## DESCRIPTION

The A6150 series of fixed output low dropout linear regulators are designed for portable battery powered applications which require low noise operation, fast enable response time, and low dropout. The device achieves its low noise performance without the need of an external noise bypass capacitor.

The A6150 can provide output value in the range of 1.2V~5.0V every 0.1V increasing. The A6150 also can be customized on request.

The A6150 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module, The A6150 has excellent load and line transient response and good temperature characteristics, when can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

The A6150 is available in SOT-25 and SC70-5 package

## ORDERING INFORMATION

| Package Type | Part Number | |
|---|---|---|
| SOT-25 | E5 | A6150E5R-XXZ |
| | | A6150E5VR-XXZ |
| SC70-5 | C5 | A6150C5R-XX |
| | | A6150C5VR-XX |
| Note | XX: Output Voltage<br>25=2.5V, 33=3.3V<br>Z: Output Type A & B<br>See Pin description<br>V: Green Package<br>R: Tape & Reel | |
| AiT provides all Pb free products<br>Suffix " V " means Green Package | | |

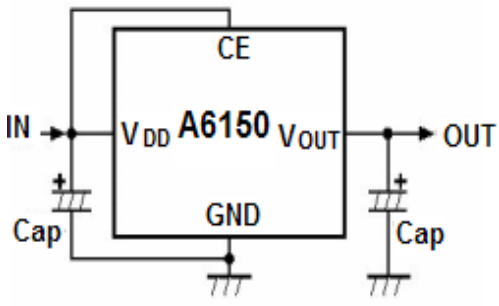
## FEATURES

- Low Power Consumption: 25uA (Typ.)
- Low Output Noise (27uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage: 0.2V@100mA(Typ.)
- High Ripple Rejection: 65dB@1kHz(Typ.)
- Low Temperature Coefficient:±100ppm/°C
- Excellent Line Regulation: 0.05%/V
- Built-in chip Enable Circuit
- Output Voltage Range: 1.2V~5.0V
- Highly Accurate: ±2% (±1% customized)
- Output Current Limit
- Available in SOT-25 and SC70-5 package

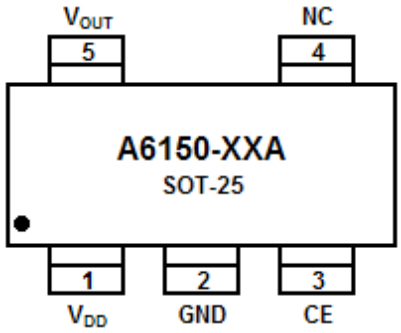
## APPLICATION

- Power Source for Cellular Phones and various kind of PCs
- Battery Powered Equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

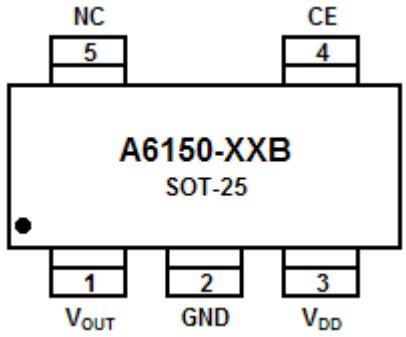
**Typical Application**



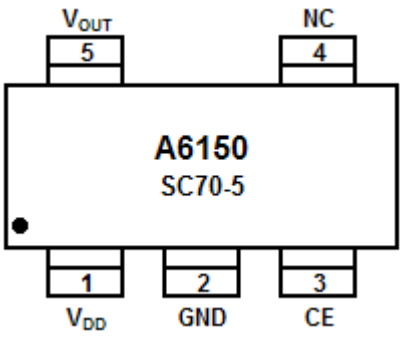
## PIN DESCRIPTION



Top View



Top View



Top View

| Pin Number | | | Symbol | Function |
|---|---|---|---|---|
| SOT-25A | SOT-25B | SC-70-5 | | |
| 5 | 1 | 5 | $V_{OUT}$ | Output Pin |
| 1 | 3 | 1 | $V_{DD}$ | Input Pin |
| 2 | 2 | 2 | GND | Ground Pin |
| 3 | 4 | 3 | CE | Enable Pin |
| 4 | 5 | 4 | NC | No Connection |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Max Input Voltage | 8V |
| Junction Temperature($T_J$) | 125°C |
| Output Current | 200mA |
| Power Dissipation (SOT-25) | 200mW |
| Power Dissipation (SC-70-5) | 200mW |
| Storage Temperature (Ts) | -45°C~150°C |
| Lead Temperature and Time | 260°C, 10S |

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ELECTRICAL CHARACTERISTICS

Test Conditions: $C_{IN}$=1uF, $C_{OUT}$=2.2uF, $T_A$=25°C, unless otherwise noted.

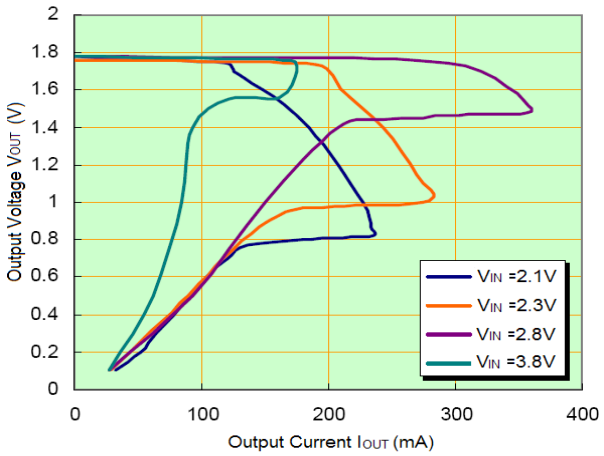
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{IN}$ | Input Voltage | | 1.8 | | 8 | V |
| $V_{OUT}$ | Output Voltage | Vin=Set Vout+1V<br>1mA≦Iout≦30mA | $V_{OUT}$ x0.98 | | $V_{OUT}$ x1.02 | V |
| $I_{OUT}$ (Max) | Max Output Current | $V_{IN}$ - $V_{OUT}$ =1V | 150 | | | mA |
| Dropout Voltage | Input-Output Voltage Differential | Refer to the Electrical Characteristics by output voltage | | | | |
| $\Delta V_{OUT}$<br>$\Delta V_{IN} \times V_{OUT}$ | Line Regulation | $I_{OUT}$=40mA<br>1.6V≦Vin≦8V | | 0.05 | 0.2 | %/V |
| $\Delta V_{OUT} / \Delta I_{OUT}$ | Load Regulation | Vin=Set Vout+1V<br>1mA≦Iout≦80mA | | 12 | 40 | mV |
| Iss | Supply Current | Vin=Set Vout+1V | | 25 | 50 | uA |
| $I_{STANDBY}$ | Supply Current (Standby) | Vin=Set Vout+1V,<br>$V_{CE}$=GND | | 0.1 | 1.0 | uA |
| $\Delta V_{OUT}$<br>$\Delta T \cdot V_{OUT}$ | Output Voltage Temperature Coefficiency | $I_{OUT}$=30mA | | ±100 | | ppm/°C |
| PSRR | Ripple Rejection | F=1kHz,<br>Ripple=0.5Vp-p<br>Vin=Set Vout+1V | | 65 | | dB |
| $I_{LIM}$ | Short Current Limit | $V_{OUT}$ =0V | | 20 | | mA |
| Rpd | CE Pull down Resistance | | 2.0 | 5.0 | 10.0 | mΩ |
| $V_{CEH}$ | CE Input Voltage "H" | | 1.5 | | Vin | V |
| $V_{CEL}$ | CE Input Voltage "L" | | 0 | | 0.25 | V |
| EN | Output Noise | BW=10Hz~100kHz | | 27 | | $uV_{RMS}$ |

## ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

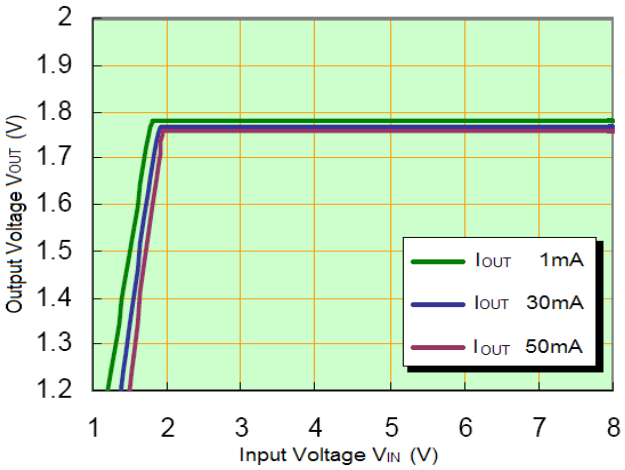
| Output Voltage $V_{OUT}$ (V) | Dropout Voltage, $V_{DIF}$ (V) | | |
|---|---|---|---|
| | Condition | Typ. | Max |
| $V_{OUT}$ =1.5V | $I_{OUT}$ =120mA | 0.38 | 0.70 |
| $V_{OUT}$ =1.6V | | 0.36 | 0.65 |
| $V_{OUT}$ =1.7V | | 0.34 | 0.60 |
| 1.8V≦Vout≦2.0 | | 0.32 | 0.55 |
| 2.1V≦Vout≦2.7 | | 0.28 | 0.60 |
| 2.8V≦Vout≦4.0 | | 0.22 | 0.35 |

## TYPICAL PERFORMANCE CHARACTERISTICS

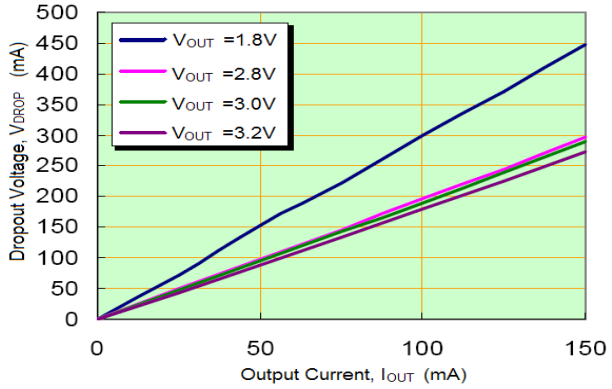
1. Output Voltage vs. Output Current
(with Output short protection)



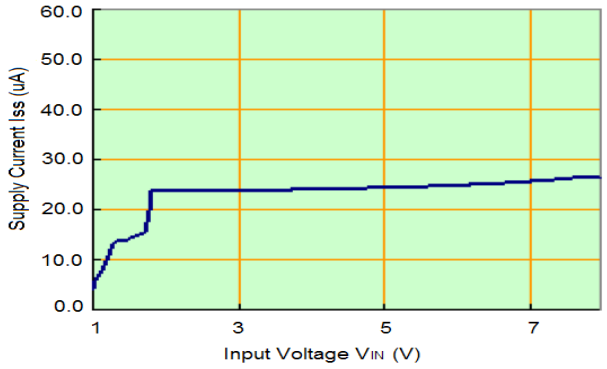

2. Output Voltage vs. Input Voltage



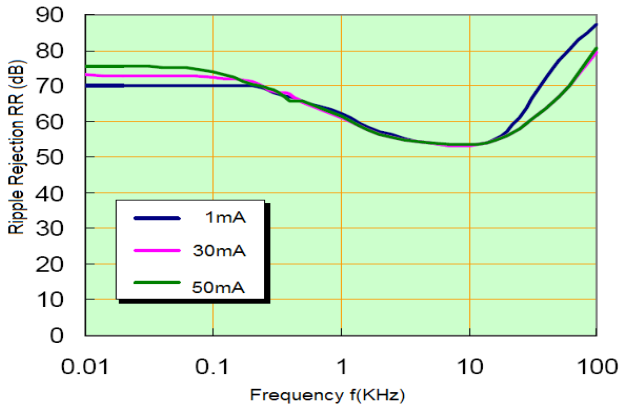

3. Dropout Voltage vs. Output Current



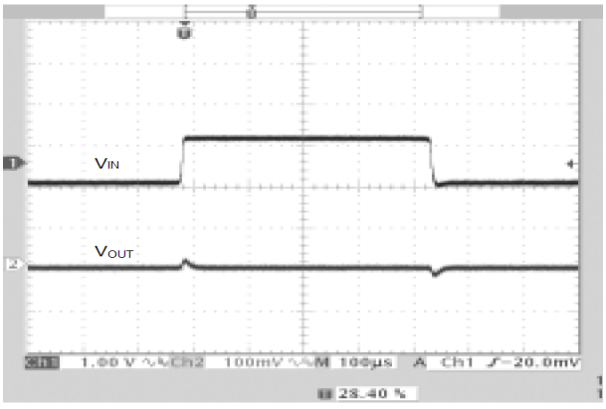

4. Supply Current vs. Input Voltage
Output: 1.8V



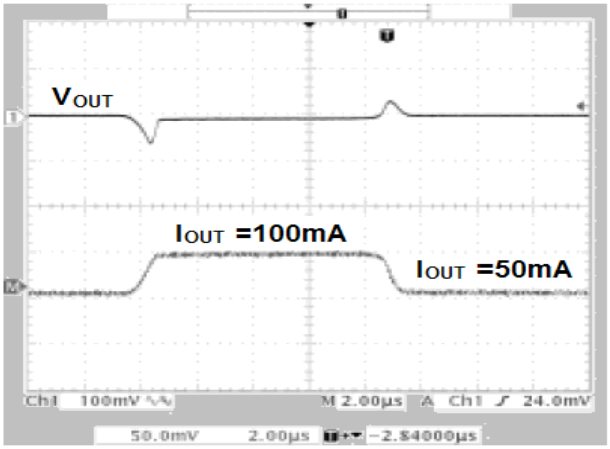

5. Ripple Rejection vs. Frequency



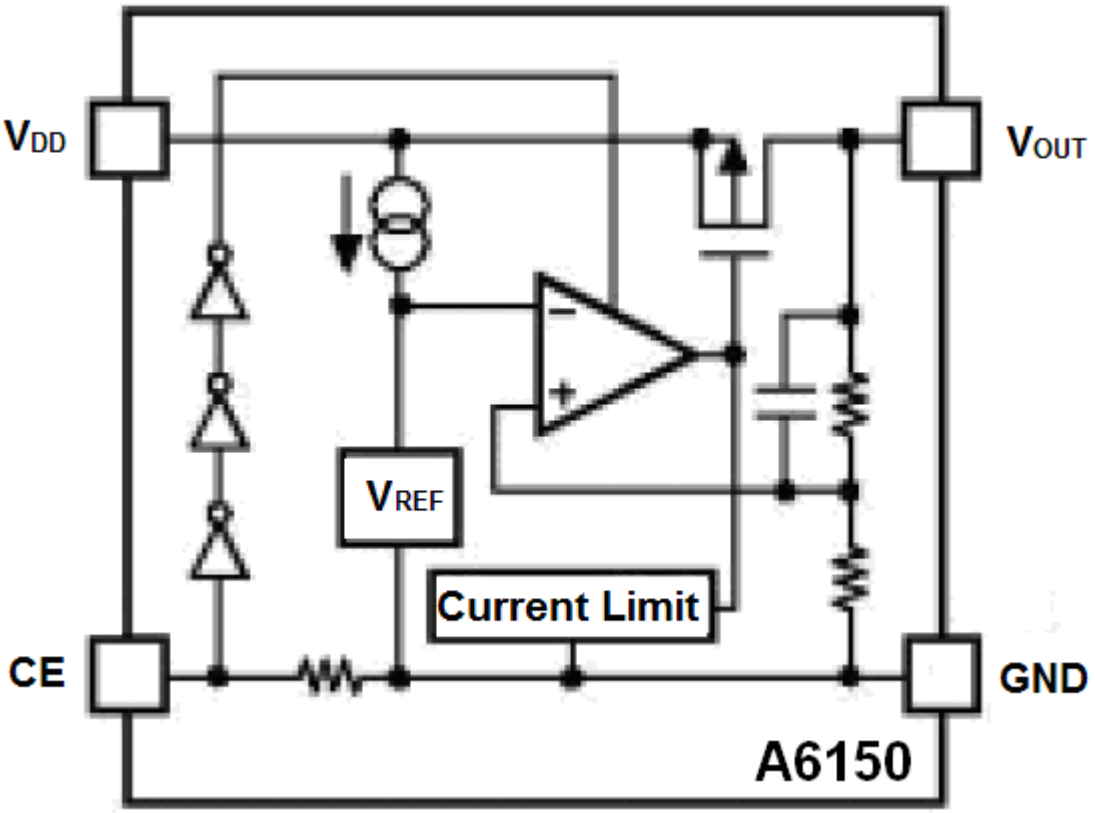

6. Line Transient Response



7. Load Transient Response



## BLOCK DIAGRAM

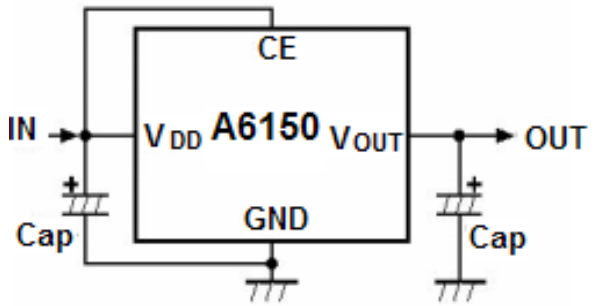


## DETAILED INFORMATION

A6150 series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

### Typical Circuit

A6150 typical circuit as follows:




### Input Capacitor ($C_{IN}$)

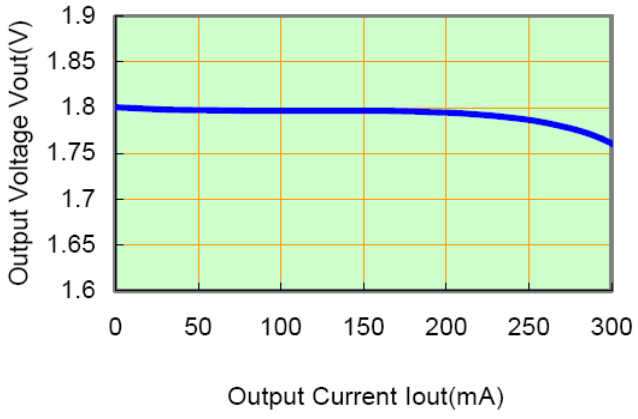
Input capacitor ($C_{IN}$=1uF) is recommended in all application circuit.

### Output Capacitor ($C_{OUT}$)

Output Capacitor ($C_{OUT}$ = 1uF / 2.2uF) is recommended in all application to assure the stability of circuit.

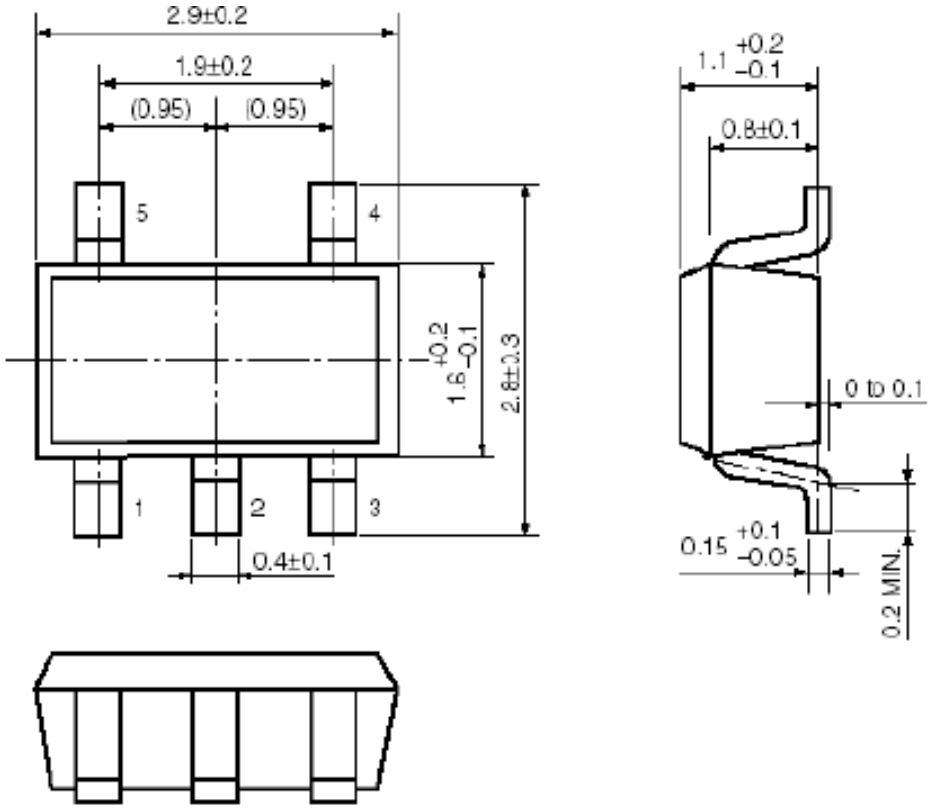
### Output Voltage vs. Output Current

Example: A6150-18 (1.8V output)

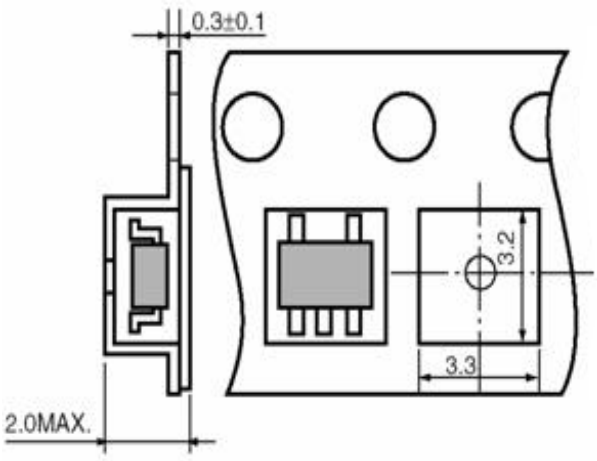


## PACKAGE INFORMATION

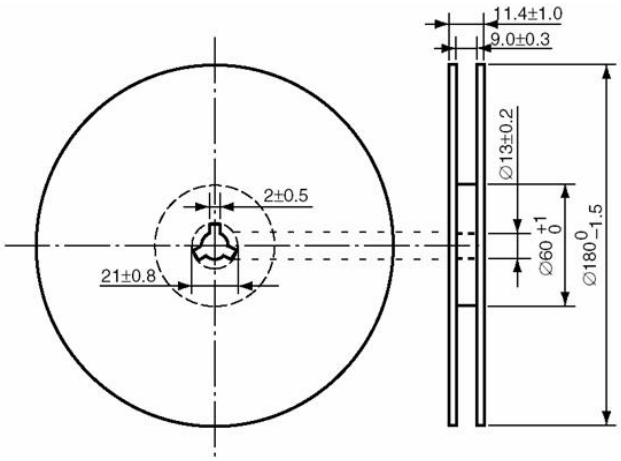
Dimension in SOT-25 (Unit: mm)



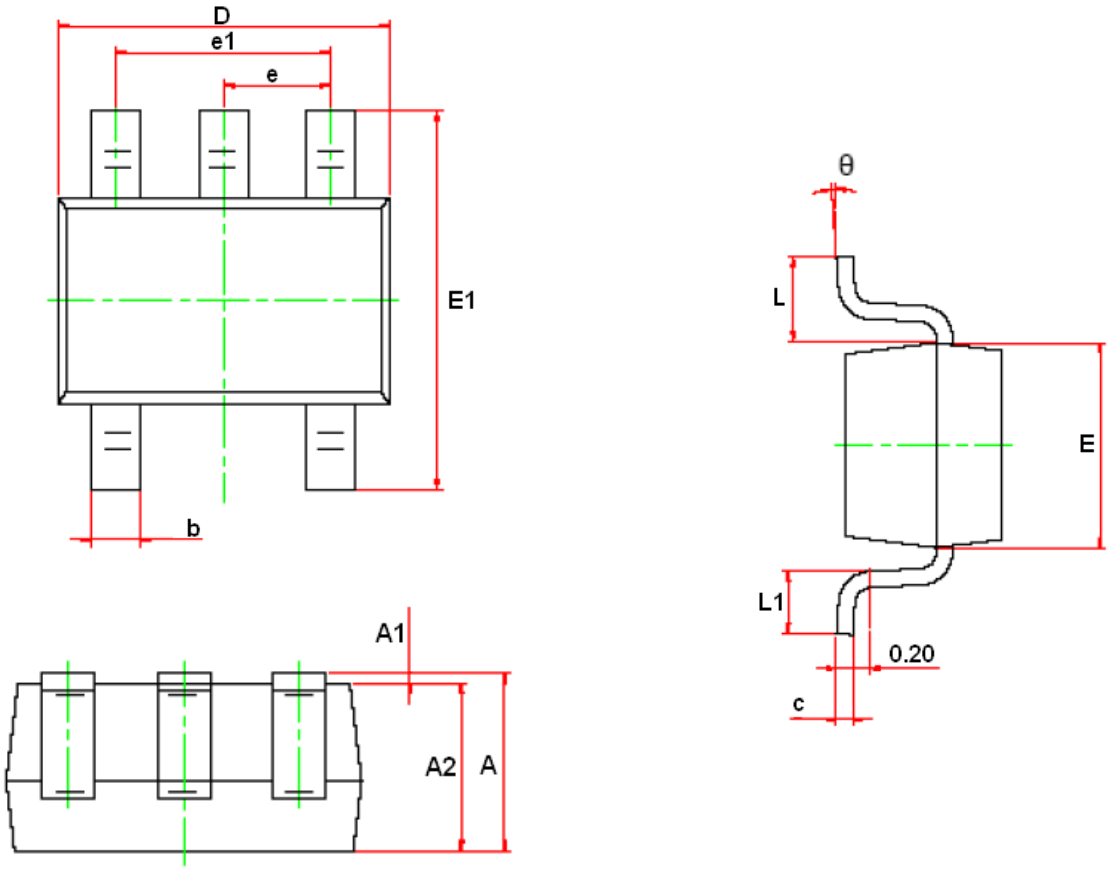

Tape Dimension




Reel Dimension



Dimension in SC70-5 (Unit: mm)




| Symbol | Dimensions in Millimeters | |
|---|---|---|
| | Min | Max |
| A | 0.900 | 1.100 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.000 |
| b | 0.150 | 0.350 |
| c | 0.080 | 0.150 |
| D | 2.000 | 2.200 |
| E | 1.150 | 1.350 |
| E1 | 2.150 | 2.450 |
| e | 0.065 TYP | |
| e1 | 1.200 | 1.400 |
| L | 0.525 REF | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |

# IMPORTANT NOTICE

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