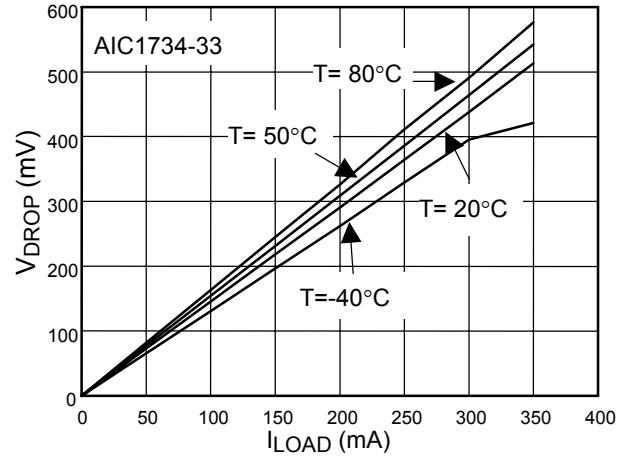


Fig. 8 V_{DROP} vs. I_{LOAD}

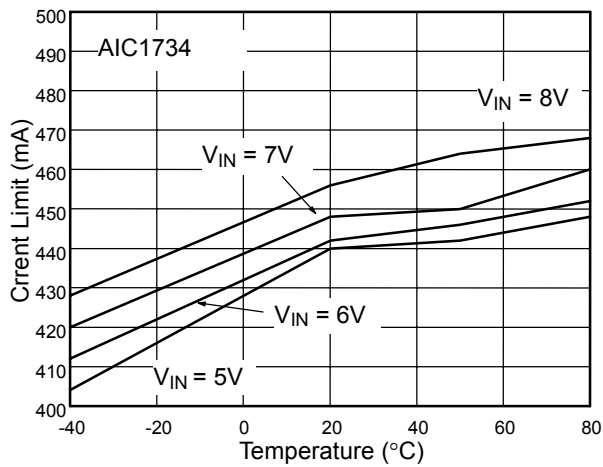
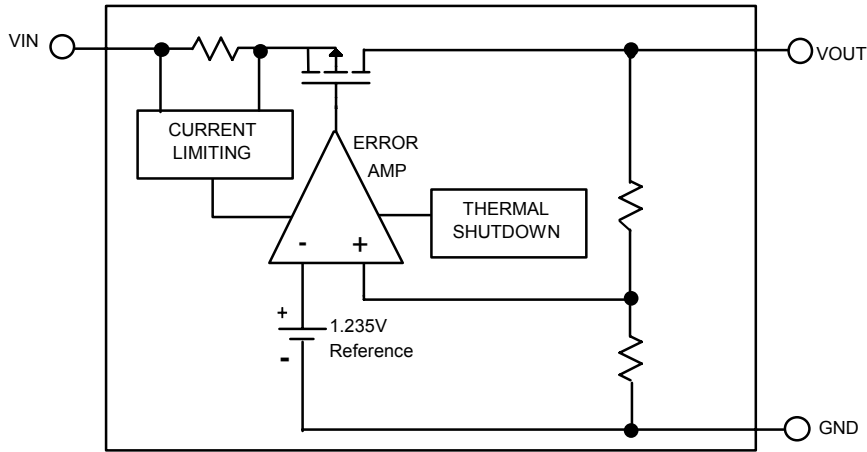


Fig. 9 Current Limit vs. Temperature

■ BLOCK DIAGRAM



■ PIN DESCRIPTIONS

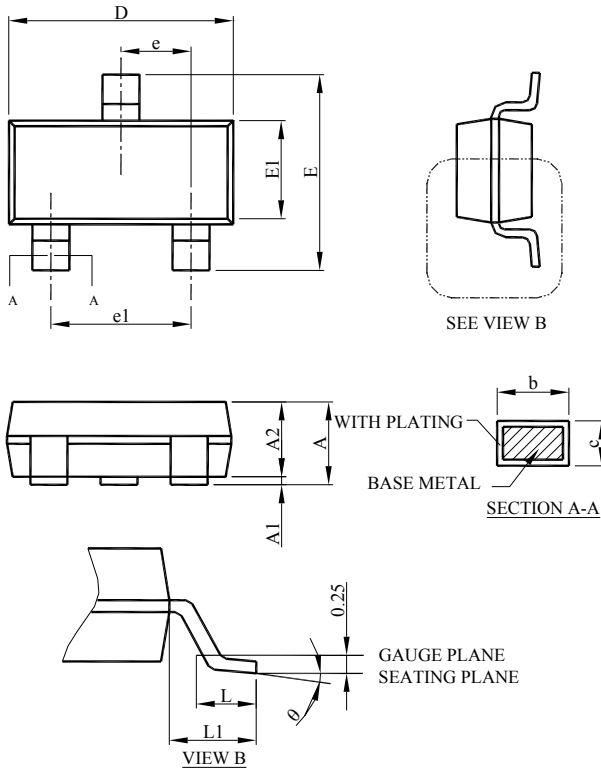
VOUT PIN - Output pin.

GND PIN - Power GND.

VIN PIN - Power Supply Input.

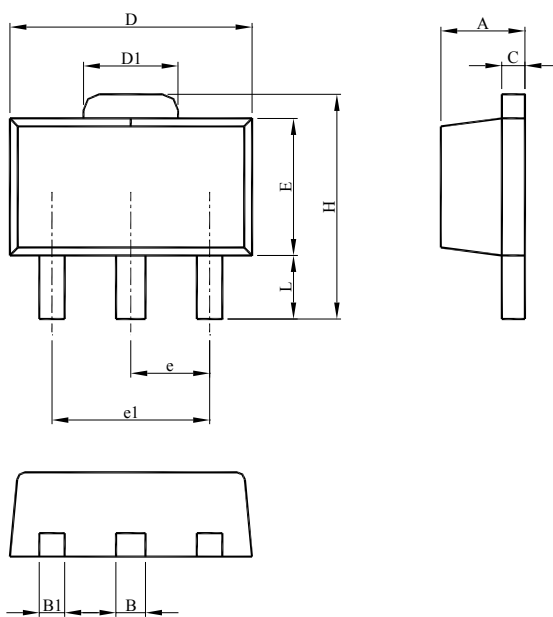
■ PHYSICAL DIMENSIONS (unit: mm)

● SOT-23



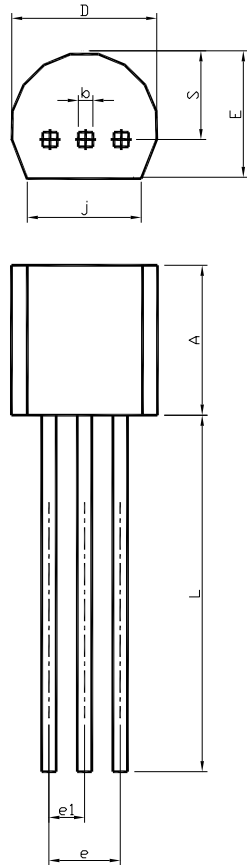
| SYMBOL | SOT-23 | |
|----------|-------------|------|
| | MILLIMETERS | |
| | MIN. | MAX. |
| A | 0.95 | 1.45 |
| A1 | 0.05 | 0.15 |
| A2 | 0.90 | 1.30 |
| b | 0.30 | 0.50 |
| c | 0.08 | 0.22 |
| D | 2.80 | 3.00 |
| E | 2.60 | 3.00 |
| E1 | 1.50 | 1.70 |
| e | 0.95 BSC | |
| e1 | 1.90 BSC | |
| L | 0.30 | 0.60 |
| L1 | 0.60 REF | |
| θ | 0° | 8° |

● SOT-89



| SYMBOL | SOT-89 | |
|--------|-------------|------|
| | MILLIMETERS | |
| | MIN. | MAX. |
| A | 1.40 | 1.60 |
| B | 0.44 | 0.56 |
| B1 | 0.36 | 0.48 |
| C | 0.35 | 0.44 |
| D | 4.40 | 4.60 |
| D1 | 1.50 | 1.83 |
| E | 2.29 | 2.60 |
| e | 1.50 BSC | |
| e1 | 3.00 BSC | |
| H | 3.94 | 4.25 |
| L | 0.89 | 1.20 |

● TO-92



| SYMBOL | TO-92 | |
|--------|-------------|------|
| | MILLIMETERS | |
| | MIN. | MAX. |
| A | 4.32 | 5.33 |
| b | 0.36 | 0.47 |
| D | 4.45 | 5.20 |
| E | 3.18 | 4.19 |
| e | 2.42 | 2.66 |
| e1 | 1.15 | 1.39 |
| j | 3.43 | |
| L | 12.70 | |
| S | 2.03 | 2.66 |

Note:

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