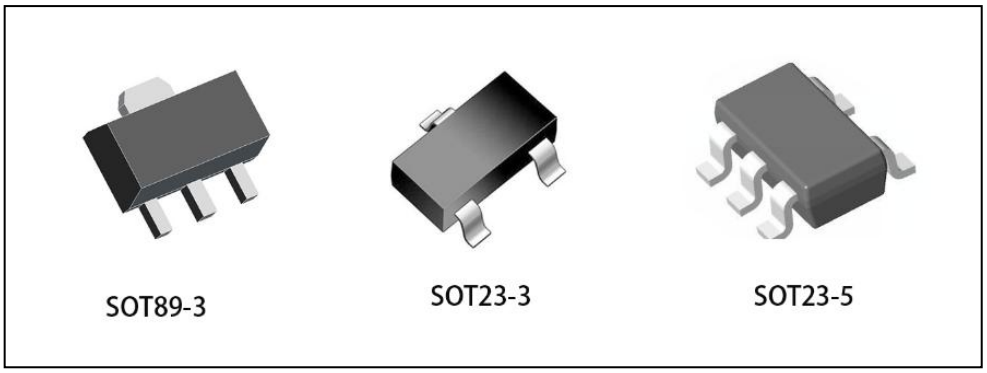
500mA 18V Low Power LDO

SSP7603 Series

General Description

The SSP7603 series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and laser trimming technologies.

The SSP7603 consists of a high-precision voltage reference, an error amplification circuit, and a current limited output driver. Transient response to load variations have improved in comparison to the existing series.



Features

- Low voltage drop: 0.20V@100mA
- High input voltage: 18V
- Low temperature coefficient
- Large Output Current: 500mA
- Low Quiescent Current: 1.5μA
- Output voltage accuracy: tolerance ±2%
- Built-in current limiter
- Packages:SOT89-3，SOT23-3 and SOT23-5

Applications

- Battery-powered equipment
- Hand-Hold Equipment
- GRS Receivers
- Wireless LAN

Order information

Product model	Package	Manner of packing	Minimum packing quantity
SSP7603Pxxxx	SOT89-3	reel	1000
	SOT89-3(B)		1000
	SOT23-3		3000
	SOT23-5		3000

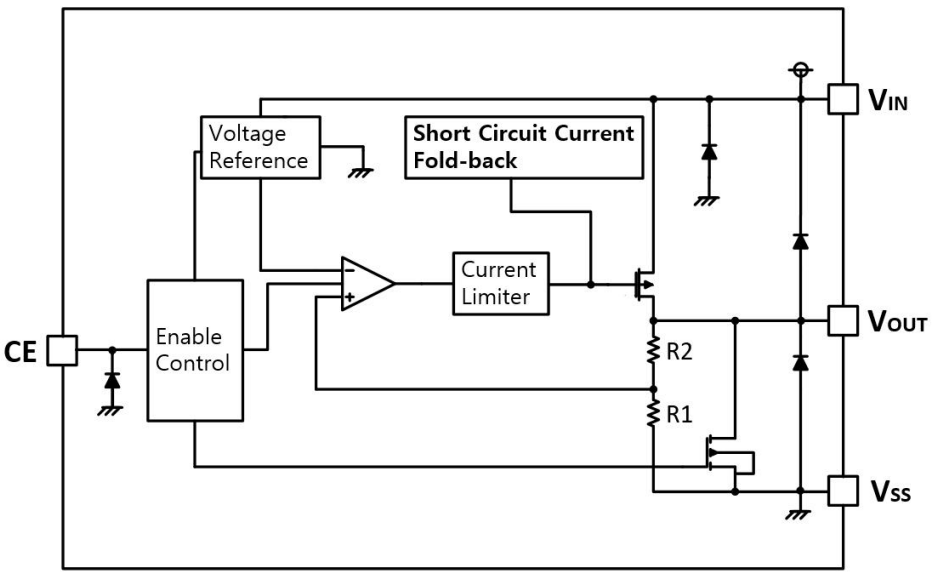
Selection Guide Table

SSP7603P①②③④

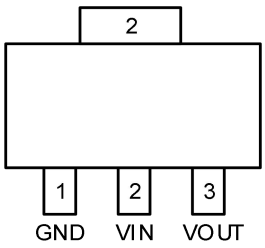
Designator	Symbol	Description	Remarks
①②	Integer	Output Voltage(1.5V~5.0V)	For example, if the output voltage is 5.0V, ①② will be 50.
③	P	Package:SOT89-3	The encapsulated pin definition is described in the pin assignment below.
	PB	Package:SOT89-3(B)	
	M	Package:SOT23-3	
	M5	Package:SOT23-5	
④	R	RoHS / Pb Free	
	G	Halogen Free	

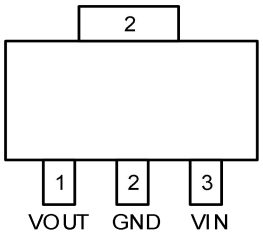
Note:"①②" stands for output voltages. The regular output voltage is 1.5V、1.8V、2.5V、2.6V、2.7V、2.8V、3.0V、3.3V、3.6V、4.0V、4.4V、4.5V、5.0V，Other voltages can be specially customized.

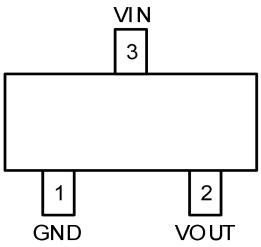
Functional Block Diagram



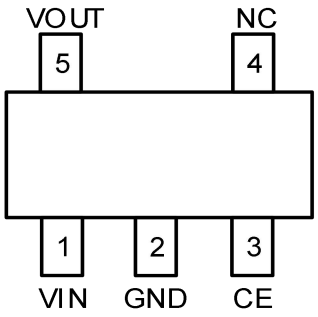
Pin Assignment

SSP7603PxxPx		
NO.	**Description**	 SOT89-3（Top View）
1	GND	
2	VIN	
3	VOUT	

SSP7603PxxPBx		
NO.	**Description**	 SOT89-3(B)（Top View）
1	VOUT	
2	GND	
3	VIN	

SSP7603PxxMx		
NO.	**Description**	 SOT23-3（Top View）
1	GND	
2	VOUT	
3	VIN	

SSP7603PxxM5x		
NO.	**Description**	
1	VIN	
2	GND	
3	CE	
4	NC	
5	VOUT	



SOT23-5（Top View）

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	VIN	-0.3	18	V
Operating Temperature		-40	85	℃
Storage Temperature	TSTG	-40	125	℃

Note:These are just the limit parameters.Beyond the range specified in the Absolute Maximum Ratings may cause serious damage to the equipment.Long exposure to extreme conditions may affect the reliability of the device.

Electrical Characteristics

SSP7603 for any output voltage (Unless otherwise specified，Ta = 25℃）

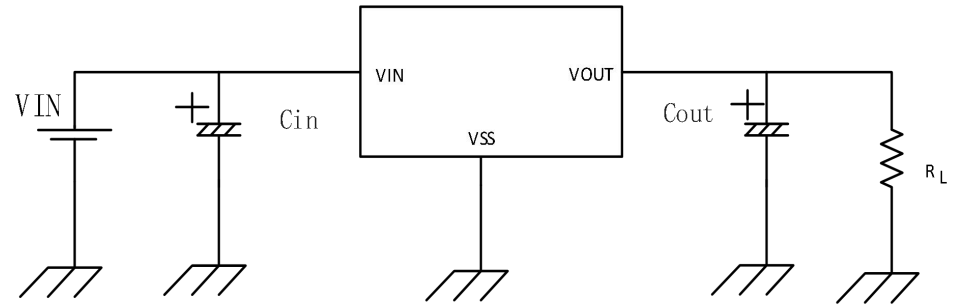
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	Vout	Vin=Vout+1V 1.0mA≤Iout≤30mA	Vout×0.98	--	Vout×1.02	V
Output Current	Iout	Vin-Vout=1V	--	500	--	mA
Low dropout	Vdrop	Refer to the next table				
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	1.6V≤Vin≤8V Iout=100mA	--	0.05	0.2	%/V

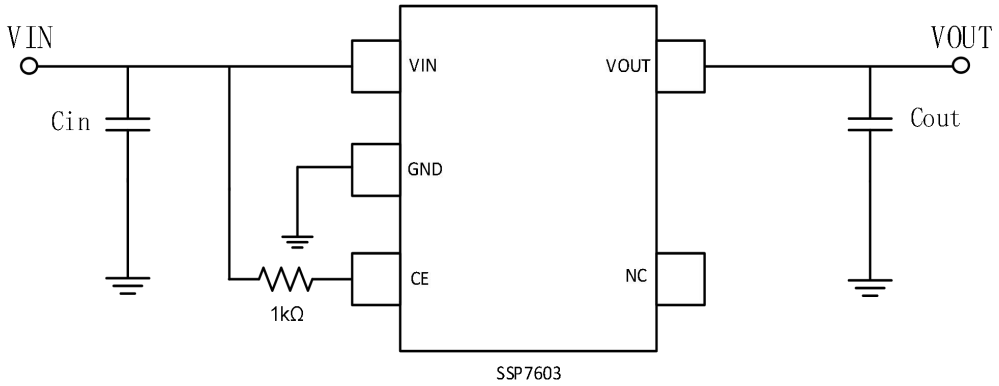
Load Regulation	△Vout	Vin= Vout+1V 1.0mA≤Iout≤100mA	--	12	30	mV
Output voltage Temperature Coefficiency	$\frac{\Delta V_{OUT}}{\Delta Ta}$	Iout=30mA 0°C≤Ta≤70°C	--	±100	--	ppm/°C
Power Supply Rejection Ratio	PSRR	F=1KHz Vin=Vout+1V	--	40	--	dB
Supply Current	Iss1	--	--	1	2	μA
Input Voltage	Vin	--	3.5	--	15	V
CE “High” Voltage	V_{CEH}	--	1.4	--	--	V
CE “Low” Voltage	V_{CEL}	--	--	--	0.7	V

Electrical Characteristics by Output Voltage：

Output Voltage Vout(V)	Dropout Voltage（V）		
	Conditions	Typ.	Max.
Vout ≤ 2.0V	Iout=60 mA	0.1	0.12
2.0 < Vout ≤ 3.0	Iout=80 mA	0.25	0.27
3.0 < Vout ≤ 4.0	Iout=100 mA	0.26	0.30
4.0 < Vout ≤ 5.0		0.18	0.22
3.0 < Vout ≤ 4.0	Iout=200 mA	0.50	0.60
4.0 < Vout ≤ 6.0		0.36	0.45
3.0 < Vout ≤ 4.0	Iout=500 mA	1.66	1.88
4.0 < Vout ≤ 6.0		0.98	1.24

Application Circuits



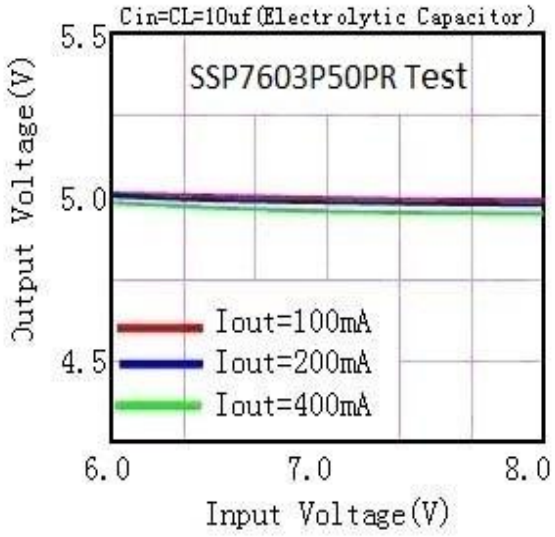


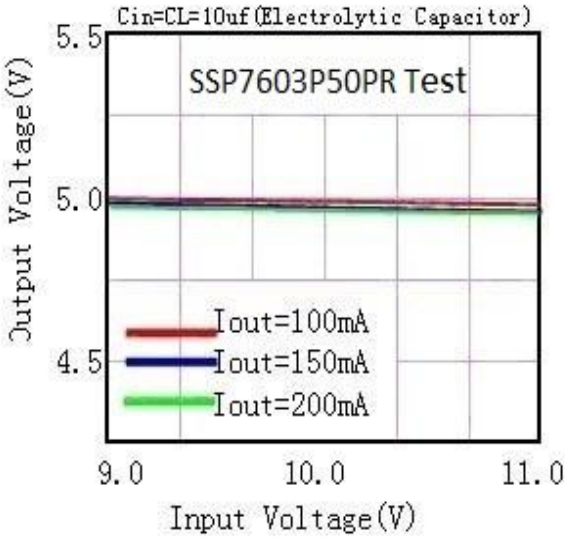
Note1:Input capacitor Cin=1μF.

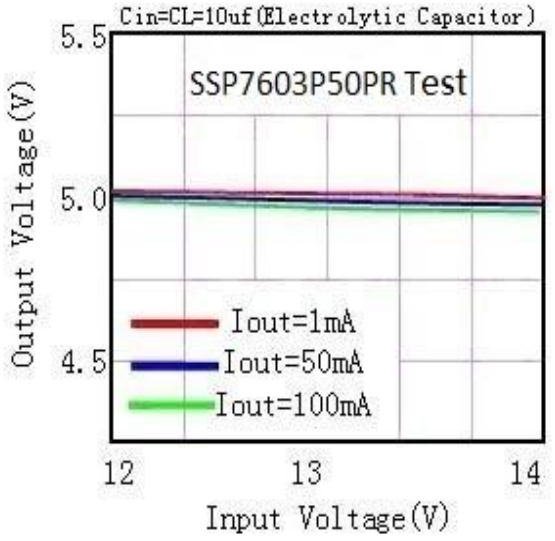
Note2:Ouput capacitor Cout=6.8μF(6.8μF ceramic capacitor is recommended).

Typical Performance Characteristics

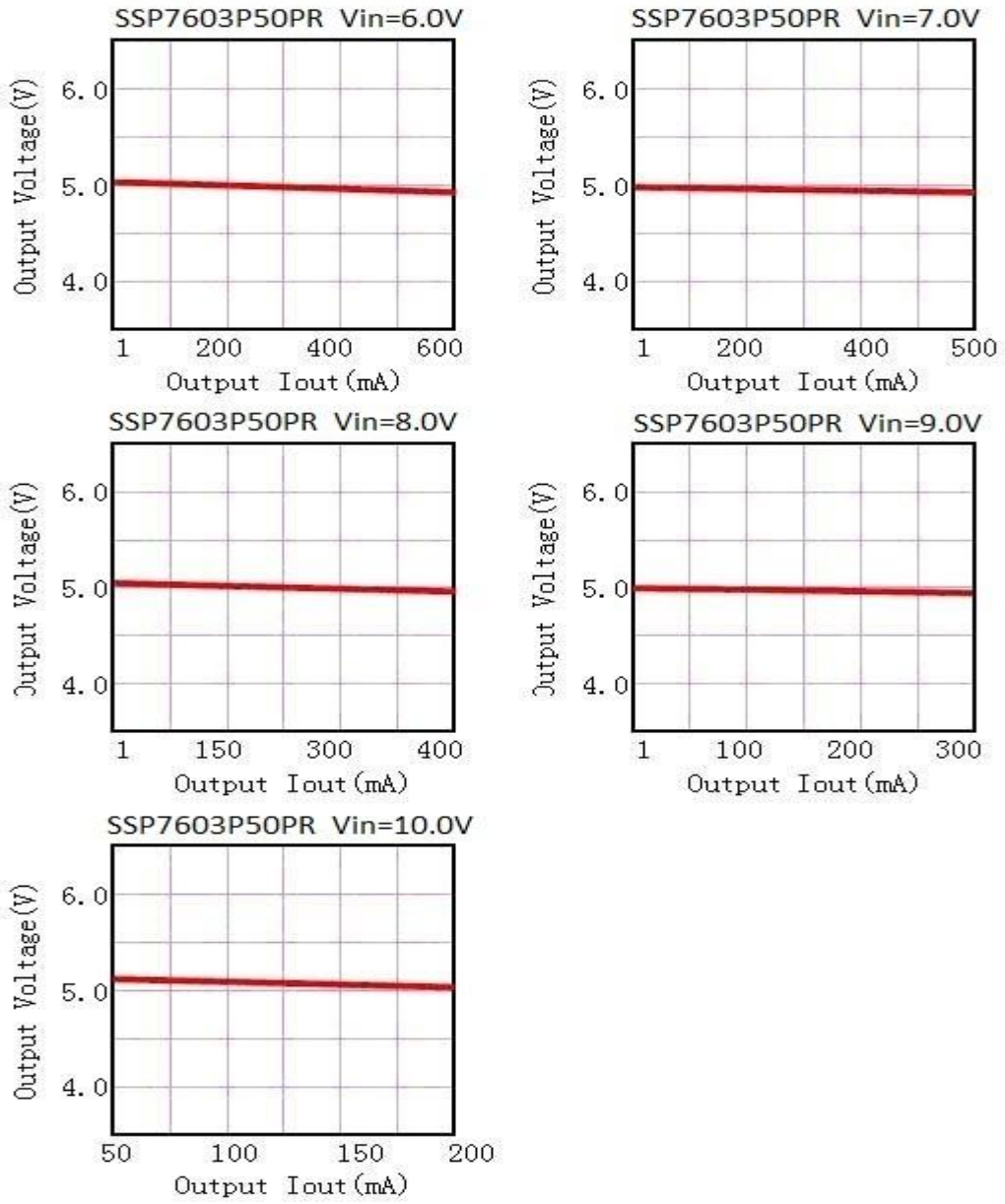
（1）Output Voltage vs Input voltage



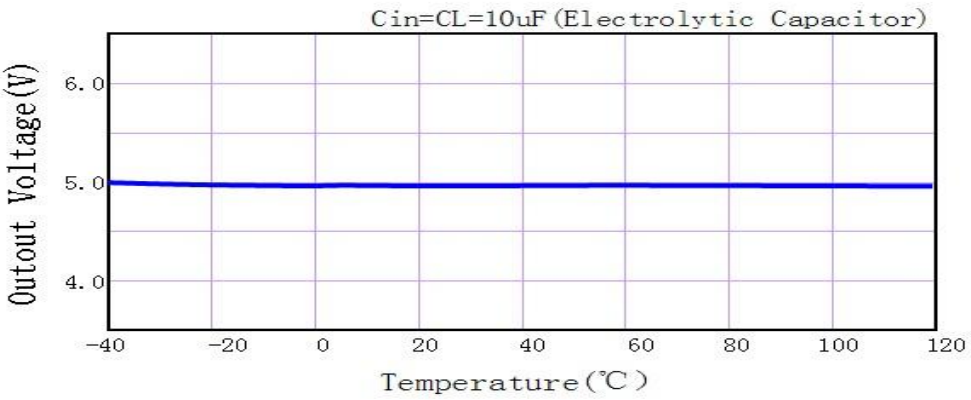




（2）Output Voltage vs.Output Current

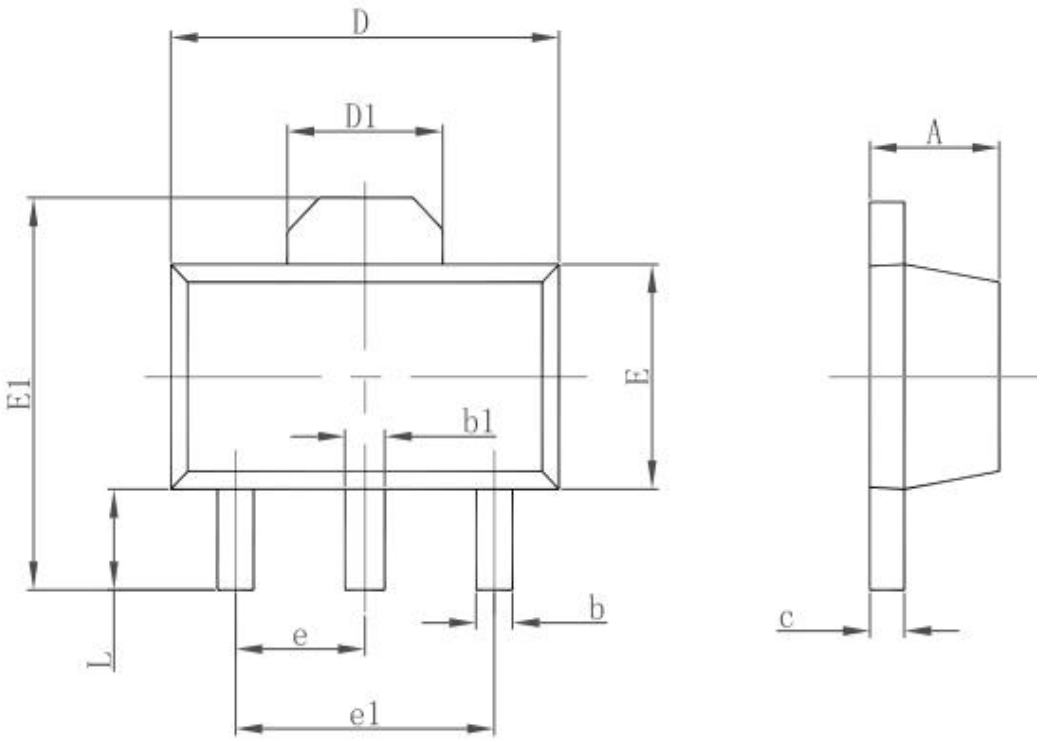


（3）Output Voltage vs.Ambient Temperature



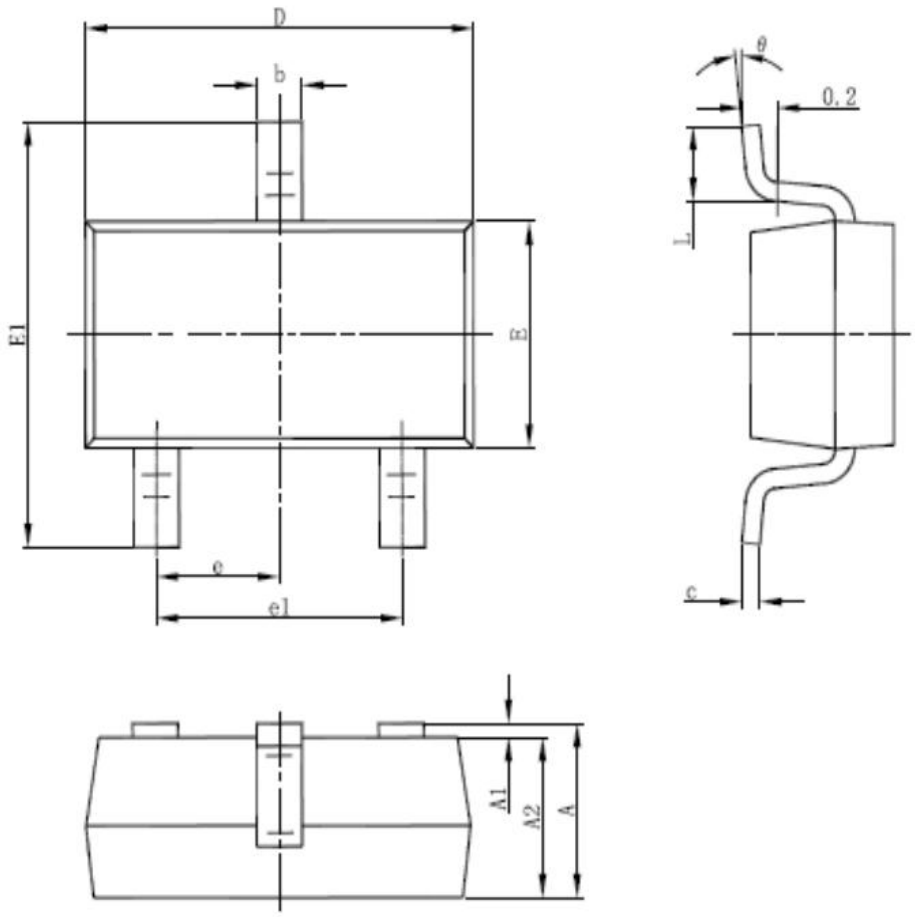
Package Information

3-pin SOT89 Outline Dimensions



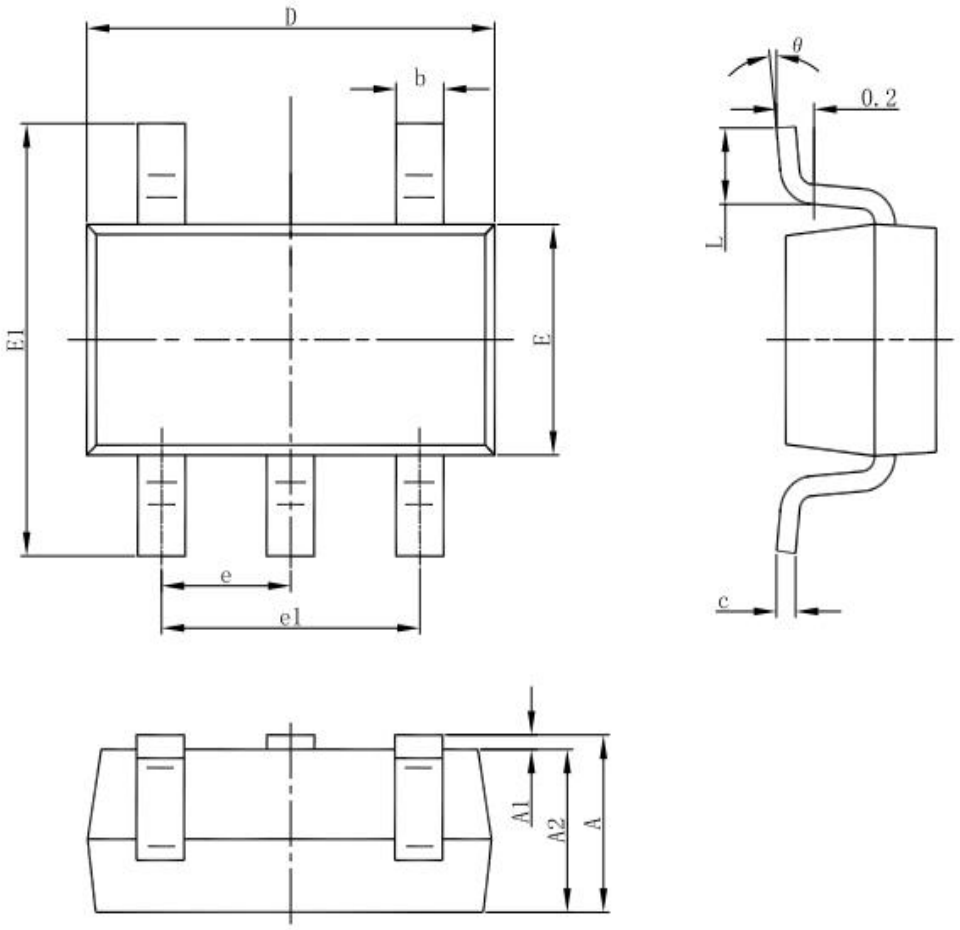
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

3-pin SOT23-3 Outline Dimensions



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°

SOT23-5 Outline Dimensions



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°

Special Version

The company reserves the right of final interpretation of this specification.

Version Change Description

Versions：V1.6	Writer：Si Yuan Wu	Time：2021.10.29

Modify the record：

1. Re-typesetting the manual and checking some data

Versions：V1.7	Writer：Yang	Time：2022.8.22

Modify the record：

1. Add the SOT89(B) package pin diagram

Versions：V1.8	Writer：Yue Yin	Time：2023.6.5

Modify the record：

1. Modify drop-out form
2. Update application circuits
3. Add CE electrical characteristics

Statement

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