BM58LXX 45V,150mA, 2.5uA,Low-Dropout Voltage Regulator

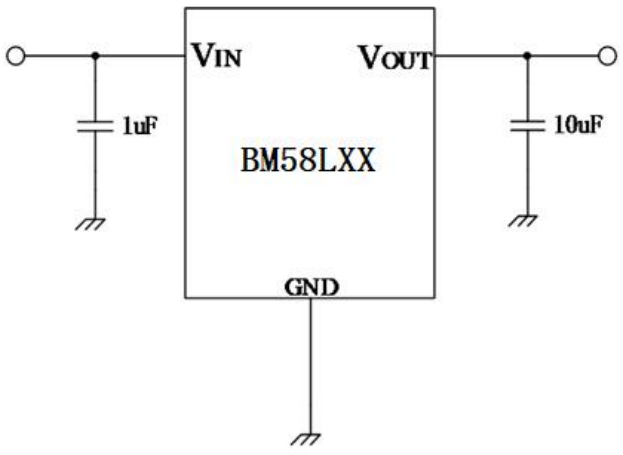
Features

- Low Quiescent Current : <3 μ A
- Wide Input Voltage Range : 3V to 45V
- High Output Current : 150mA
- Low Dropout Voltage : 500mV@100mA
- Fixed Output Voltages :2.5V,3.0V,3.3V, 5.0V
- Output Voltage Tolerance : **±1%**
- Current Limit Protection
- Short Circuit Protection
- Thermal Shutdown Protection
- Available Packages : SOT23, SOT89-3

Application

- Battery-powered Equipment
- Smoke Detector and Sensor
- Micro Controller Applications
- Home Appliance

Typical Application Circuit



Description

The BM58LXXseries is an ultra-small, low dropout (LDO) linear regulator that can source 150mA of output current. The BM58LXXseries is designed to provide high input voltage, and excellent load and line transient performance.

TheBM58LXX series has thermal shutdown, current limit, and short circuit protections for added safety.

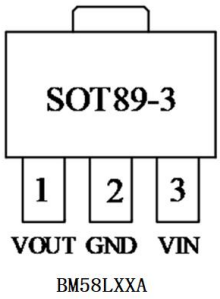
TheBM58LXX series contains nine fixed output voltages of2.5V, 3.0V, 3.3V, and 5.0V.

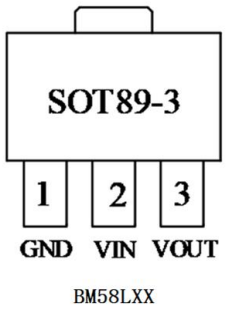
Device Information(1)

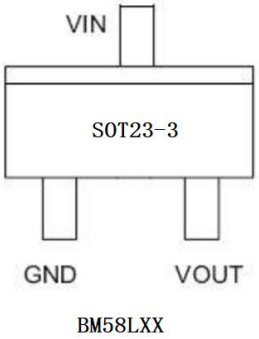
PART NUMBER	PACKAGE	Minimum qantity
BM58LXXTE	SOT23-3	3K/reel
BM58LXXTS	SOT89-3	1K/reel
BM58LXXTG	SOT23-5	3K/reel

(1) For all available packages, see the orderableaddendum at the end of the data sheet.

Pin Configuration ： SOT89 and SOT23-3







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Absolute Maximum Ratings

Item	Description	Min	Max	Unit
Voltage	VIN to GND	-0.3	48	V
	VOUT to GND	-0.3	7	V
	VIN to VOUT	-0.3	45	V
Current	Peak output current	Internally limited		
Temperature	Operating Temperature Range	-40	125	℃
	Storage Temperature	-40	150	℃
Thermal Resistance (Junction to Ambient)	SOT89	130		℃/W
	SOT23	200		℃/W
Power Dissipation	SOT89	900		mW
	SOT23	600		mW
Electrostatic discharge rating	Human Body Model（HBM）	4		kV
	Charged Device Model（CDM）	200		V

Note: exceeding the range specified by the rated parameters will cause damage to the chip, and the working state of the chip beyond the range of rated parameters cannot be guaranteed. Exposure outside the rated parameter range will affect the reliability of the chip.

Electrical Characteristics

（At $T_{A=}$25°C, C_{IN}=0.1uF, V_{IN}=V_{OUTNOM}+2V, C_{OUT}=0.1uF, unless otherwise noted）

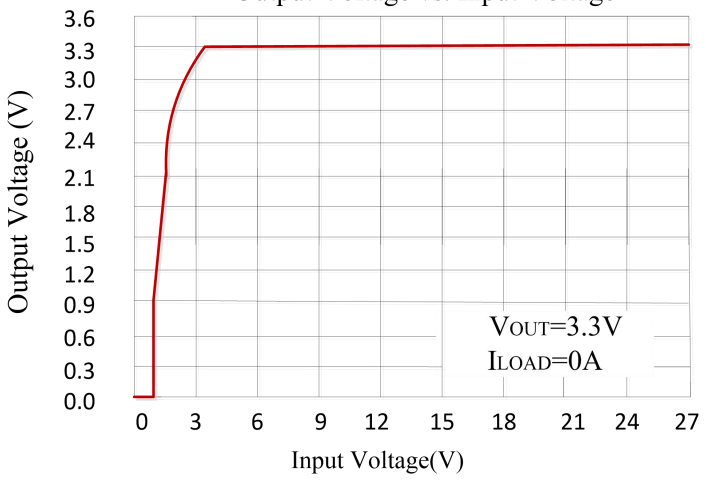
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_{IN}	Input voltage		3	—	45	V
I_{GND}	Quiescent current	V_{IN}=12V, No-load	—	2.5	3	μA
V_{OUT}	Output Voltage	V_{IN}=12V, I_{OUT}=10mA	V_{OUTNOM} * 0.98	V_{OUTNOM}	V_{OUTNOM} * 1.02	V
I_{OUT_MAX}	Output current	V_{IN}=V_{OUTNOM}+1V	—	150	—	mA
V_{DROP}	Dropout voltage*1 (MST58L50B)	I_{OUT}=100mA V_{IN}=V_{OUTNOM}-0.1V	—	500	—	mV
		I_{OUT}=150mA V_{IN}=V_{OUTNOM}-0.1V	—	650	—	
	Dropout voltage (MST58L33B)	I_{OUT}=100mA V_{IN}=V_{OUTNOM}-0.1V	—	500	—	mV
		I_{OUT}=150mA V_{IN}=V_{OUTNOM}-0.1V	—	700	—	
$\Delta V_{OUT}/\Delta I_{OUT}$	Load Regulation	V_{IN}= 7V, 1mA≤I_{OUT}≤150mA	—	0.1	—	mV/mA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	I_{OUT}=1mA, V_{OUTNOM}+2V≤V_{IN}≤24V	—	0.1	—	mV/V
I_{LIMIT}	Current Limit	V_{IN}=V_{OUTNOM}+2V	—	300	—	mA
I_{SHORT}	Short Current	V_{IN}=12V	—	100	—	mA
T_{SHDN}	ThermalShutdown Temperature	Shutdown, temperature increasing	—	154	—	℃
		Reset, temperature decreasing	—	125	—	

Note： *1 Dropout Voltage is the voltage difference between the input and the output at which the output voltage drops 2% below its nominal value.

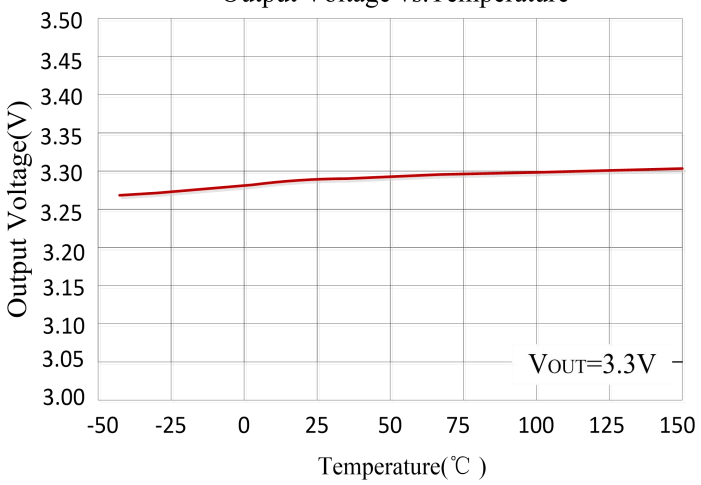
Typical Performance Characteristics

Test Condition: T_A=25°C,Vin=12V,Iout=1mA,C_{OUT}=10uF, unless otherwise note

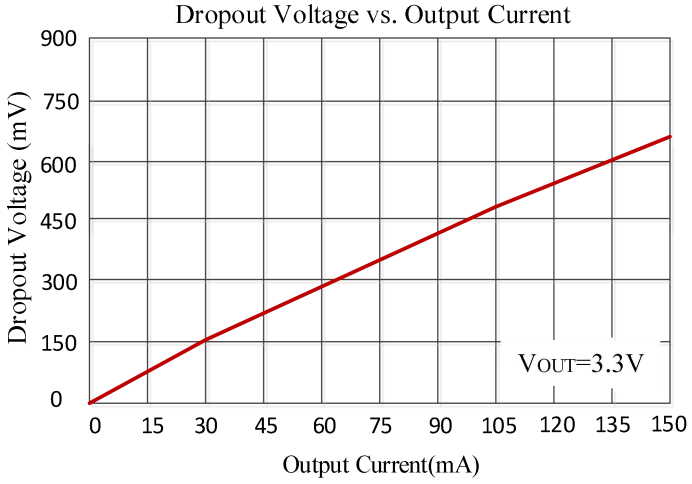
Output Voltage vs. Input Voltage



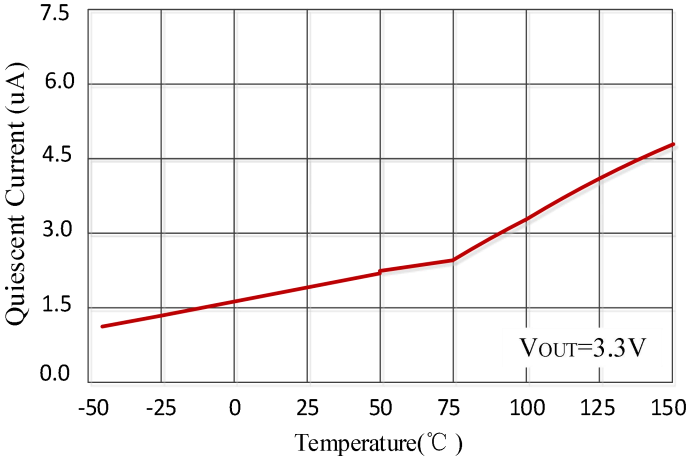
Output Voltage vs.Temperature



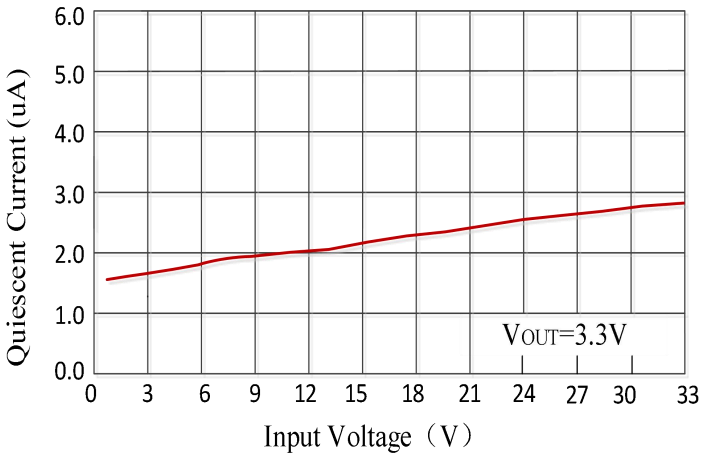
Dropout Voltage vs. Output Current



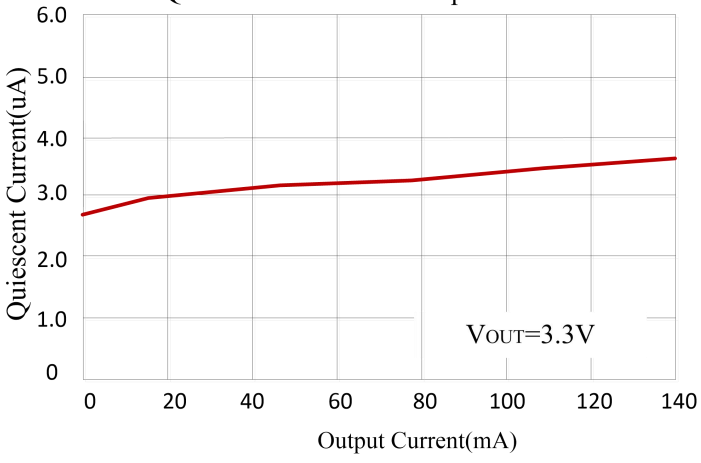
Quiescent Current vs.Temperature



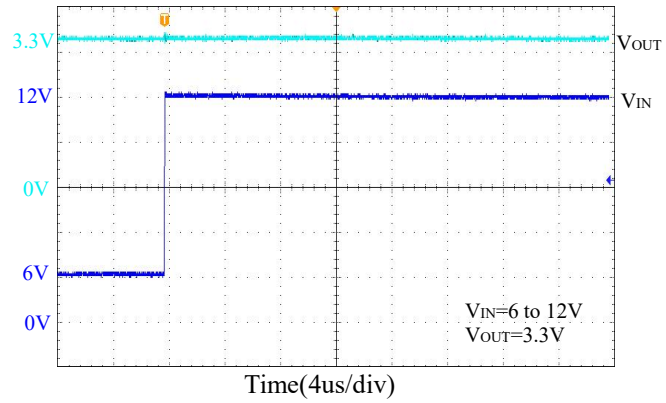
Quiescent Current vs. Input Voltage



Quiescent Current vs. Output Current

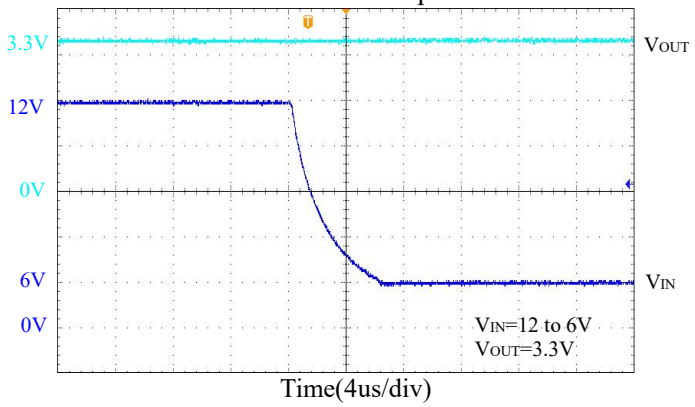


Line Transient Response



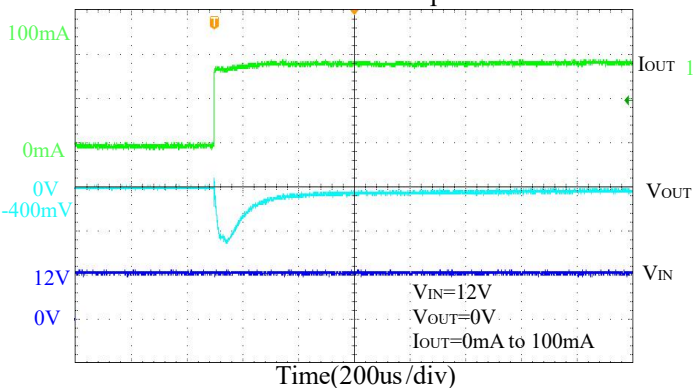
Time(4us/div)

Line Transient Response



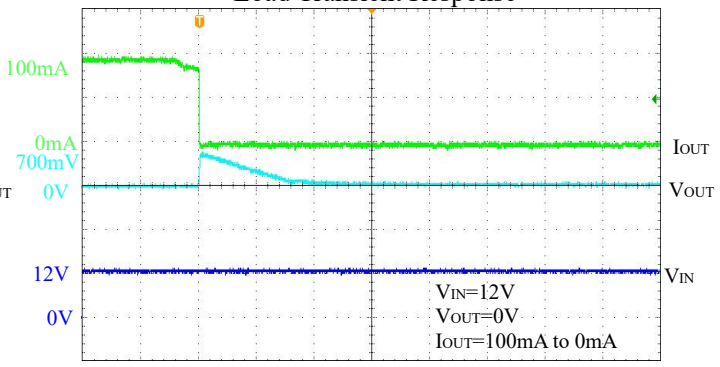
Time(4us/div)

Load Transient Response



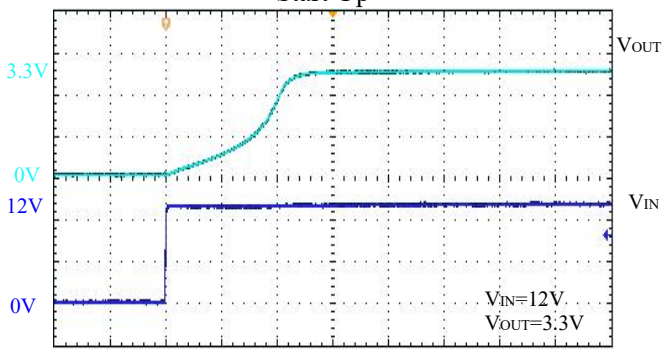
Time(200us/div)

Load Transient Response



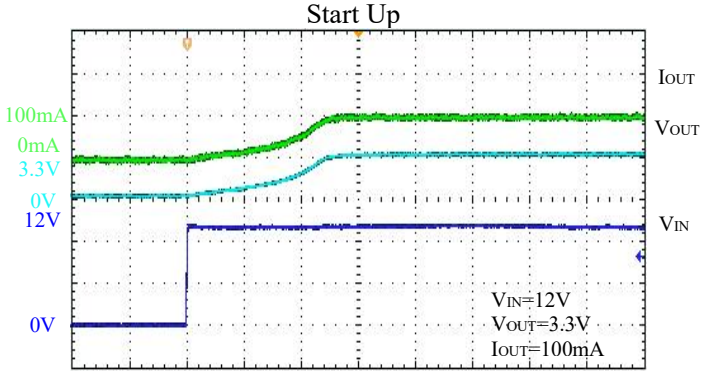
Time(200us/div)

Start Up



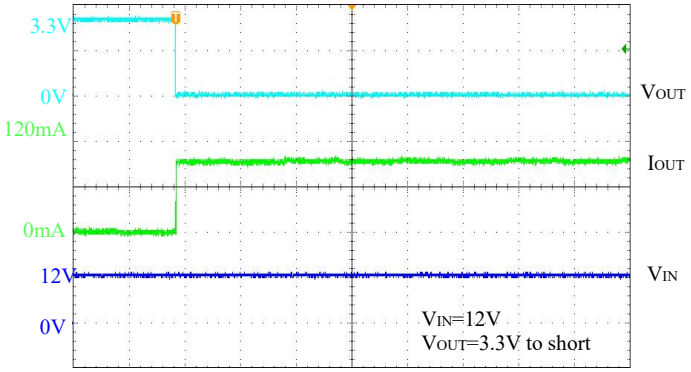
Time(40us/div)

Start Up



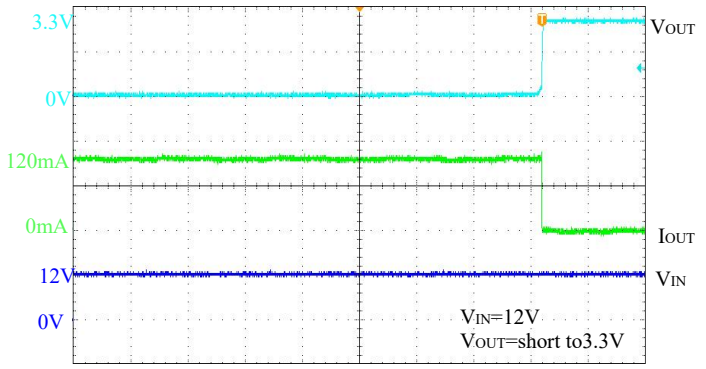
Time(40us/div)

Short Circuit Protection



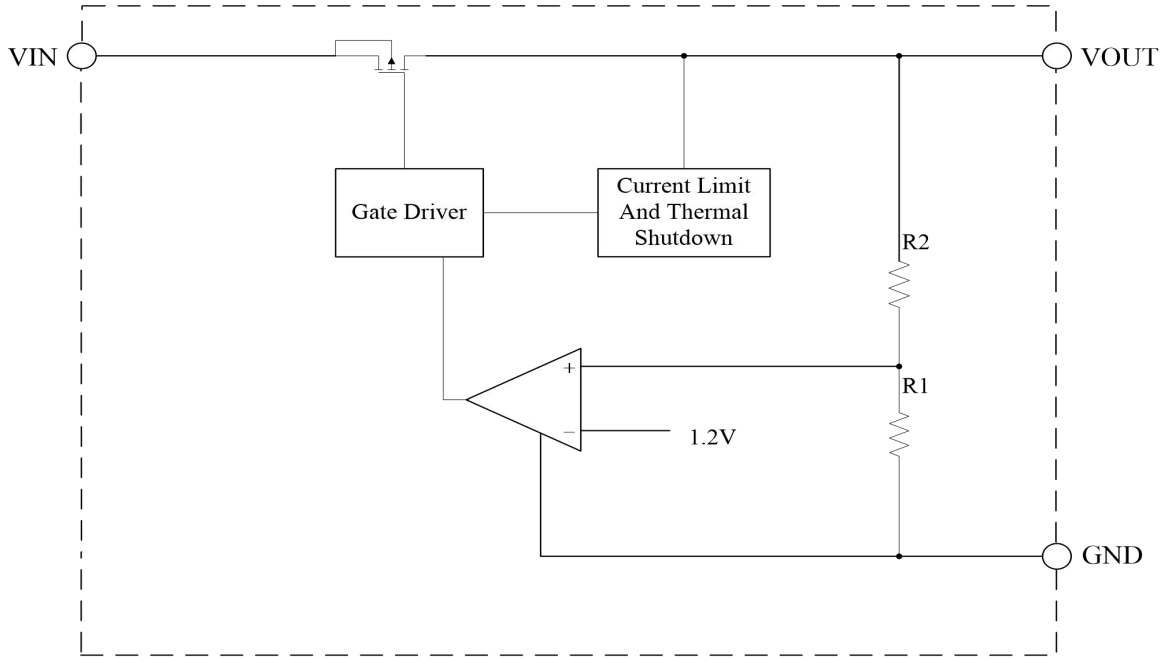
Time(2ms/div)

Short Circuit Protection



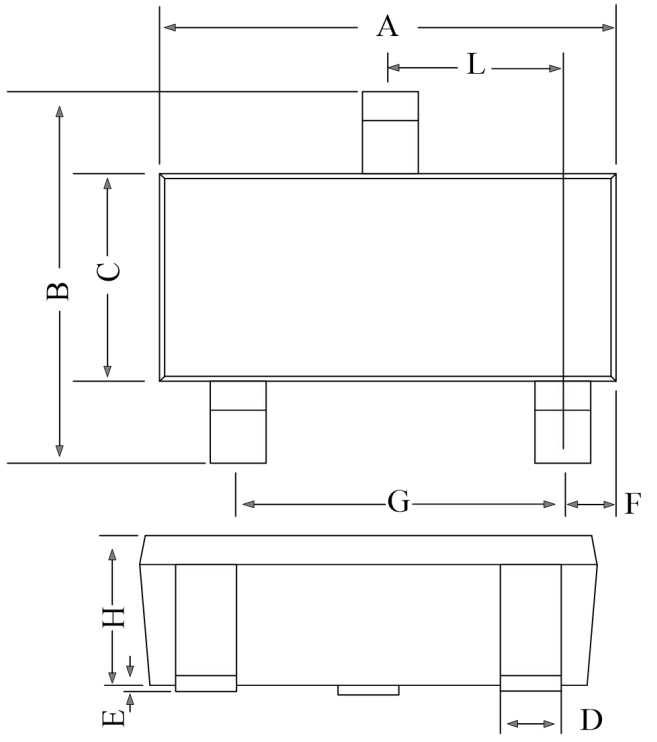
Time(2ms/div)

Block Diagram



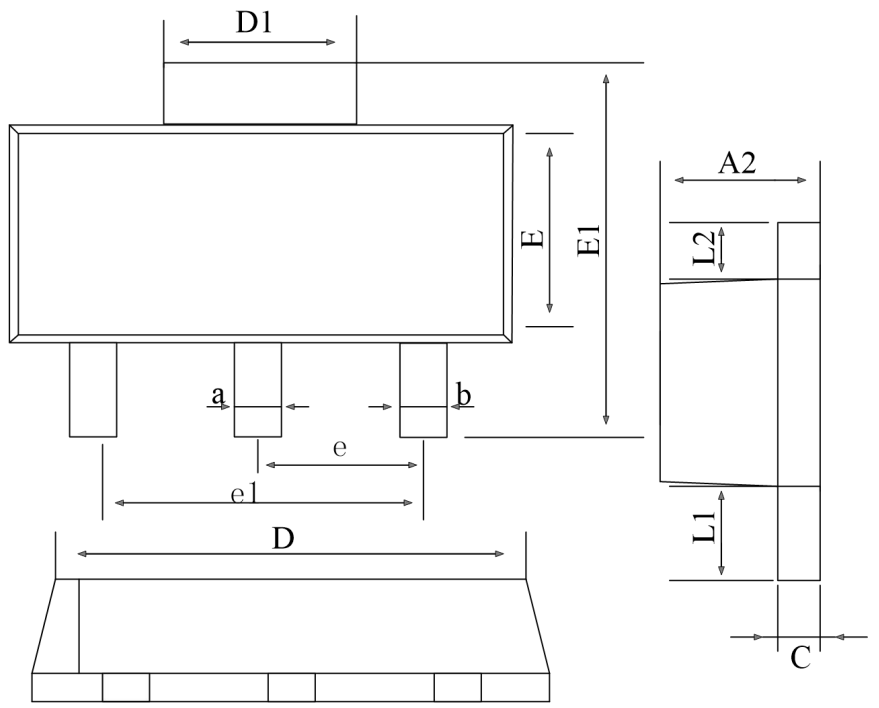
Package Outline:

SOT23-3



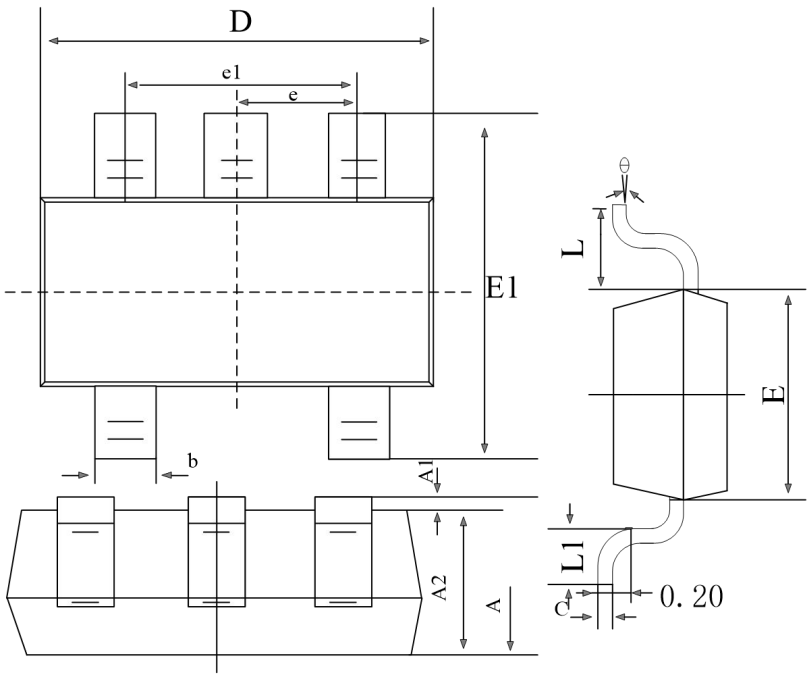
REF.	Millimeter	
	Min.	Max.
A	2. 82	2. 92
B	2. 65	2. 95
C	1. 56	1. 60
D	0. 35	0. 55
E	0	0. 1
F	0. 45	0. 55
G	1. 90 REF.	
H	1. 0	1. 3
K	0. 10	0. 20
J	0. 40	_
L	0. 85	1. 15
M	0°	10°

SOT89-3



REF.	Millimeter	
	Min.	Max.
A2	1.4	1.6
a	0.45	0.55
b	0.38	0.48
c	0.36	0.46
D	4.40	4.60
D1	1.60	1.80
E	2.40	2.60
E1	4.00	4.30
e	1.00	2.00
e1	2.95	3.05
L1	0.80	1.00
L2	0.65	0.75

SOT23-5



REF.	Millimeter	
	Min.	Max.
A	1.05	1.25
A1	0	0.1
A2	1.05	1.15
b	0.3	0.5
c	0.1	0.2
D	2.85	3.05
E	1.5	1.7
E1	2.65	2.95
e	0.95(BSC)	
e1	1.8	2.0
L	0.3	0.6
θ	0°	8°