General Description

EMP3201 series is a high efficiency, low ripple, high frequency PFM control DC-DC boost converter. EMP3201 series requires only three external components, the device can change the low voltage input of battery step-up into output voltages for electronic devices.

Applications

- 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

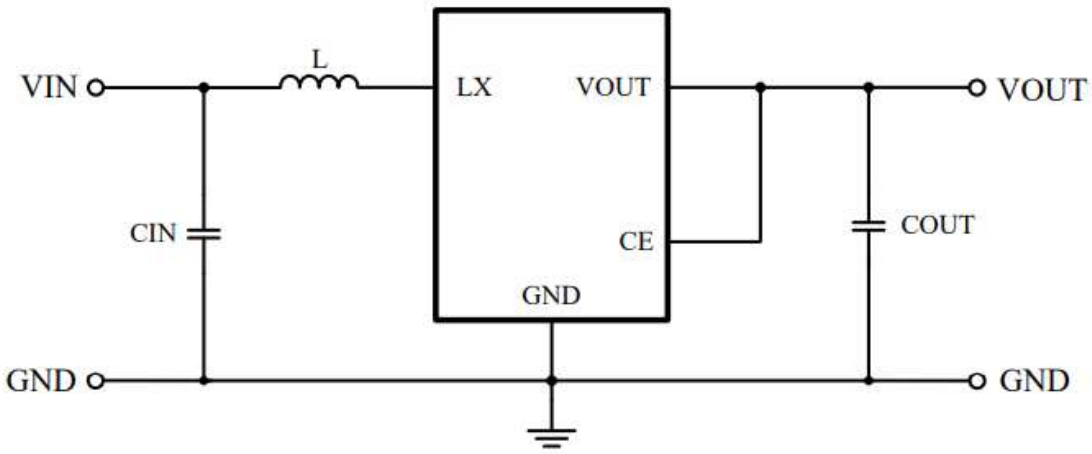
Features

- Maximum efficiency: 94%
- Maximum operating frequency: 300KHz
- Low Quiescent Current: 15μA
- Output Voltage: 1.8V ~ 5.0V (step 0.1V)
- Output Accuracy: ± 2.5%
- Input voltage: 0.9V ~ 6.5V
- low ripple and low noise
- Small volume

Package

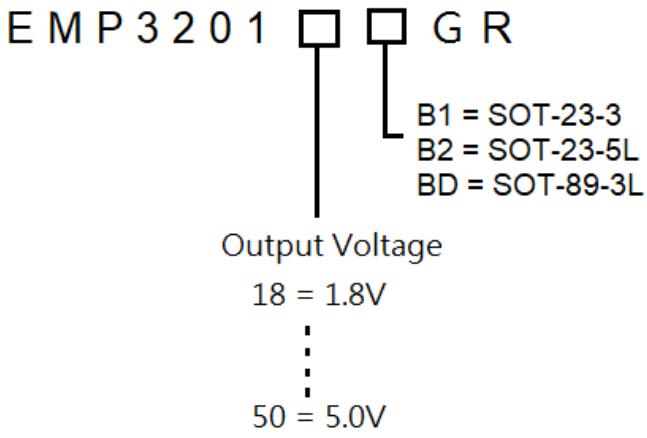
- SOT-23-3
- SOT-23-5L
- SOT-89-3L

TYPICAL APPLICATION CIRCUIT

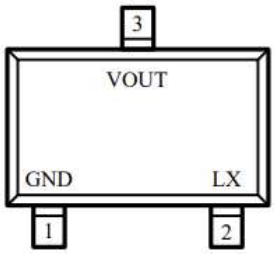


Note: CIN=10μF, COUT=22 μF, L=10uH.

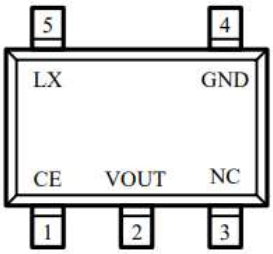
Ordering Information



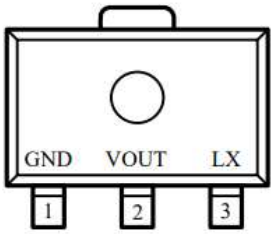
Pin Assignment



SOT-23-3L
(TOP VIEW)



SOT-23-5L
(TOP VIEW)

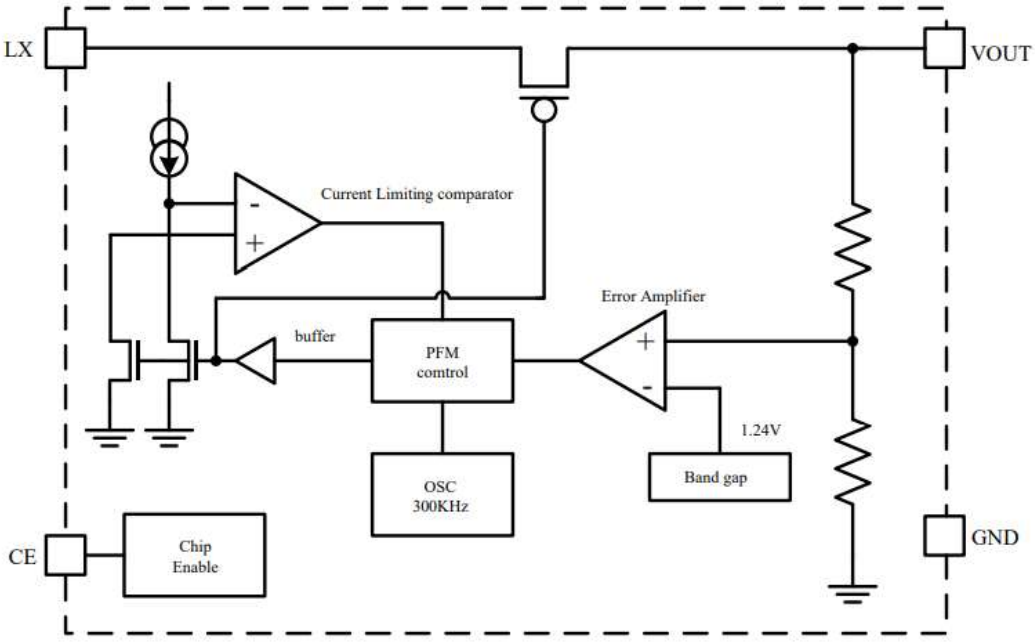


SOT-89-3L
(TOP VIEW)

Represents the output voltage range

Output Voltage(V)	0.1～3.0	3.1～6.0
300KHz	T	X
180KHz	U	Y
100KHz	V	Z

Function Block Diagram



ABSOLUTE MAXIMUM RATINGS

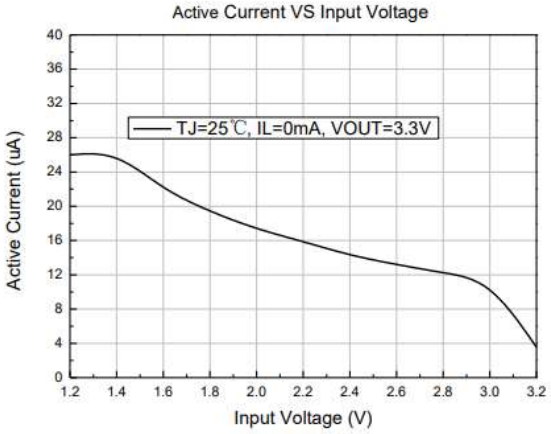
Parameter	Symbol	Description	Typical	Unit
Input voltage	V_{max}	Maximum voltage supply for V_{OUT} and V_{LX} pin	6.5	V
Current	ILXmax	Maximum current in LX pin	1000	mA
Power dissipation	P_D	SOT-23-3L maximum power dissipation	350	mW
		SOT-23-5L maximum power dissipation	350	mW
		SOT89-3L maximum power dissipation	500	mW
Temperature	Tmin-max	Operating Ambient Temperature	-40—85	°C
	Tstorage	Storage Temperature	-40—165	
ESD	V_{ESD}	Body static pressure values	2000	V

ELECTRICAL CHARACTERISTICS

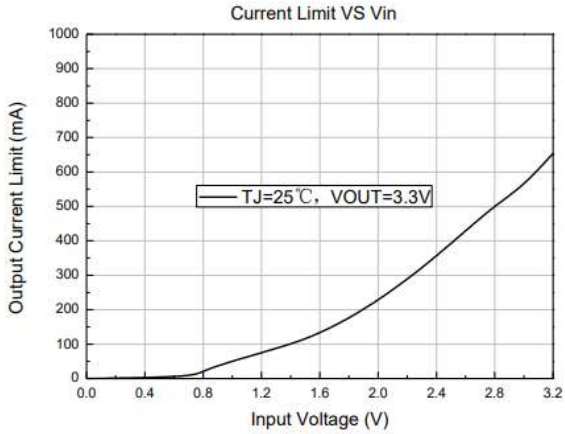
Parameter	Symbol	Test condition	Min	Typ	Max	Units
Output voltage accuracy	$\triangle V_{OUT}$	-	-2.5	-	2.5	%
Maximum input voltage	VIN_{MAX}	-	0.9	-	6.5	V
Start voltage	V_{START}	I_{LOAD}=1mA,V_{IN}:0→2V	-	-	0.8	V
Hold voltage	V_{HOLD}	I_{LOAD}=1mA,V_{IN}:2→0V	0.6	-	-	V
Oscillation signal duty cycle	DC_{OSC}	-	-	-	78	%
Efficiency	η	-	-	90	94	%
Limit current	I_{LIMIT}	-	600	800	1000	mA
Input current (No load)	I_{INO}	V_{IN}=1.8V,V_{OUT}=3.0V	-	15	-	μA

TYPICAL PERFORMANCE CHARACTERISTICS

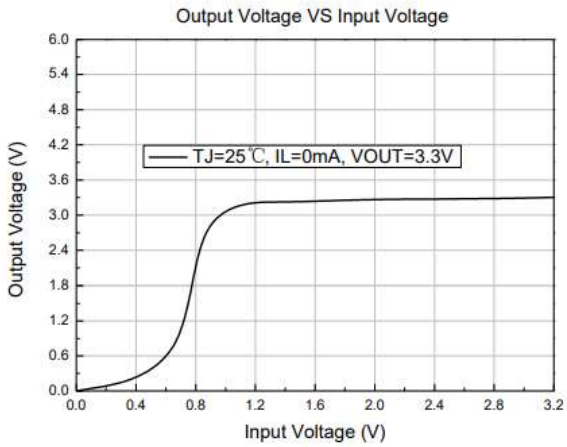
1. Active Current VS Input Voltage



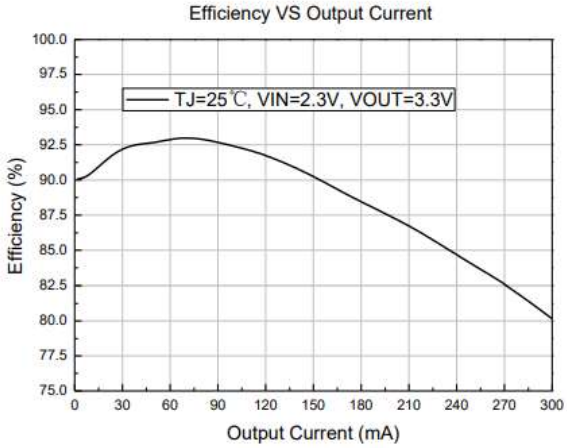
2. Output Current Limit VS Vin



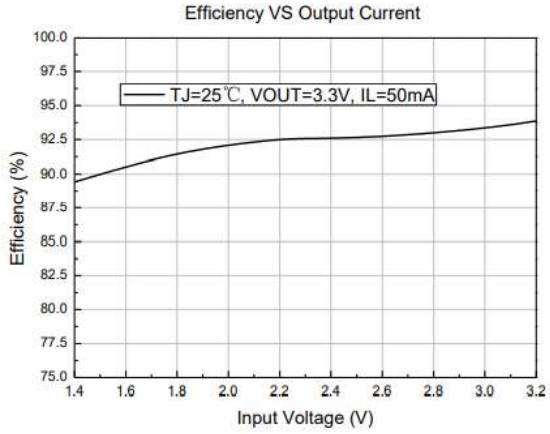
3. Output Voltage VS Input Voltage



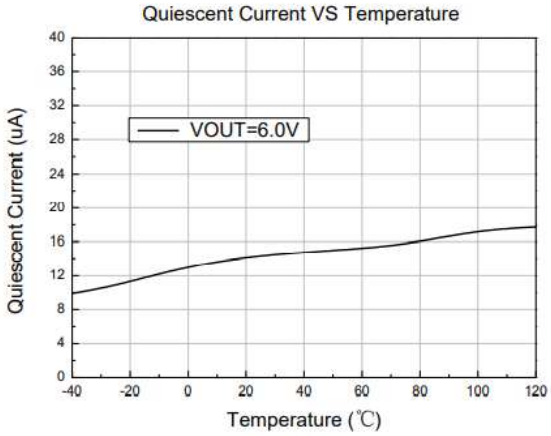
4. Efficiency VS Output Current



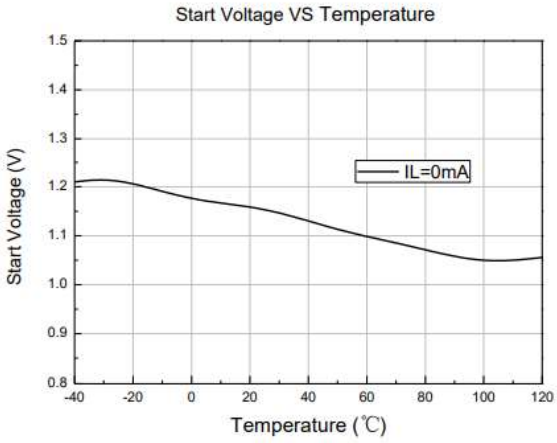
5. Efficiency VS Output Current



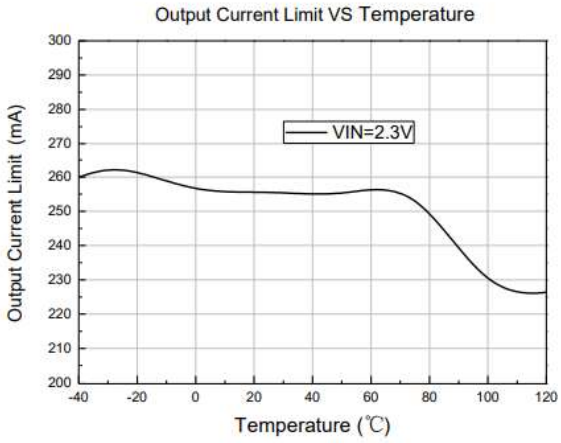
6. Quiescent Current VS Temperature



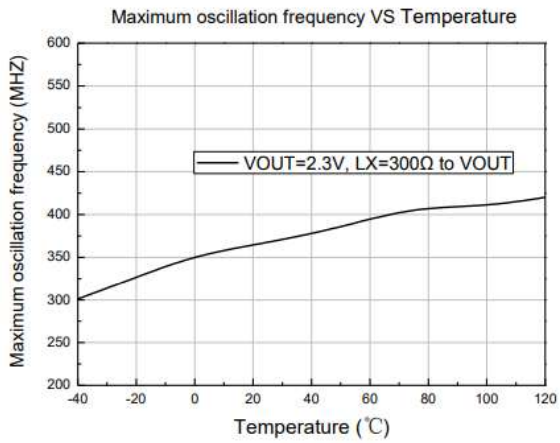
7. Start Voltage VS Temperature



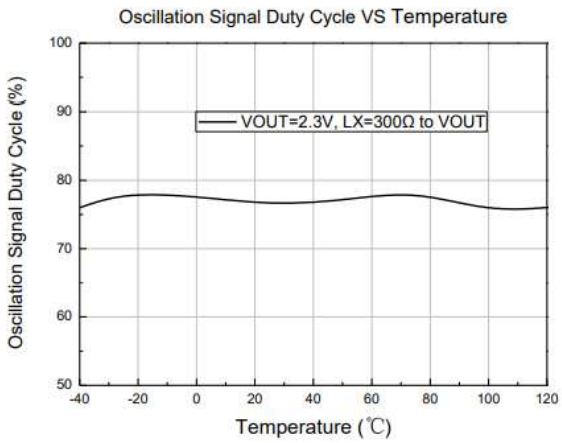
8. Output Current Limit VS Temperature



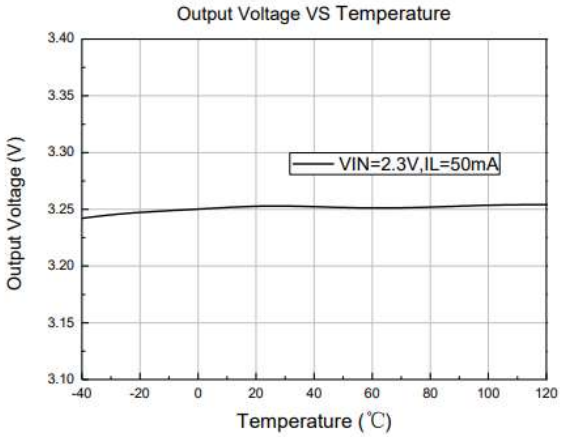
9. Maximum oscillation frequency VS Temperature



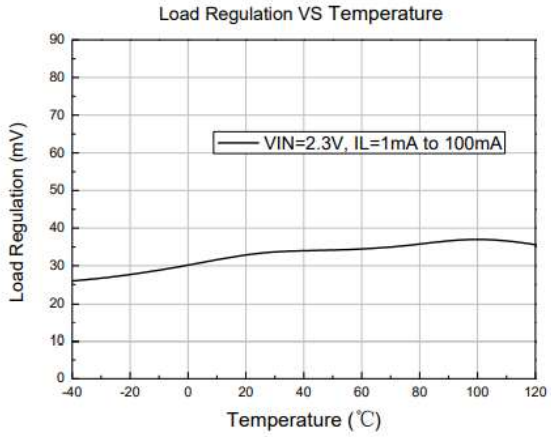
10. Oscillation Signal Duty Cycle VS Temperature



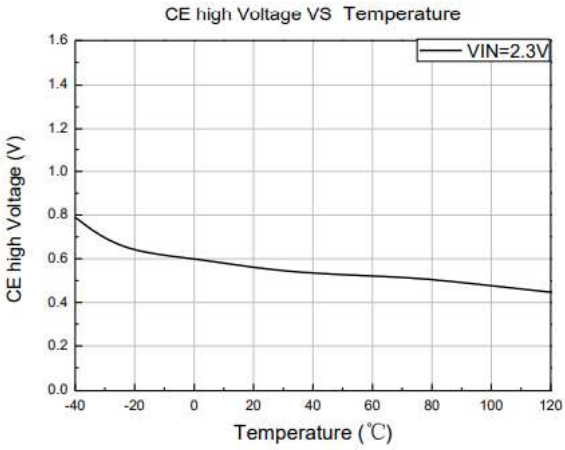
11. Output Voltage VS Temperature



12. Load Regulation VS Temperature

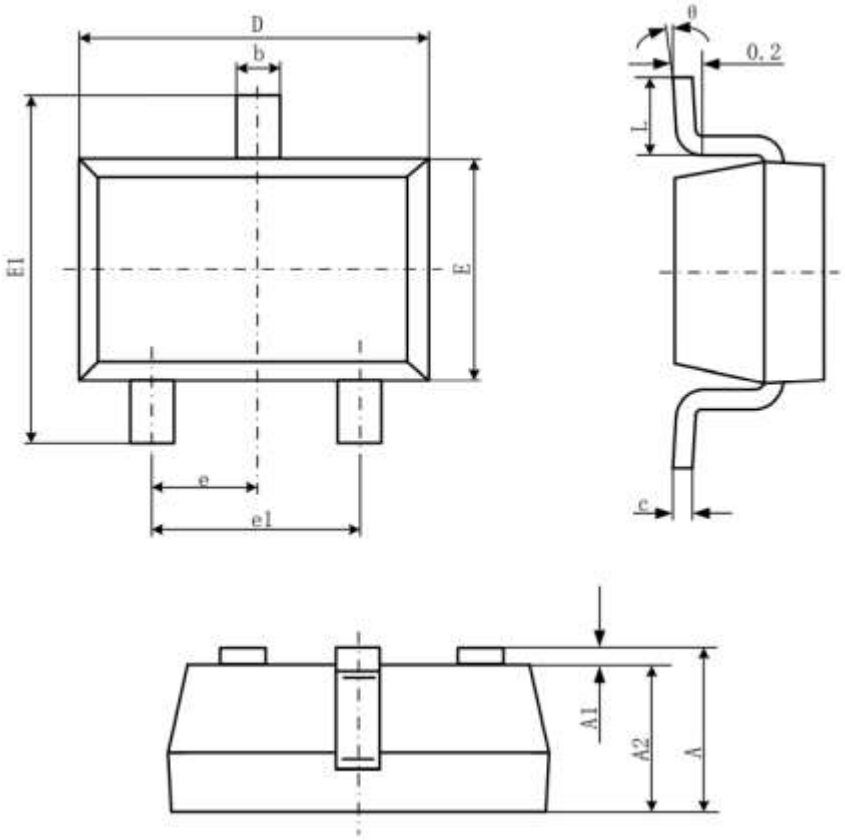


13. CE high Voltage VS Temperature



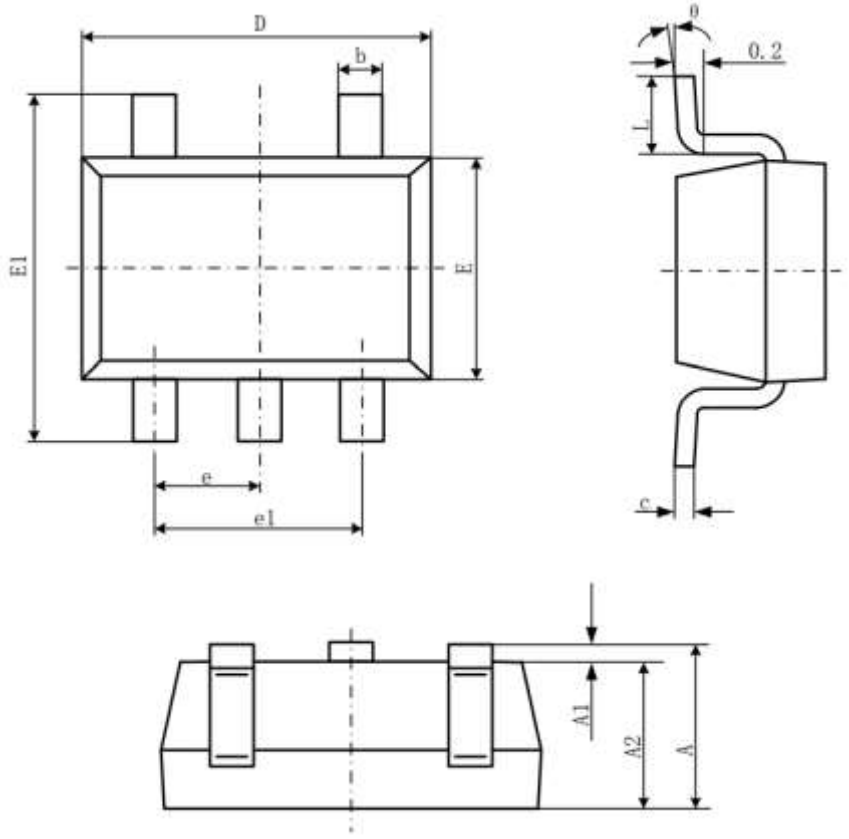
PACKAGE INFORMATION

- SOT-23-3L



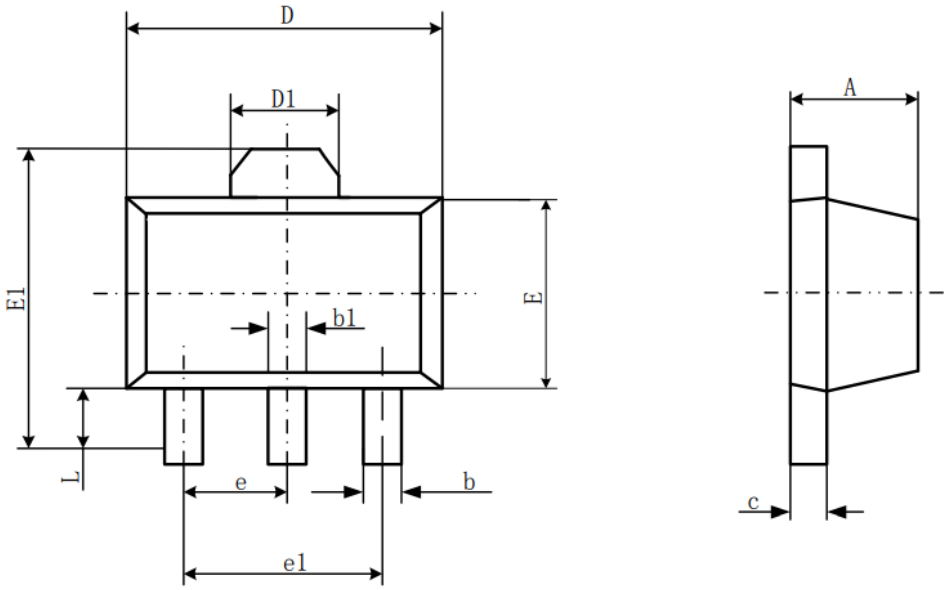
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)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

- SOT-23-5L



Symbol	Dimensions In Millimeters		Dimensions In 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°

- SOT-89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.400	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF.		0.061REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047