



## 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  $\pm 2\%$ .

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 25=2.5V, 33=3.3V Z: Output Type A & B See Pin description V: Green Package R: Tape & Reel	
AiT provides all RoHS products Suffix "V" means Halogen free Package		

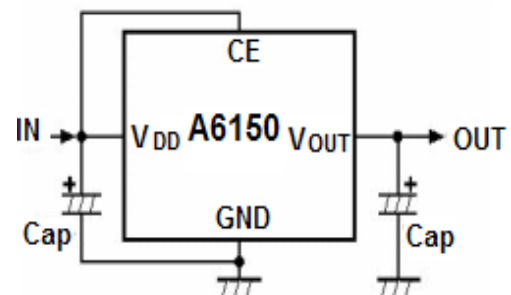
## FEATURES

- 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: $\pm 100$ ppm/ $^{\circ}$ C
- Excellent Line Regulation: 0.05%/V
- Built-in chip Enable Circuit
- Output Voltage Range: 1.2V~5.0V
- Highly Accurate:  $\pm 2\%$  ( $\pm 1\%$  customized)
- Output Current Limit
- Available in SOT-25 and SC70-5 package

## APPLICATION

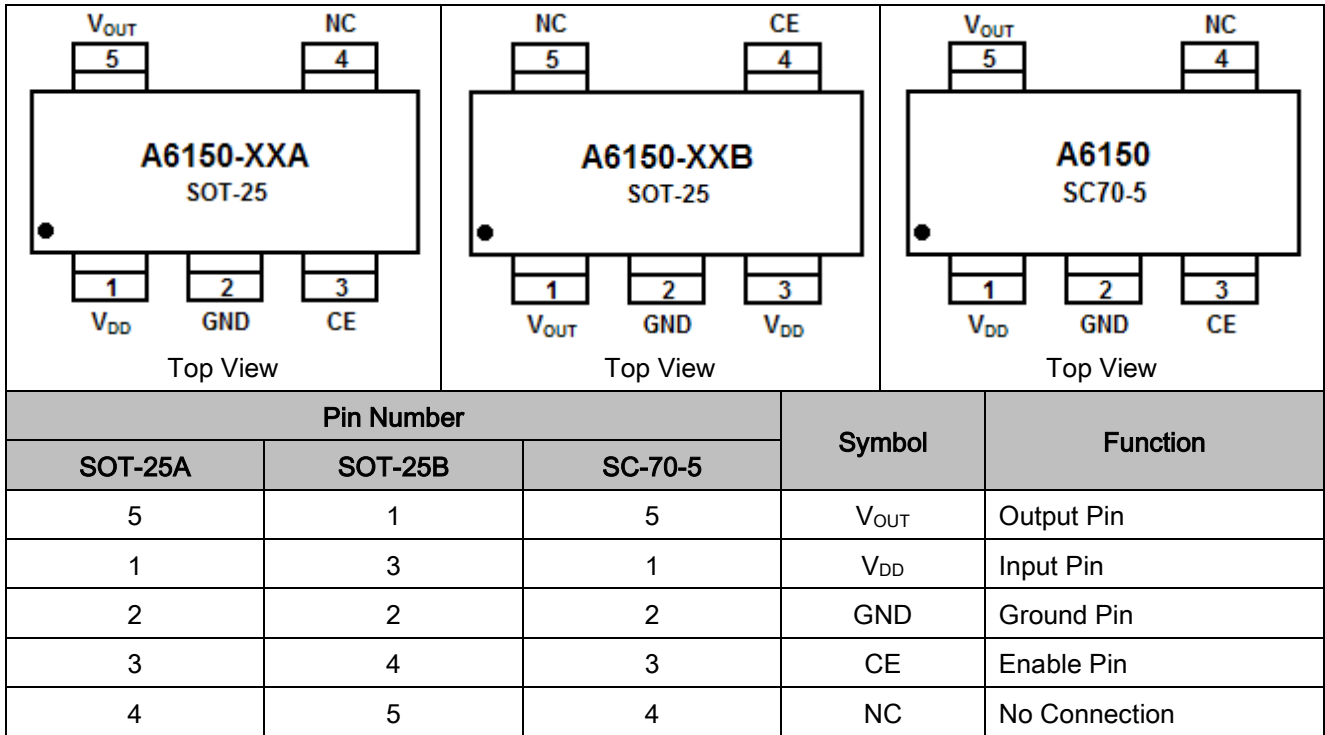
- Power Source for Cellular Phones and various kind of PCs
- Battery Powered Equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

Typical Application





**PIN DESCRIPTION**





## 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 ( $T_s$ )	-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 are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## THERMAL RESISTANCE

Package	$\theta_{JA}$	$\theta_{JC}$
SOT-25	250°C/W	130°C/W
SC70-5	333°C/W	170°C/W

NOTE: Thermal Resistance is specified with approximately 1 square of 1 oz copper.



## ELECTRICAL CHARACTERISTICS

Test Conditions:  $C_{IN}=1\mu F$ ,  $C_{OUT}=2.2\mu F$ ,  $T_A=25^\circ C$ , unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{IN}$	Input Voltage		1.8		8	V
$V_{OUT}$	Output Voltage	$V_{in} = \text{Set } V_{out} + 1V$ $1mA \leq I_{out} \leq 30mA$	$V_{OUT}$ $\times 0.98$		$V_{OUT}$ $\times 1.02$	V
$I_{OUT}(\text{Max})$	Max Output Current	$V_{IN} - V_{OUT} = 1V$	150			mA
Dropout Voltage	Input-Output Voltage Differential	Refer to the Electrical Characteristics by output voltage				
$\Delta V_{OUT}$	Line Regulation	$I_{OUT}=40mA$ $1.6V \leq V_{in} \leq 8V$		0.05	0.2	%/V
$\Delta V_{IN} \times V_{OUT}$						
$\Delta V_{OUT} / \Delta I_{OUT}$	Load Regulation	$V_{in} = \text{Set } V_{out} + 1V$ $1mA \leq I_{out} \leq 80mA$		12	40	mV
$I_{SS}$	Supply Current	$V_{in} = \text{Set } V_{out} + 1V$		25	50	$\mu A$
$I_{STANDBY}$	Supply Current (Standby)	$V_{in} = \text{Set } V_{out} + 1V$ , $V_{CE} = GND$		0.1	1.0	$\mu A$
$\Delta V_{OUT}$	Output Voltage Temperature Coefficiency	$I_{OUT}=30mA$		$\pm 100$		ppm/ $^\circ C$
$\Delta T - V_{OUT}$						
PSRR	Ripple Rejection	$F=1kHz$ , Ripple=0.5Vp-p $V_{in} = \text{Set } V_{out} + 1V$		65		dB
$I_{LIM}$	Short Current Limit	$V_{OUT} = 0V$		20		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	m $\Omega$
$V_{CEH}$	CE Input Voltage "H"		1.5		$V_{in}$	V
$V_{CEL}$	CE Input Voltage "L"		0		0.25	V
EN	Output Noise	BW=10Hz~100kHz		27		$\mu V_{RMS}$

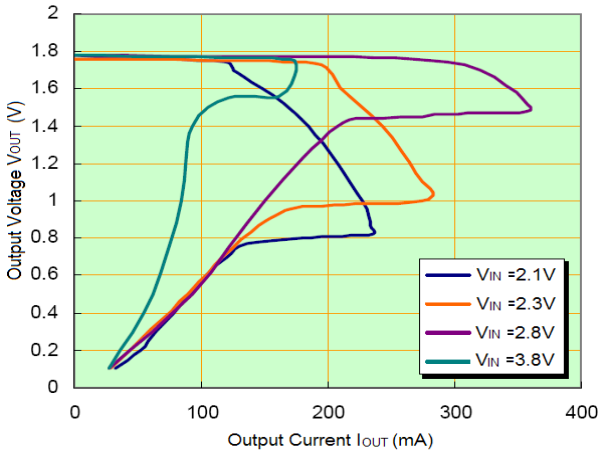
## ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

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
$1.8V \leq V_{out} \leq 2.0$		0.32	0.55
$2.1V \leq V_{out} \leq 2.7$		0.28	0.60
$2.8V \leq V_{out} \leq 4.0$		0.22	0.35

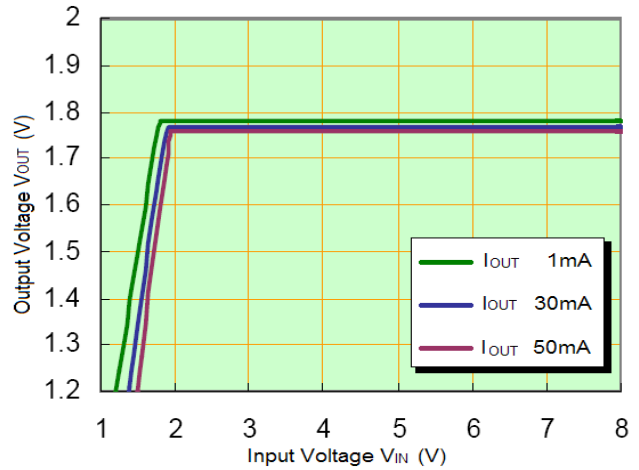


## TYPICAL PERFORMANCE CHARACTERISTICS

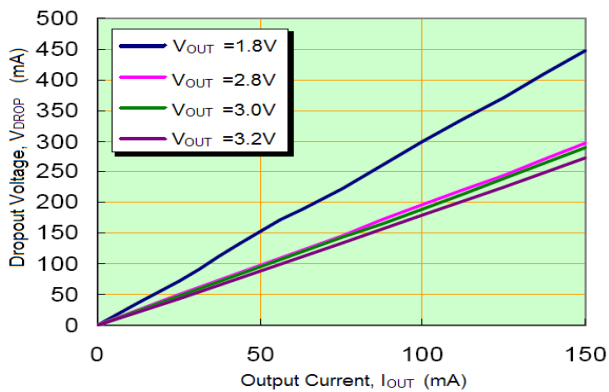
1. Output Voltage vs. Output Current (with Output short protection)



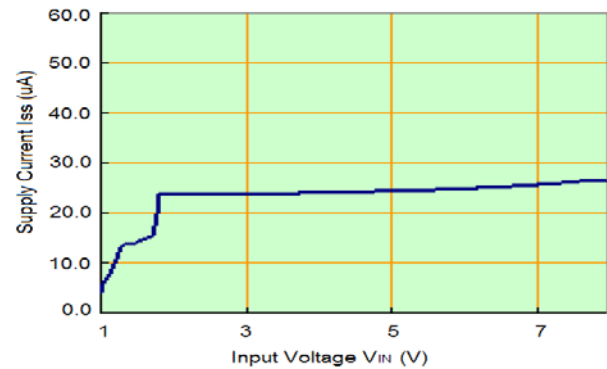
2. Output Voltage vs. Input Voltage



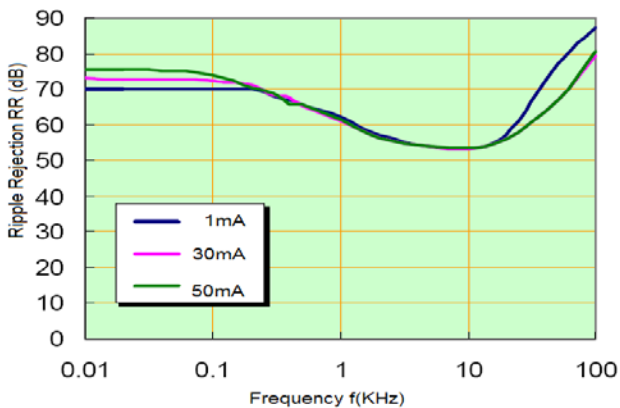
3. Dropout Voltage vs. Output Current



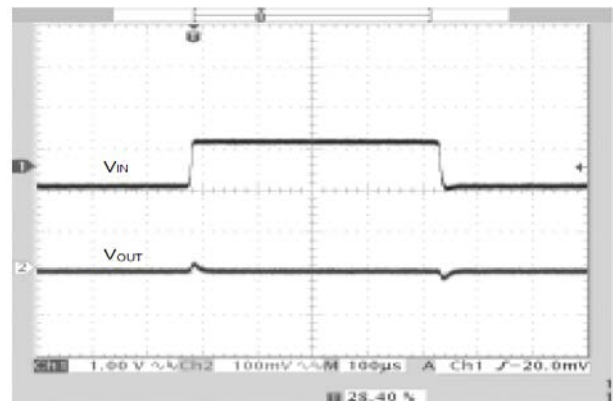
4. Supply Current vs. Input Voltage  
Output: 1.8V



5. Ripple Rejection vs. Frequency

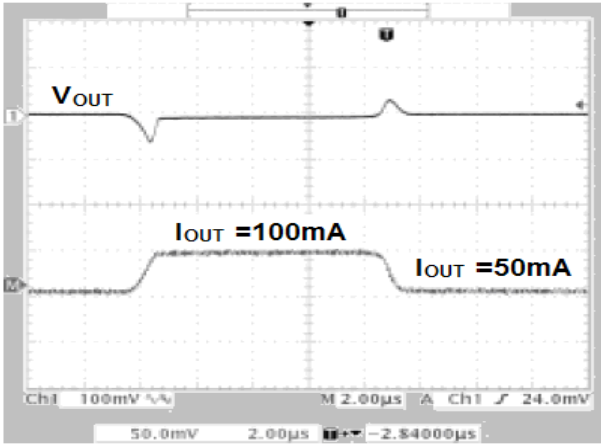


6. Line Transient Response



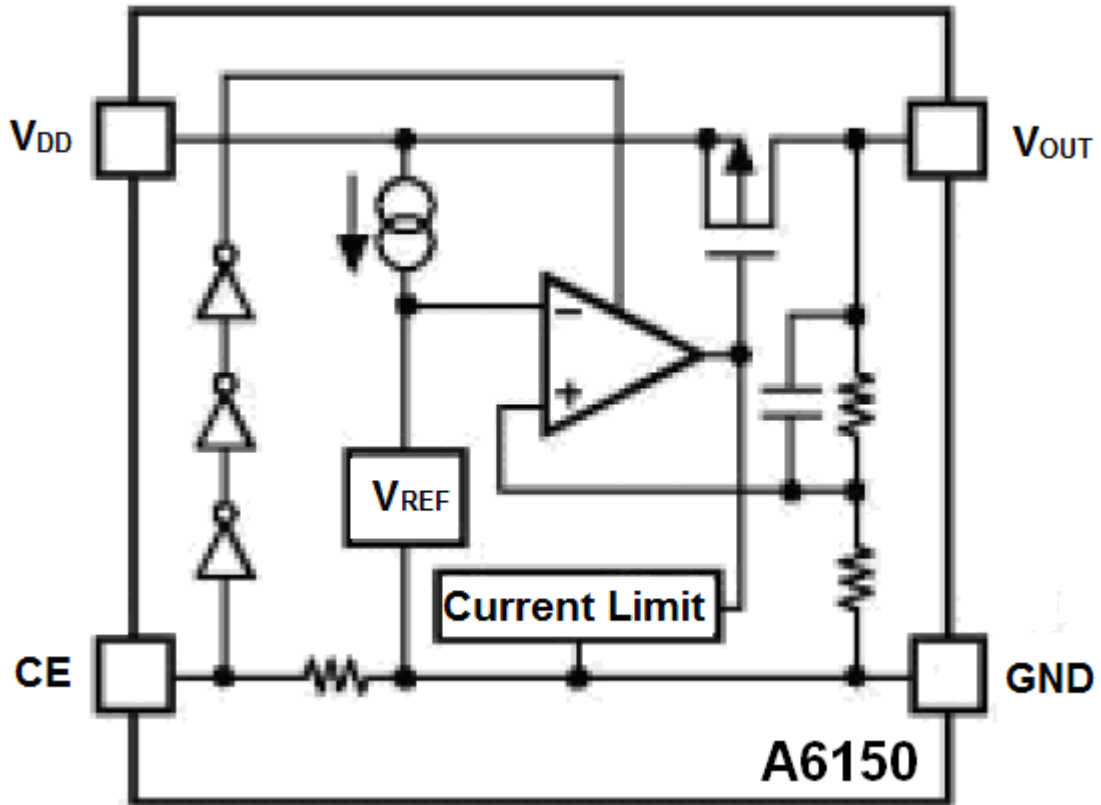


### 7. Load Transient Response





**BLOCK DIAGRAM**



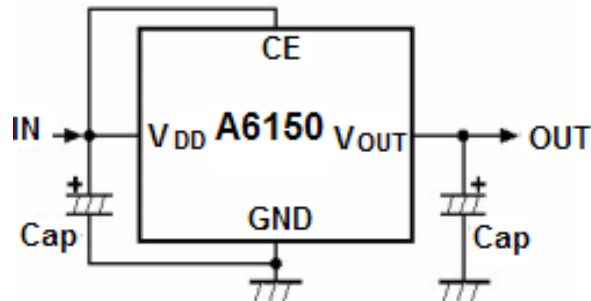


## DETAILED INFORMATION

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 ( $C_{IN}$ )

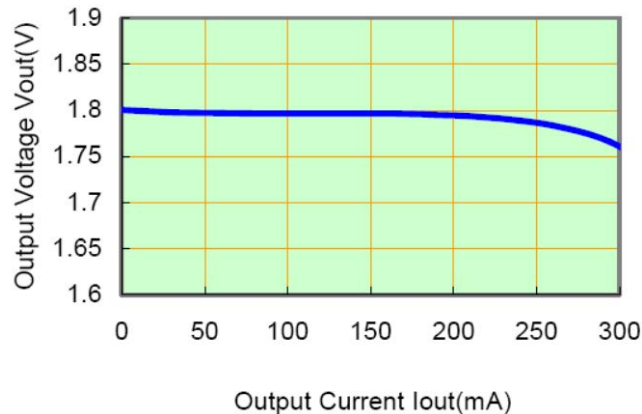
Input capacitor ( $C_{IN}=1\mu F$ ) is recommended in all application circuit.

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

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

### Output Voltage vs. Output Current

Example: A6150-18 (1.8V output)

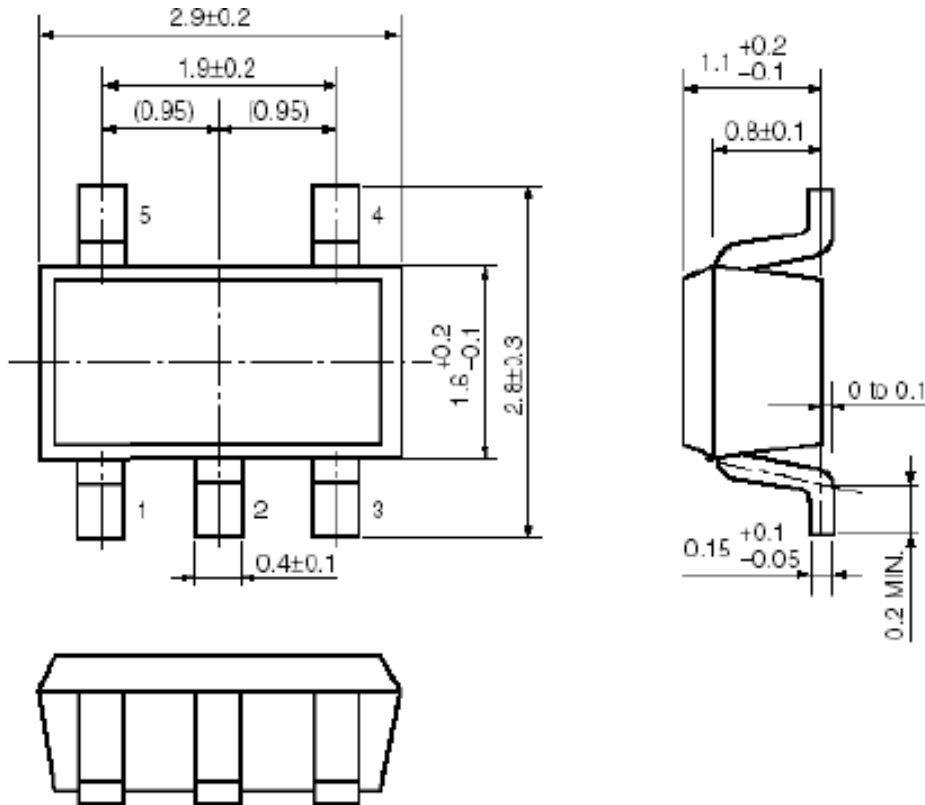






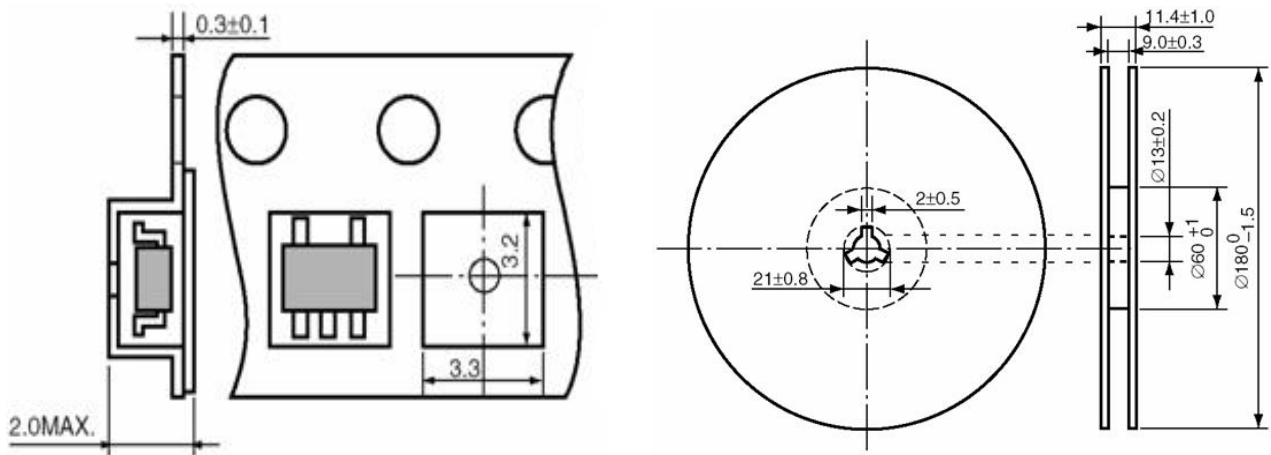
## PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



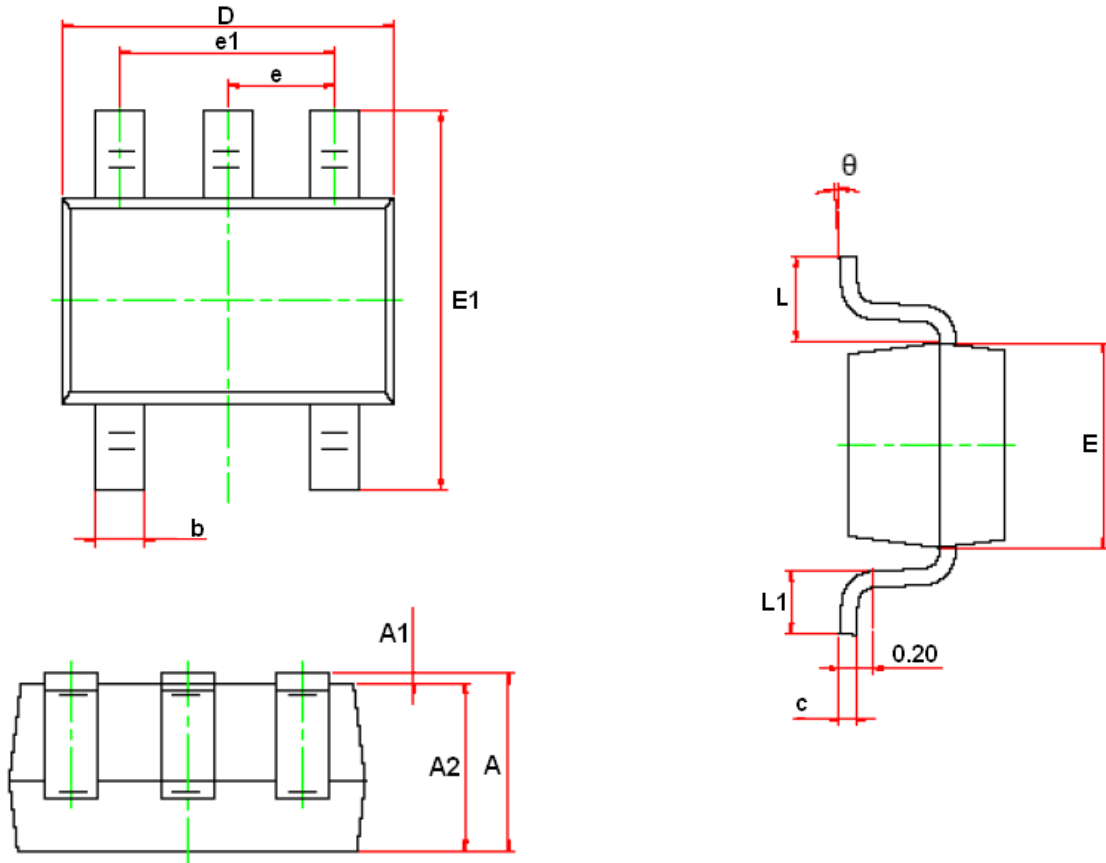
Tape Dimension

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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