



## DESCRIPTION

A7539 series is a high efficiency, low ripple, high frequency PFM control DC-DC boost converter.

A7539 series requires only three external components, the device can change the low voltage input of battery step-up into output voltages for electronic devices.

The A7539 is available in SOT-23 and SOT-25 packages.

## FEATURES

- Maximum efficiency: 94%
- Maximum operating frequency: 300kHz
- Low Quiescent Current: 15 $\mu$ A
- Output Voltage: 1.8V ~ 5.0V (step 0.1V)
- Output Accuracy:  $\pm$  2.5%
- Input voltage: 0.9V ~ 6.5V
- low ripple and low noise
- Small volume
- Available in SOT-23 and SOT-25 packages

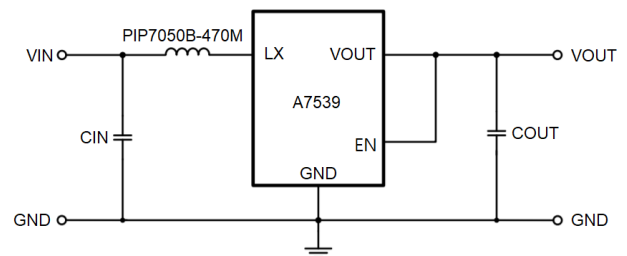
## ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	A7539E3R-XX
		A7539E3VR-XX
SOT-25 SPQ: 3,000pcs/Reel	E5	A7539E5R-XX
		A7539E5VR-XX
Note	XX: Output Voltage 33=3.3V V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

## APPLICATION

- 1 to 3 batteries of electronic equipment
- Electronic dictionaries, digital cameras
- LED flashlights, LED Light
- Blood pressure monitors, MP3, remote control toys
- Wireless headsets, wireless mouse, keyboard
- Medical devices, anti-lost alarm
- Car alarm, charger, VCR, PDA and other handheld electronic devices

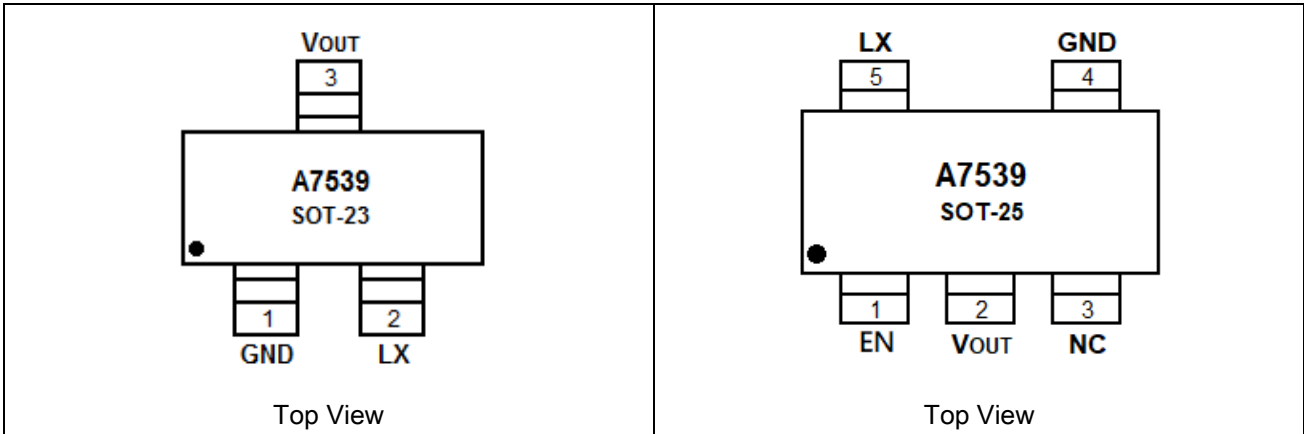
## TYPICAL APPLICATION



NOTE:  $C_{IN}$ =10 $\mu$ F,  $C_{OUT}$ =22  $\mu$ F, L=10 $\mu$ H.



**PIN DESCRIPTION**



Pin #		Symbol	Function
SOT-23	SOT-25		
1	4	GND	Ground
2	5	LX	Switch pin
3	2	V <sub>OUT</sub>	Output pin
-	1	EN	Chip enable pin
-	3	NC	No connect



## ABSOLUTE MAXIMUM RATINGS

V <sub>MAX</sub> , Input voltage	Maximum voltage supply for V <sub>OUT</sub> and V <sub>LX</sub> pin	6.5V
I <sub>LX(MAX)</sub> , Current	Maximum current in LX pin	1000mA
P <sub>D</sub> , Power Dissipation	SOT-23 maximum power dissipation	350mW
	SOT-25 maximum power dissipation	350mW
T <sub>min-max</sub> , Temperature	Operating Ambient Temperature	-40°C~85°C
T <sub>STORAGE</sub> , Temperature	Storage Temperature	-40°C~165°C
V <sub>ESD</sub> , ESD	Body static pressure values	2000V

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ELECTRICAL CHARACTERISTICS

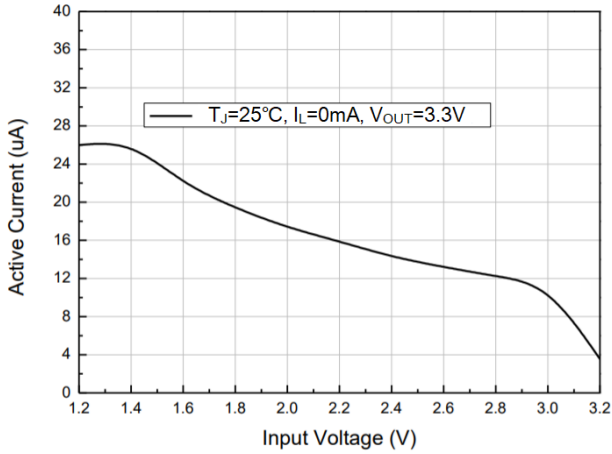
T<sub>A</sub>=25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	ΔV <sub>OUT</sub>		-2.5	-	2.5	%
Maximum Input Voltage	V <sub>IN(MAX)</sub>		0.9	-	6.5	V
Start Voltage	V <sub>START</sub>	I <sub>LOAD</sub> =1mA, V <sub>IN</sub> :0→2V	-	-	0.8	V
Hold Voltage	V <sub>HOLD</sub>	I <sub>LOAD</sub> =1mA, V <sub>IN</sub> :2→0V	0.6	-	-	V
Oscillation Signal Duty Cycle	DC <sub>OSC</sub>		-	-	78	%
Efficiency	η		-	90	94	%
Limit Current	I <sub>LIMIT</sub>		600	800	1000	mA
Input Current (No load)	I <sub>NO-LOAD</sub>	V <sub>IN</sub> =1.8V, V <sub>OUT</sub> =3.0V	-	15	-	μA

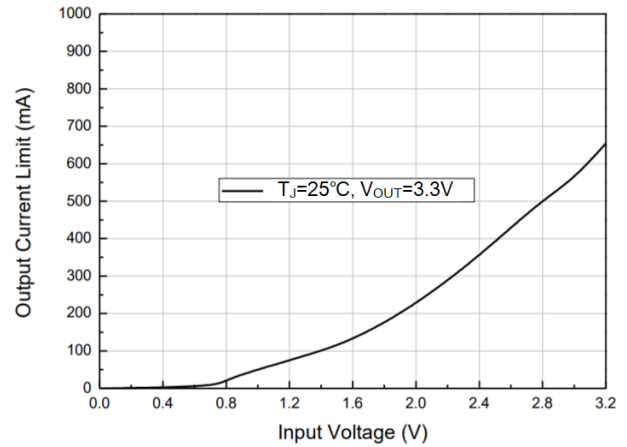


## TYPICAL PERFORMANCE CHARACTERISTICS

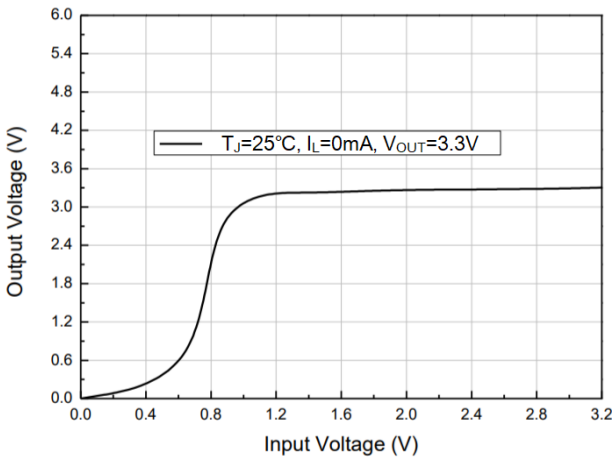
1. Active Current vs. Input Voltage



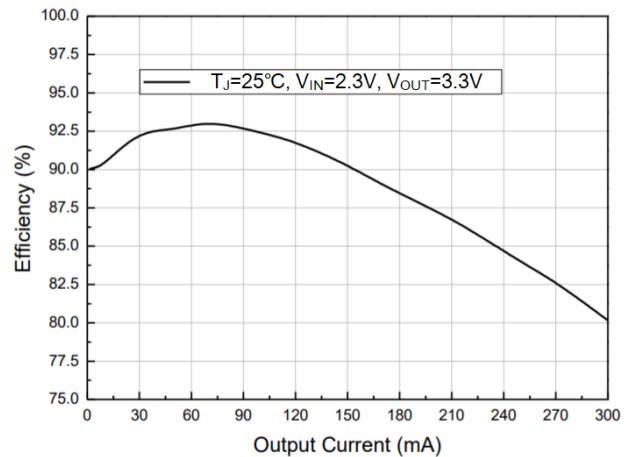
2. Output Current Limit vs.  $V_{\text{IN}}$



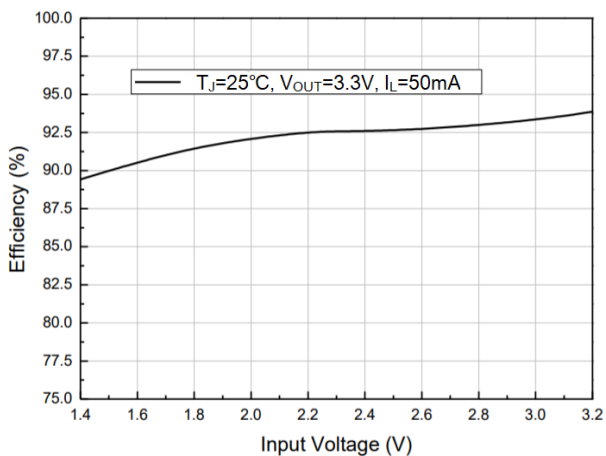
3. Output Voltage vs. Input Voltage



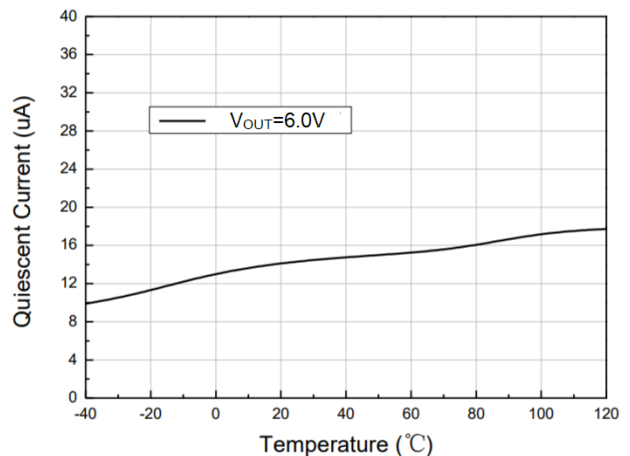
4. Efficiency vs. Output Current



5. Efficiency vs. Output Current

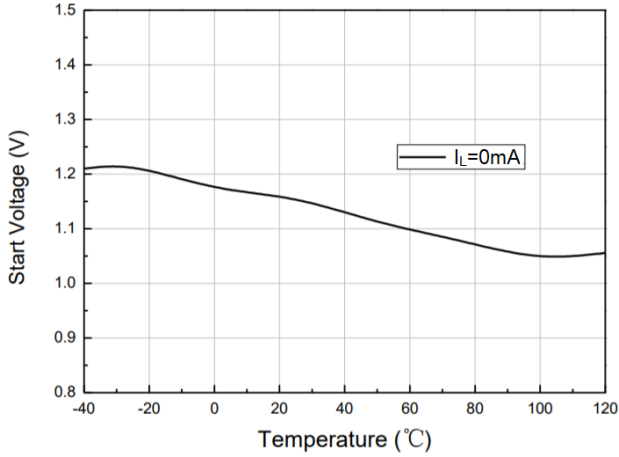


6. Quiescent Current vs. Temperature

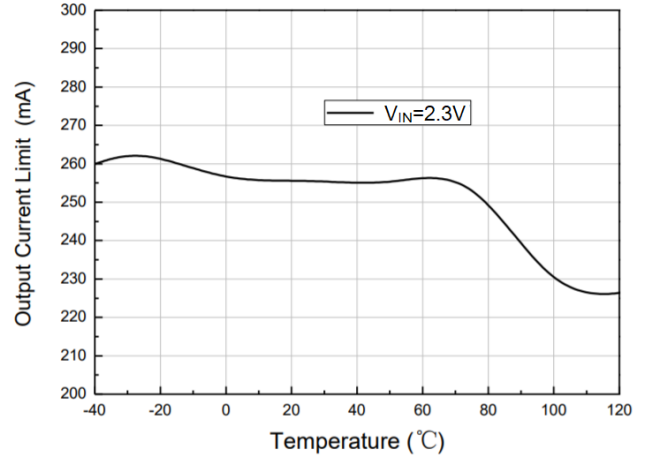




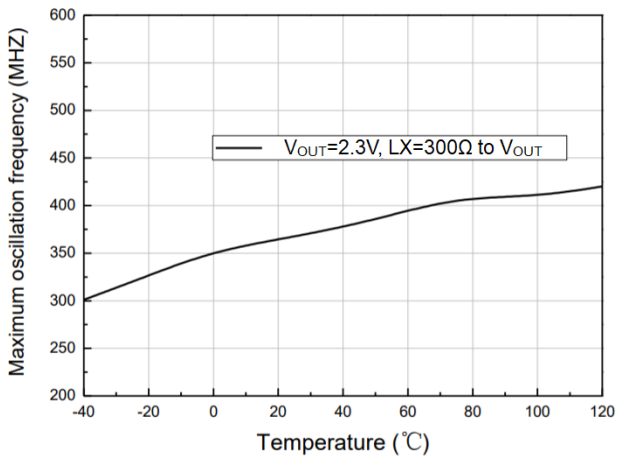
7. Start Voltage vs. Temperature



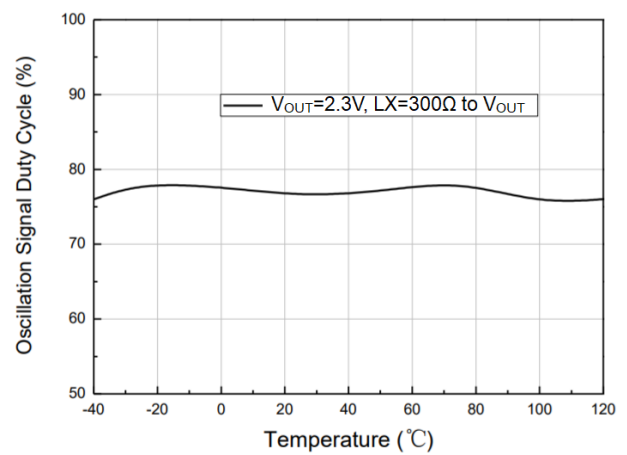
8. Output Current Limit vs. Temperature



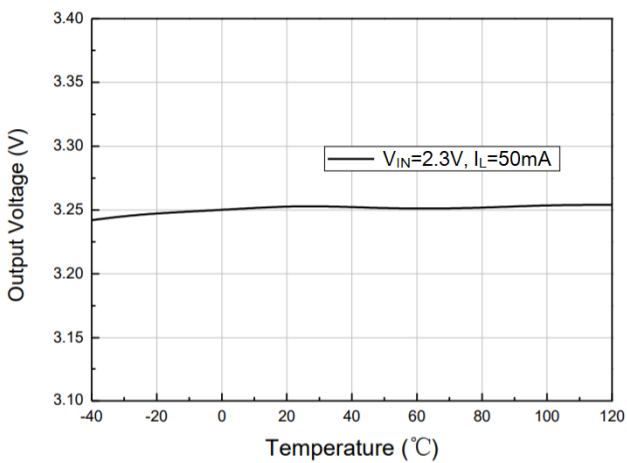
9. Maximum Oscillation Frequency vs. Temperature



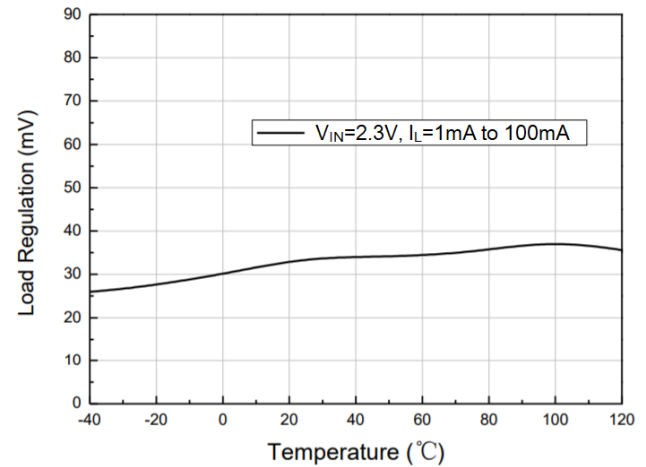
10. Maximum Oscillation Frequency vs. Temperature



11. Output Voltage vs. Temperature

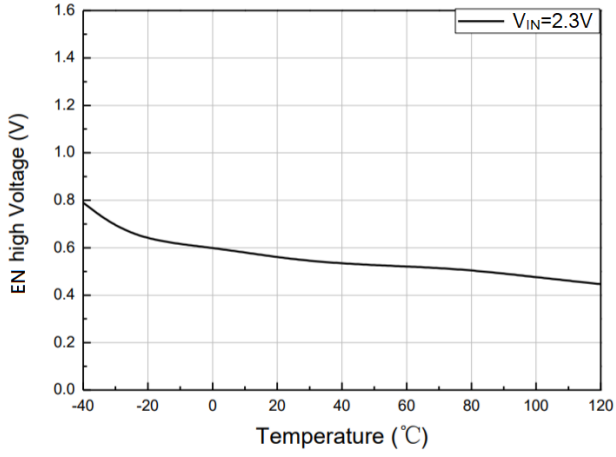


12. Load Regulation vs. Temperature



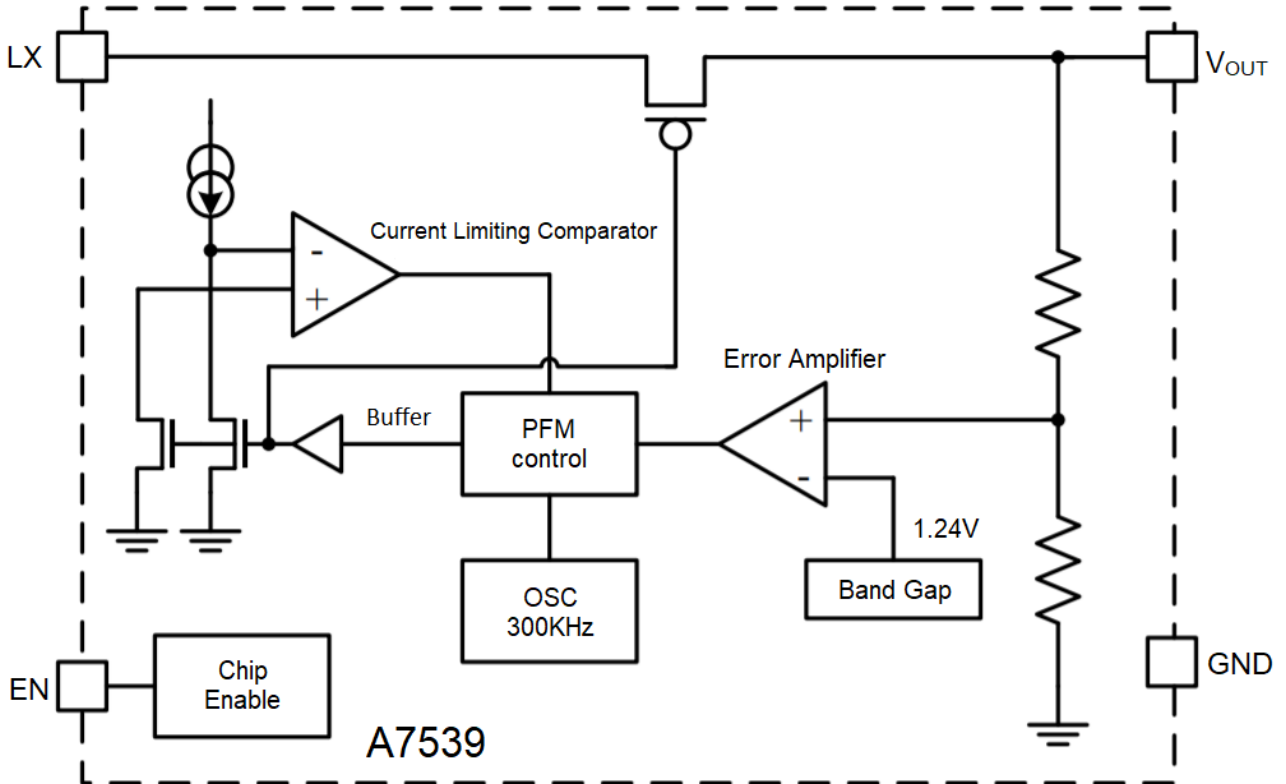


13. EN high Voltage vs. Temperature





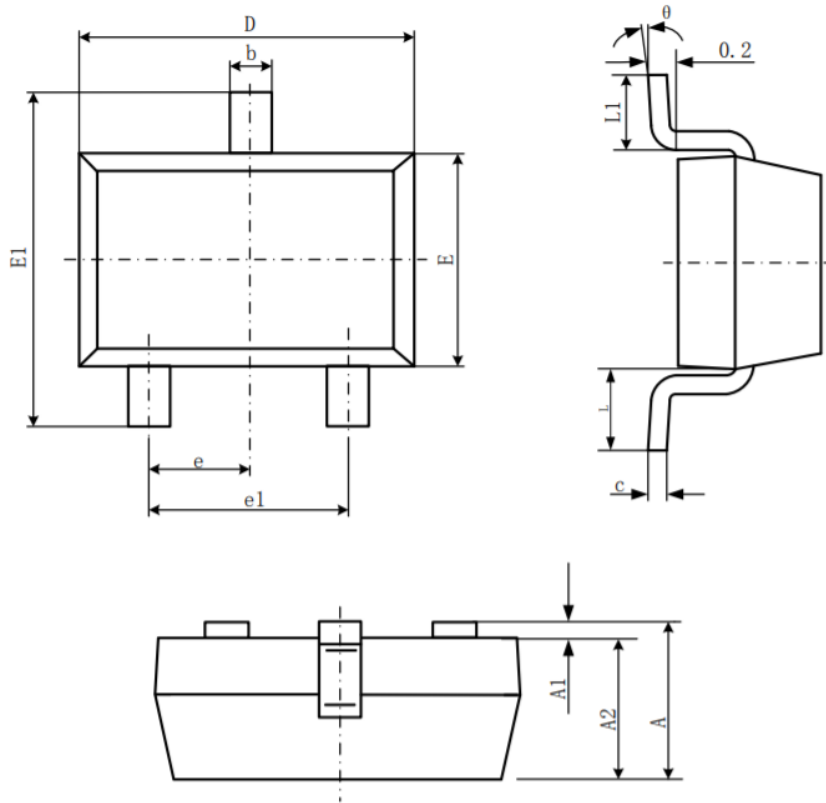
**BLOCK DIAGRAM**





**PACKAGE INFORMATION**

Dimension in SOT-23 Package (Unit: mm)

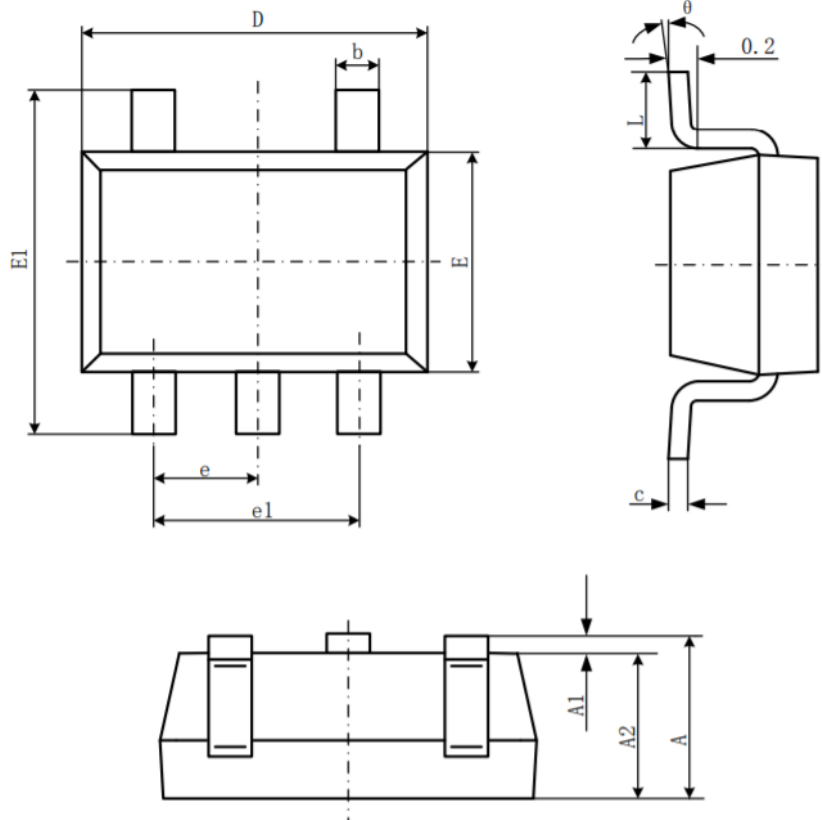


Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000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





Dimension in SOT-25 (Unit: mm)



Symbol	Millimeters		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
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E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
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theta	0°	8°	0°	8°



## IMPORTANT NOTICE

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