

■ Description

The MB852LXXB series is a high voltage, ultralow-power, low dropout voltage regulator. The device can deliver 100mA output current with a dropout voltage of 500mV and allows an input voltage as high as 24V. The typical quiescent current is only 1.7 μ A. The device is available in fixed output voltages of 3.0, 3.3 and 5.0V.

The device features integrated short-circuit and thermal shutdown protection.

Although designed primarily as fixed voltage regulators, the device can be used with external components to obtain variable voltages.

■ Application

- Battery-powered equipment
- Smoke detector and sensor
- Microcontroller Applications
- Home Appliance

■ Features

- Low Quiescent Current: 1.7 μ A
- High Input Voltage: Up to 24V
- High Output Current: \geq 150mA
- Low Dropout Voltage:
 - 30mV@10mA
 - 300mV@100mA
 - 600mV@200mA
- Fixed Output Voltages: 3.0, 3.3, and 5.0V
- High-accuracy Output Voltage \pm 2%
- Good Transient Response
- Integrated Short-Circuit Protection
- Integrated Thermal Protection
- Available Packages:

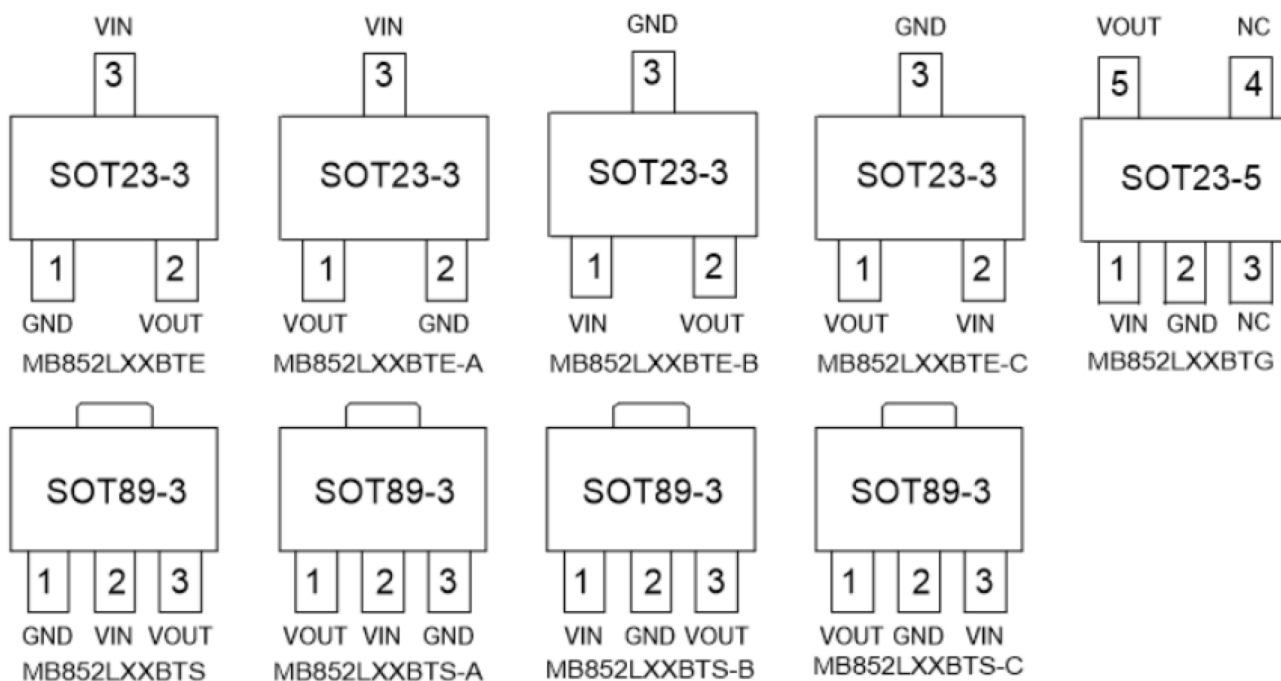
MB852LXXBTE	SOT23-3
MB852LXXBTE-A	
MB852LXXBTE-B	
MB852LXXBTE-C	
MB852LXXBTS	SOT89-3
MB852LXXBTS-A	
MB852LXXBTS-B	
MB852LXXBTS-C	
MB852LXXBTG	SOT23-5

Pin Descriptions

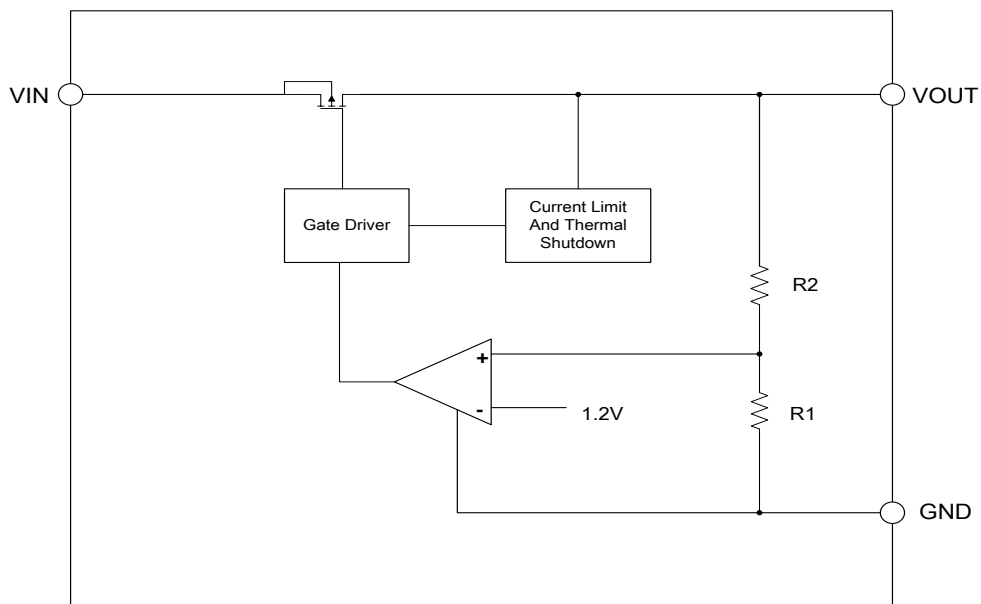
SOT23-3				SOT23-5	PIN NAME	DESCRIPTION
MB852LX X BTE	MB852LLX X BTE-A	MB852LX X BTE-B	MB852LX X BTE-C	MB852LX X BTG		
1	2	3	3	2	GND	Ground Pin
2	1	2	1	5	VOUT	Output Pin
3	3	1	2	1	VIN	Input Pin
				3,4	NC	No connection

SOT89-3				PIN NAME	DESCRIPTION
MB852LXXBTS	MB852LXXBTS- A	MB852LXXBTS- B	MB852LXXBTS- C		
1	3	2	2	GND	Ground Pin
3	1	3	1	VOUT	Output Pin
2	2	1	3	VIN	Input Pin

Packages and Pin Assignment



■ Functional Block Diagram



■ Absolute Maximum Ratings

Item	Description	Min	Max	Unit
Voltage	VIN Pin to GND Pin	-0.3	30	V
	VOUT Pin to GND pin	-0.3	15	V
	VOUT Pin to VIN Pin	-15	0.3	V
Current	Peak output	Internally limited		
Temperature	Operating Ambient Temperature	-40	80	°C
	Storage Temperature	-40	150	°C
	Operating virtual junction Temperature	-	260	°C
Thermal Resistance (Junction to Ambient)	SOT89	180		°C/W
	SOT23-3	380		°C/W
	SOT23-5	300		°C/W
Power Dissipation	SOT89	600		mW
	SOT23-3	300		mW
	SOT23-5	400		mW
Electrostatic discharge rating	Human Body Model (HBM)	4		kV
	Charged Device Model (MM)	100		V

Note : Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

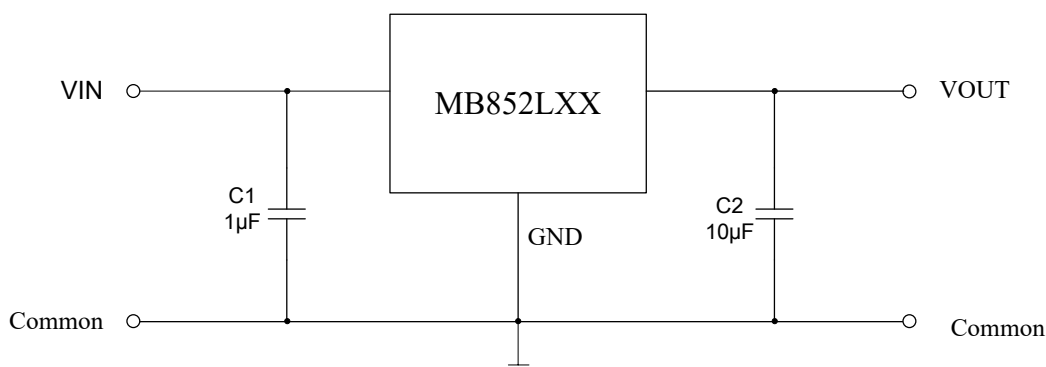
■ Electrical characteristics

(At $T_A=25^\circ\text{C}$, $C_{IN}=1\mu\text{F}$, $V_{IN}=V_{OUTNOM}+1.0\text{V}$, $C_{OUT}=10\mu\text{F}$, unless otherwise noted)

Symbol	Parameter	Test Conditions	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage		3	—	24	V
I_{GND}	Quiescent Current	$V_{IN}=12\text{V}$, No load	—	1.6	3	μA
$V_{OUT(MB852LXXB)}$	Output Voltage	$V_{IN}=12\text{V}$, $I_{OUT}=10\text{mA}$	-2%		2%	V_{OUT}
I_{OUT_MAX}	Output Current		-	150	—	mA
V_{DROP}	Dropout Voltage*1 (MB852L50)	$I_{OUT}=150\text{mA}$, $\Delta V_{OUT} = -V_{OUTNOM} * 2\%$	—	700	900	mV
		$I_{OUT}=100\text{mA}$, $\Delta V_{OUT} = -V_{OUTNOM} * 2\%$	—	500	600	mV
	Dropout Voltage*1 (MB852L33)	$I_{OUT}=150\text{mA}$, $\Delta V_{OUT} = -V_{OUTNOM} * 2\%$	—	800	990	mV
		$I_{OUT}=100\text{mA}$, $\Delta V_{OUT} = -V_{OUTNOM} * 2\%$	—	500	700	mV
	Dropout Voltage*1 (MB852L30)	$I_{OUT}=150\text{mA}$, $\Delta V_{OUT} = -V_{OUTNOM} * 2\%$	—	800	990	mV
		$I_{OUT}=100\text{mA}$, $\Delta V_{OUT} = -V_{OUTNOM} * 2\%$	—	500	700	mV
ΔV_{OUT}	Load Regulation	$1\text{mA} \leq I_{OUT} \leq 100\text{mA}$	—	45	80	mV
$\frac{\Delta V_{OUT} \times 100}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	$I_{OUT}=10\text{mA}$, $V_{IN}=(V_{OUTNOM}+1\text{V})$ to 24V	—	0.15	—	%/V
I_{LIMIT}	Current Limit	$V_{IN}=(V_{OUTNOM}+1\text{V})$ to 24V $R_{LOAD}=V_{OUTNOM}/1\text{A}$	—	TBD	—	mA
T_{SHDN}	Thermal Shutdown Threshold		—	125	—	$^\circ\text{C}$

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.

■ Application Circuits



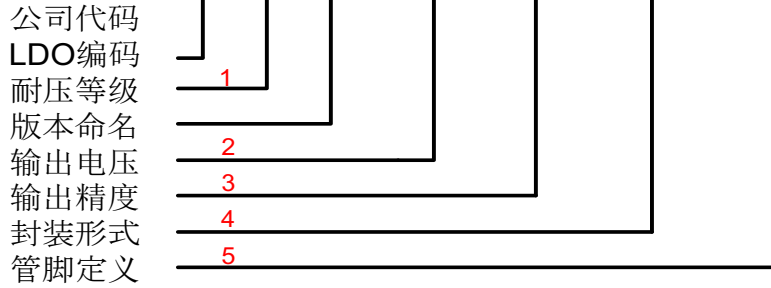
■ Ordering Information

Ordering Number	Package Type	Note
MB852LXXBTE MB852LXXBTE-A MB852LXXBTE-B MB852LXXBTE-C	SOT23-3	/
MB852LXXBTS MB852LXXBTS-A MB852LXXBTS-B MB852LXXBTS-C	SOT89-3	/
MB852LXXBTG	SOT23-5	/

Note: please check with your support window before design-in.

■ Marking Information

MB852LXXBTE-A



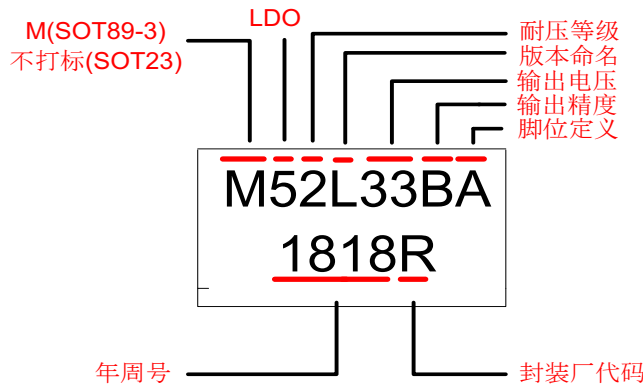
注释1：2-24V耐压 3-35V耐压

注释2：18 (1.8V) 30(3.0V) 33(3.3V) 50(5.0V)

注释3：A(1%精度) B (2%精度) C (3%精度)

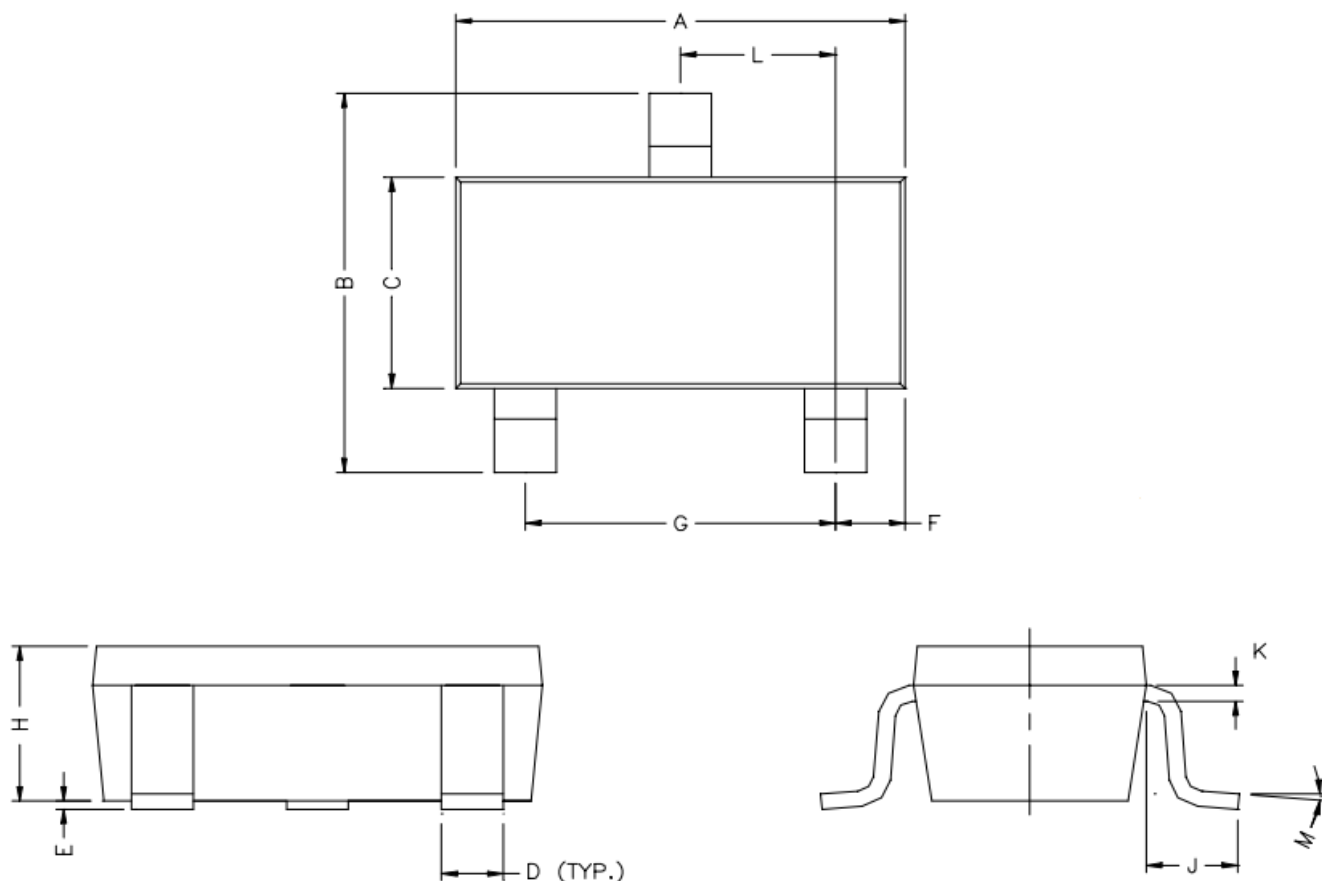
注释4：TE(SOT23-3) TS(SOT89-3) TG(SOT23-5)

注释5：封装脚位定义



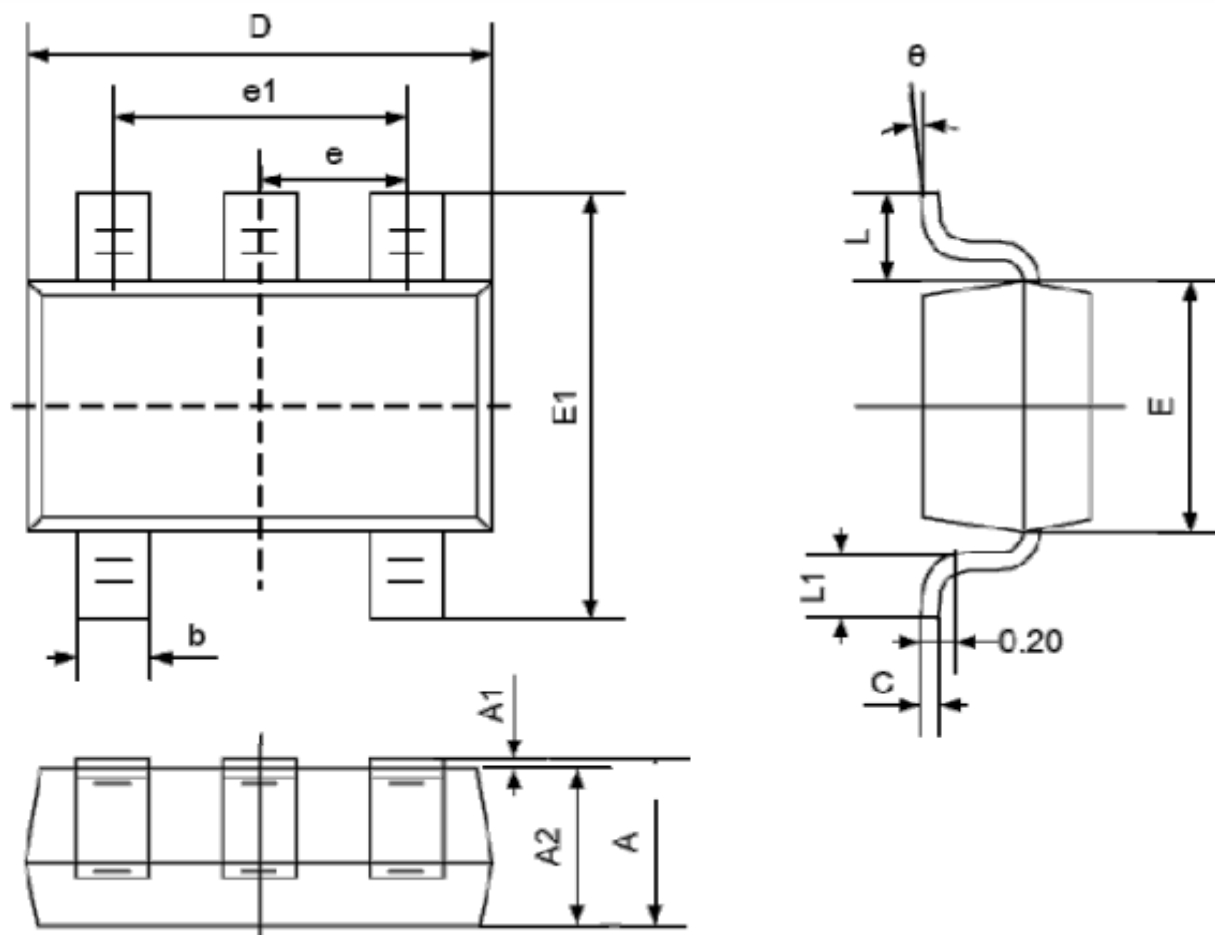
■ Package Information

SOT23-3



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.82	2.92	G	1.90	REF.
B	2.65	2.95	H	1.0	1.3
C	1.56	1.60	K	0.10	0.20
D	0.35	0.55	J	0.40	-
E	0	0.1	L	0.85	1.15
F	0.45	0.55	M	0°	10°

SOT23-5

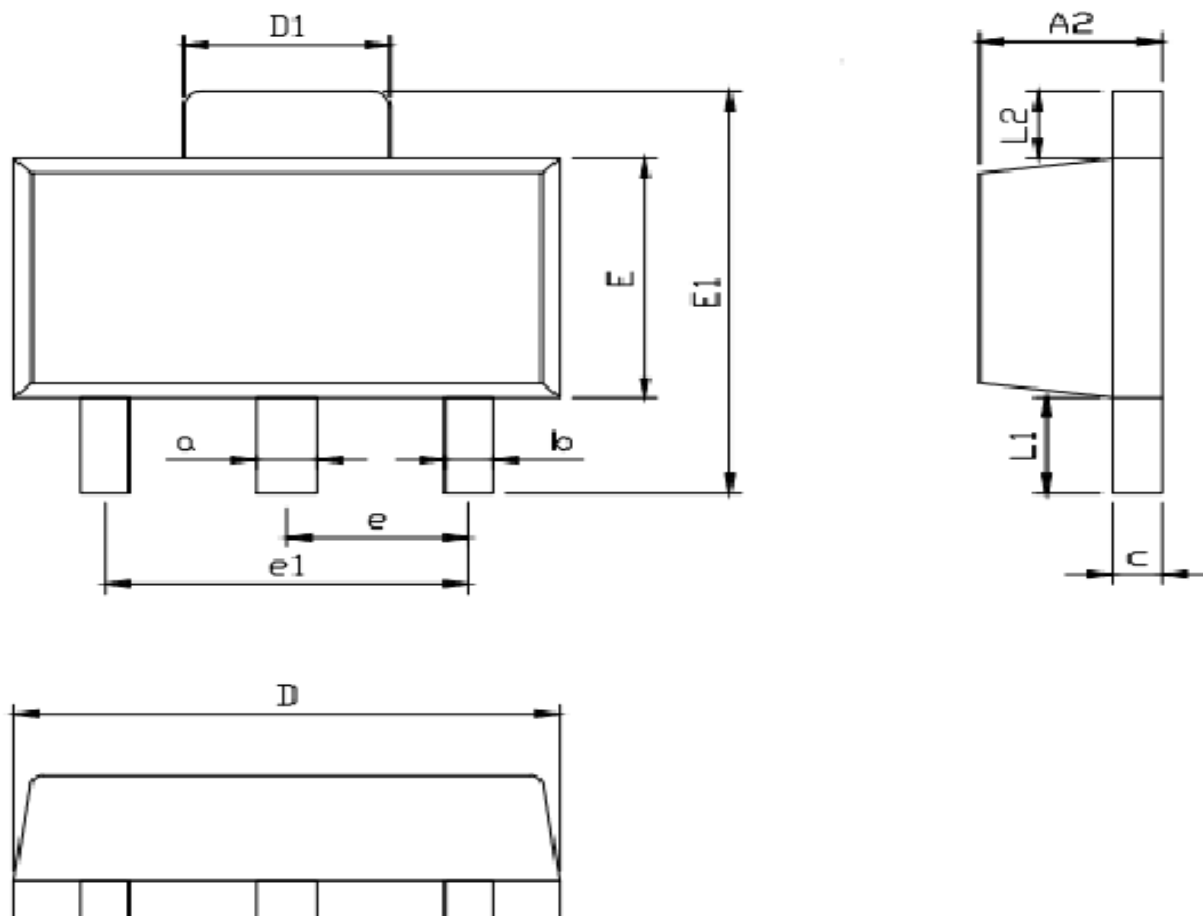


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.05	1.25	E	1.5	1.7
A1	0	0.1	E1	2.65	2.95
A2	1.05	1.15	e	0.95 (BSC)	
b	0.3	0.5	e1	1.8	2.0
c	0.1	0.2	L	0.3	0.6

MB852LXXB

D	2.85	3.05	θ	0°	8°
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SOT89-3

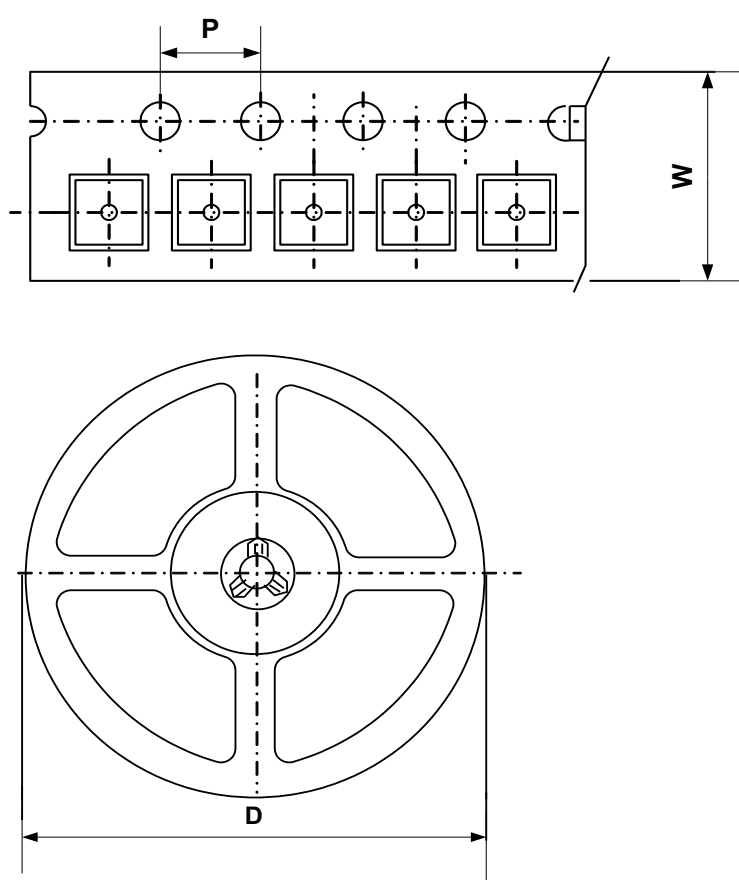


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A2	1.4	1.6	E	2.40	2.60
a	0.45	0.55	E1	4.00	4.30
b	0.38	0.48	e	1.00	2.00

MB852LXXB

c	0.36	0.46	e1	2.95	3.05
D	4.40	4.60	L1	0.80	1.00
D1	1.60	1.80	L2	0.65	0.75

■ Packing information



Type	W(mm)	P(mm)	D(mm)	Qty (pcs)
SOT23-3 SOT23-5	12.0±0.1 mm	8.0±0.1 mm	330±1 mm	3000pcs
SOT89-3	/	/	/	1000pcs

