

250mA, 18V Vin, Output overshoot control LDO ME6249

General Description

ME6249 series are low-dropout linear voltage regulators with a built-in voltage reference module, error amplifier module and feedback resistance network. ME6249 can deliver 250mA output current and allow an input voltage as high as 18V. This series has the function of internal feedback resistor setting from 1.8V to 5V.

Features

- High output accuracy: $\pm 1\%$
- Output voltage overshoot control
- Input voltage: up to 18 V
- Ultra-low quiescent current (Typ.= 3 μ A)
- Output Current: I_{OUT} = 250mA
(When V_{IN} = 4.3V and V_{OUT} = 3.3V)
- Low temperature coefficient
- Ceramic capacitor can be used

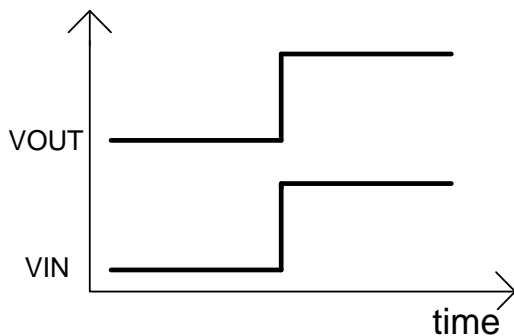
Typical Application

- Electronic weighbridge
- Water meters, power meters
- Plaything
- Phones, cordless phones

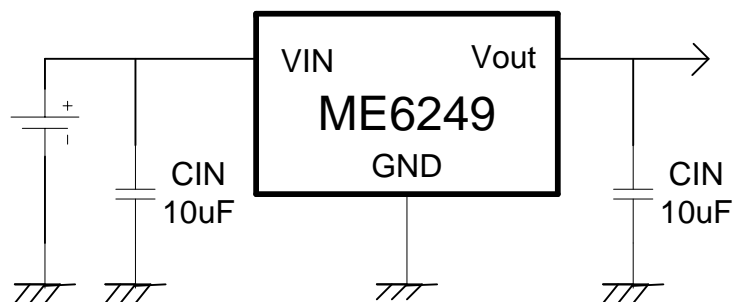
Package

- 3-pin SOT23-3、SOT89-3

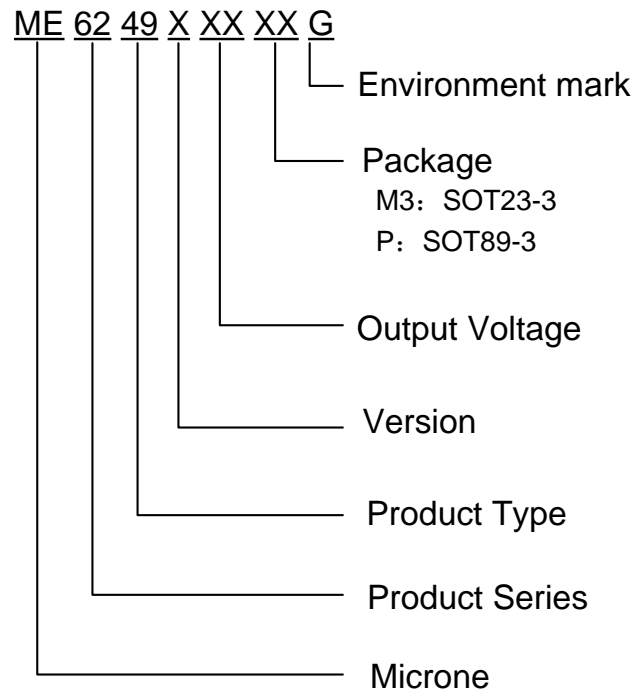
Typical performance characteristics



Typical Application Circuit



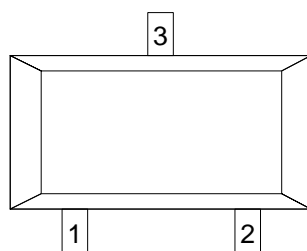
Selection Guide



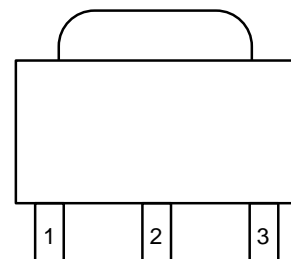
product series	product description
ME6249A33M3G	VOUT=3.3V; Package: SOT23-3
ME6249A33PG	VOUT=3.3V; Package: SOT89-3
ME6249A50M3G	VOUT=5.0V; Package: SOT23-3
ME6249A50PG	VOUT=5.0V; Package: SOT89-3

NOTE: If you need other voltage and package, please contact our sales staff.

Pin Configuration & Pin Assignment



SOT23-3

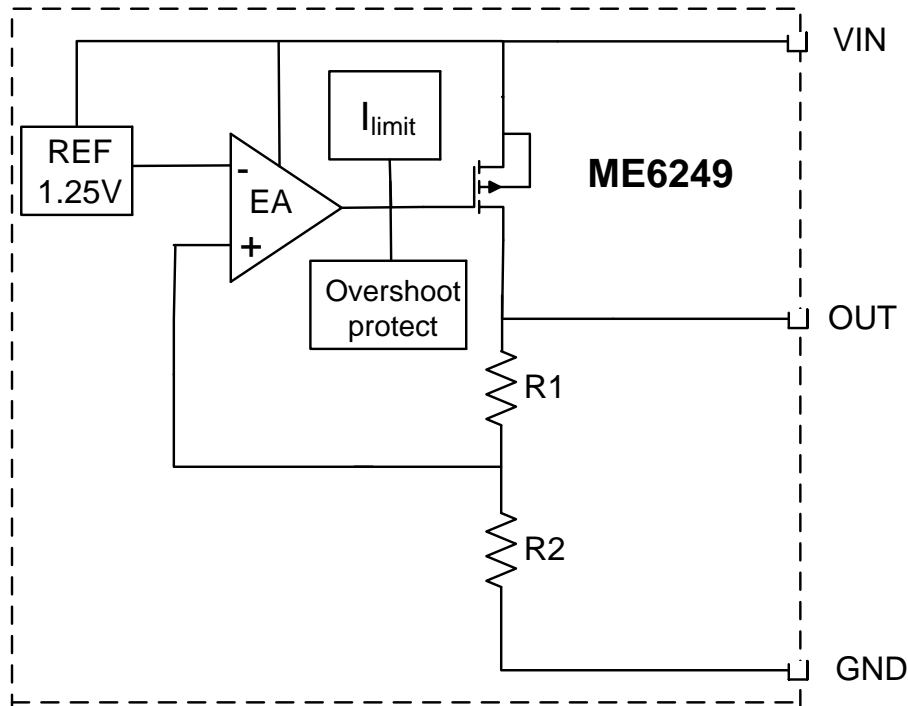


SOT89-3

Pin Assignment

Pin Number		Pin Name	Functions
SOT23-3	SOT89-3		
1	1	V _{SS}	Ground
2	3	V _{OUT}	Output
3	2	V _{IN}	Power Input

Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Input Voltage	V_{IN}	20	V
Output Current	I_{OUT}	300	mA
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Power Dissipation	SOT23-3	P_D	W
	SOT89-3		
Thermal resistance (Junction to air)	SOT23-3	θ_{JA}	$^{\circ}\text{C}/\text{W}$
	SOT89-3		
Operating Junction Temperature Range	T_{OPR}	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Maximum junction temperature	T_J	-40 ~ +150	$^{\circ}\text{C}$
Lead Temperature		260 $^{\circ}\text{C}$, 10sec	

Electrical Characteristics

ME6249A33M3G

($V_{IN} = V_{OUT} + 1V$, $C_{IN} = C_L = 10\mu F$, $T_a = 25^\circ C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	$I_{OUT} = 40mA$	X 0.99	$V_{OUT}(T)$ (Note 1)	X 1.01	V
Input Voltage	V_{IN}		3.3		18	V
Maximum Output Current	I_{OUT_max}	$V_{IN} = V_{OUT} + 1V$	250			mA
Load Regulation	ΔV_{OUT}	$V_{IN} = V_{OUT} + 1V$, $1mA \leq I_{OUT} \leq 150mA$		45	90	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT} = 40mA$		80		mV
Supply Current	I_{SS}	$V_{IN} = V_{OUT} + 1.5V$		3	6	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT} = 1mA$ $V_{OUT} + 1V \leq V_{IN} \leq 12V$		0.2	0.3	%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta T_a}$	$I_{OUT} = 40mA$ $-40^\circ C \leq T_a \leq 85^\circ C$		65		ppm/ $^\circ C$

ME6249A50M3G ($V_{IN} = V_{OUT} + 1V$, $C_{IN} = C_L = 10\mu F$, $T_a = 25^\circ C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	$I_{OUT} = 40mA$	X 0.99	$V_{OUT}(T)$ (Note 1)	X 1.01	V
Input Voltage	V_{IN}		5		18	V
Maximum Output Current	I_{OUT_max}	$V_{IN} = V_{OUT} + 1V$	250			mA
Load Regulation	ΔV_{OUT}	$V_{IN} = V_{OUT} + 1V$, $1mA \leq I_{OUT} \leq 150mA$		20	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT} = 40mA$		60		mV
Supply Current	I_{SS}	$V_{IN} = V_{OUT} + 1.5V$		3	6	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT} = 1mA$ $V_{OUT} + 1V \leq V_{IN} \leq 12V$		0.1	0.2	%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta T_a}$	$I_{OUT} = 40mA$ $-40^\circ C \leq T_a \leq 85^\circ C$		65		ppm/ $^\circ C$

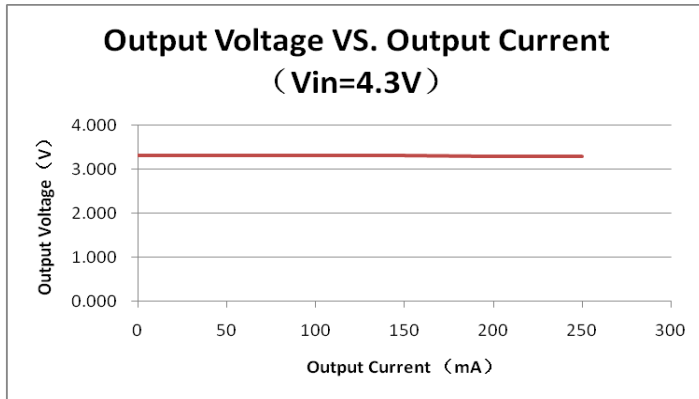
Note :

- $V_{OUT}(T)$: Specified Output Voltage
- $V_{OUT}(E)$: Effective Output Voltage (ie. The output voltage when " $V_{OUT}(T) + 1.0V$ " is provided at the Vin pin while maintaining a certain Iout value.)
- $V_{DIF} = V_{IN1} - V_{OUT}(E)'$
 V_{IN1} : The input voltage when $V_{OUT}(E)'$ appears as input voltage is gradually decreased.
 $V_{OUT}(E)'$ = A voltage equal to 98% of the output voltage whenever an amply stabilized Iout and $\{V_{OUT}(T) + 1.0V\}$ is input.

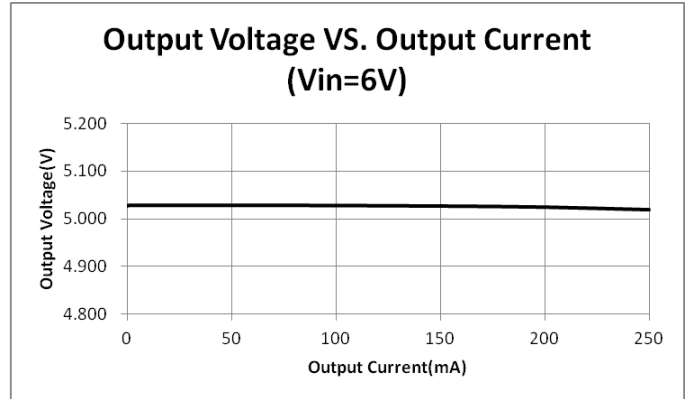
Type Characteristics

(1) Output Voltage VS. Output Current ($T_a = 25\text{ }^\circ\text{C}$)

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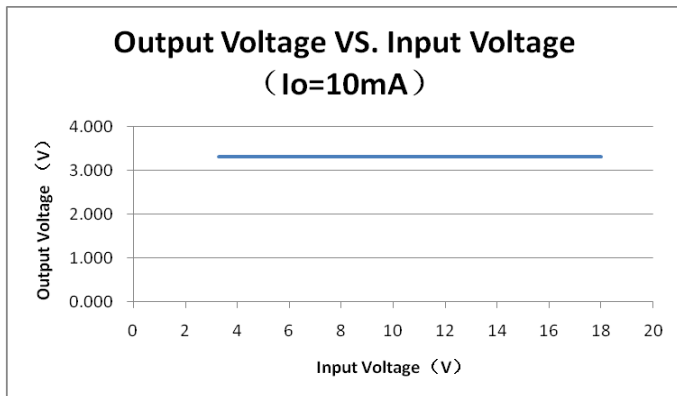


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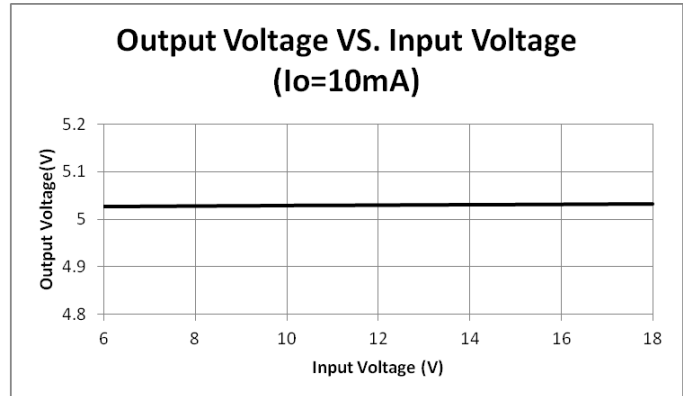


(2) Output Voltage VS. Input Voltage ($T_a = 25\text{ }^\circ\text{C}$)

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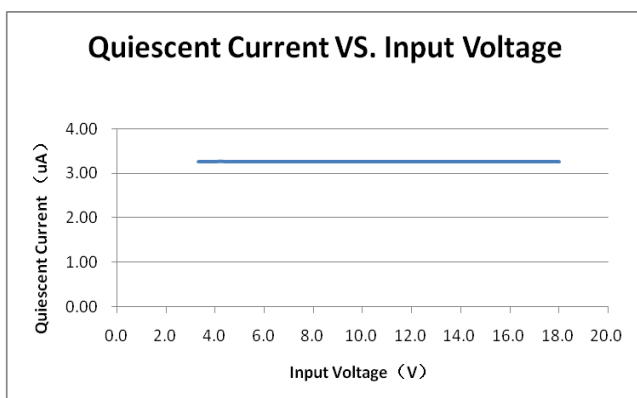


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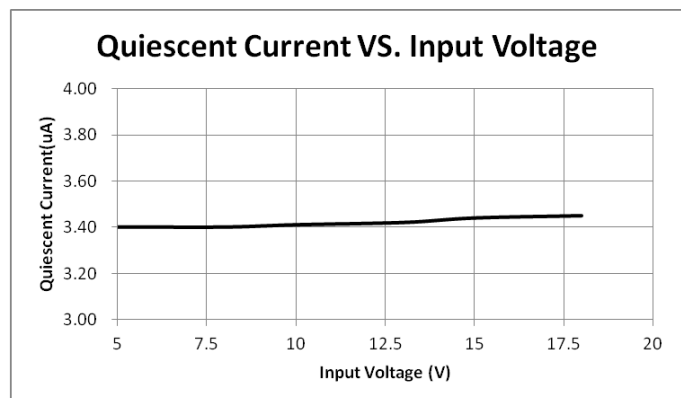


(3) Quiescent Current VS. Input Voltage ($T_a = 25\text{ }^\circ\text{C}$)

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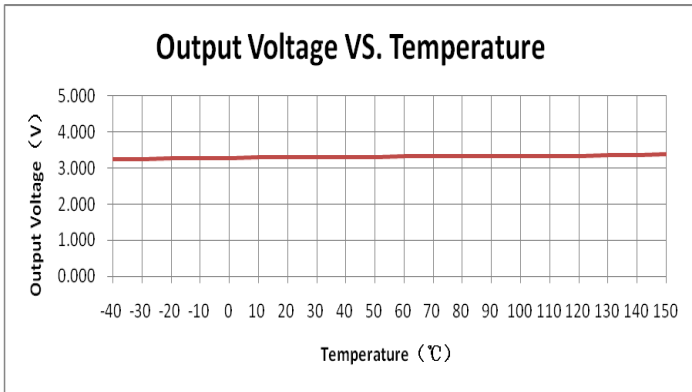


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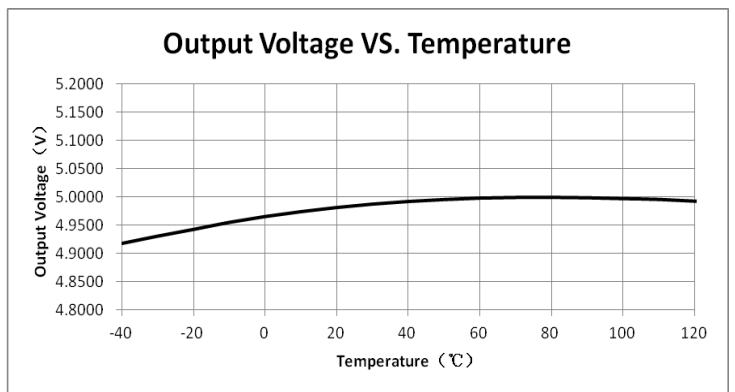


(4) Output Voltage VS. Temperature ($I_{OUT}=10mA$)

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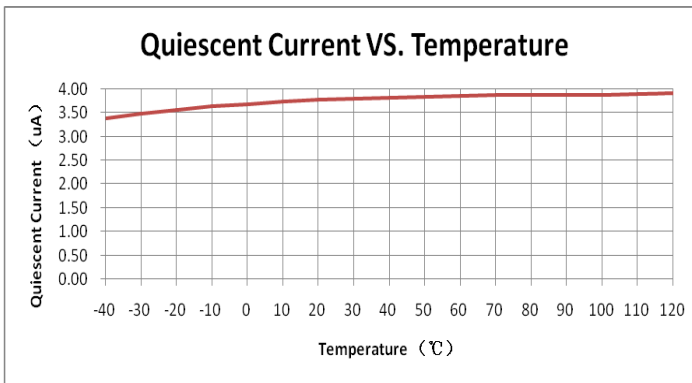


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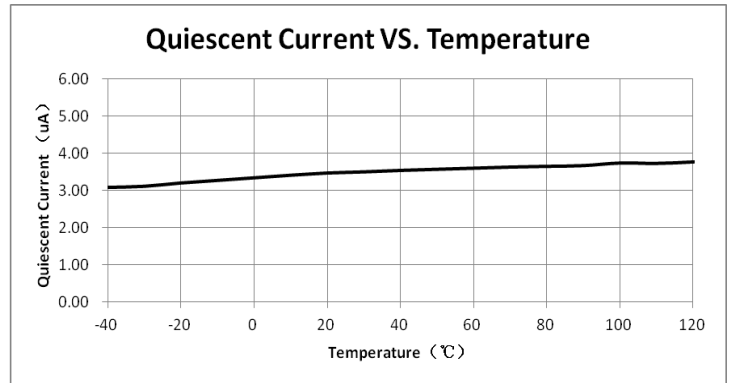


(5) Quiescent Current VS. Temperature

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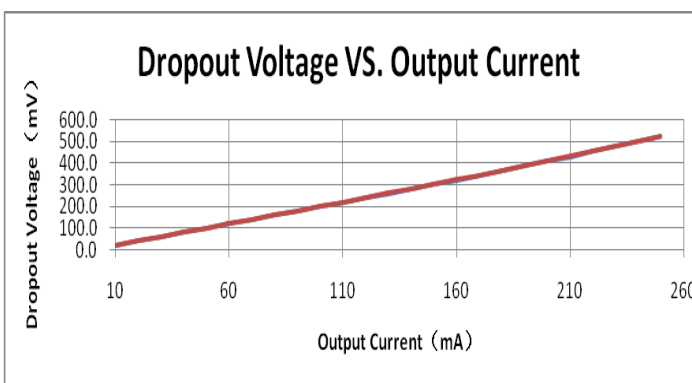


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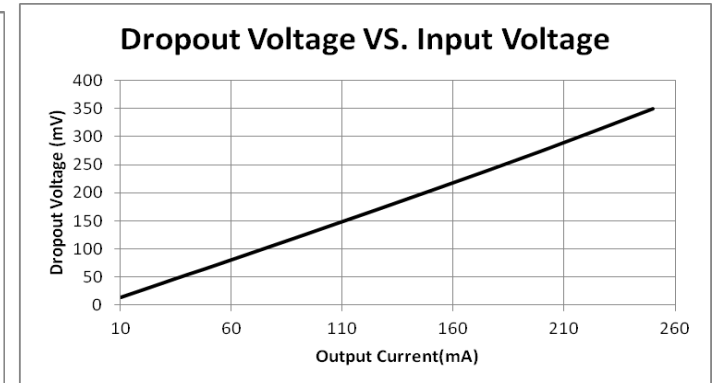


(6) Dropout Voltage VS. Output Current

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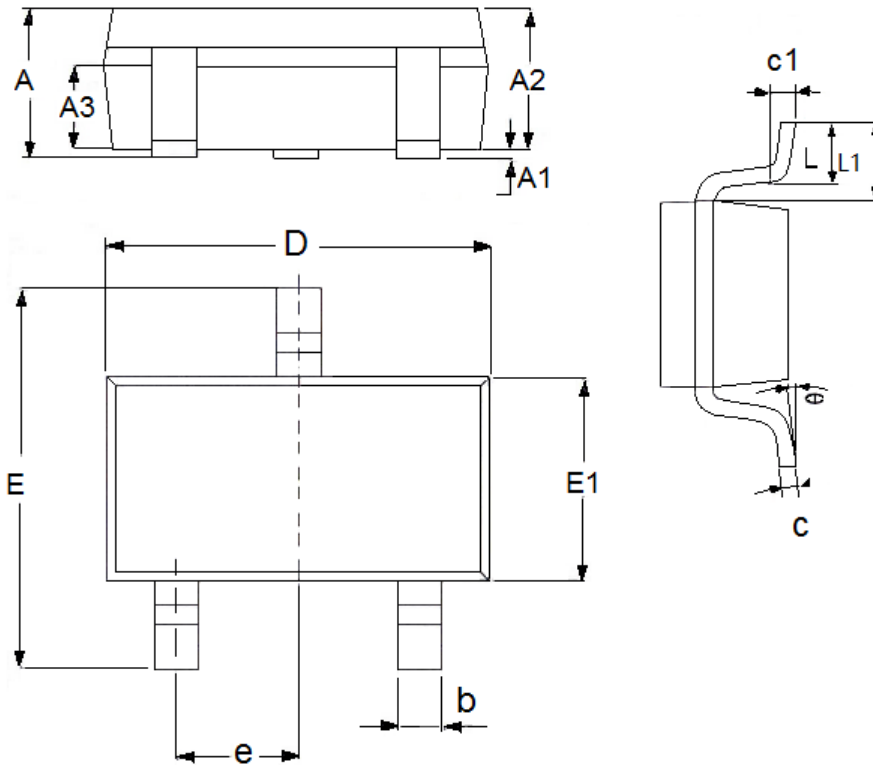


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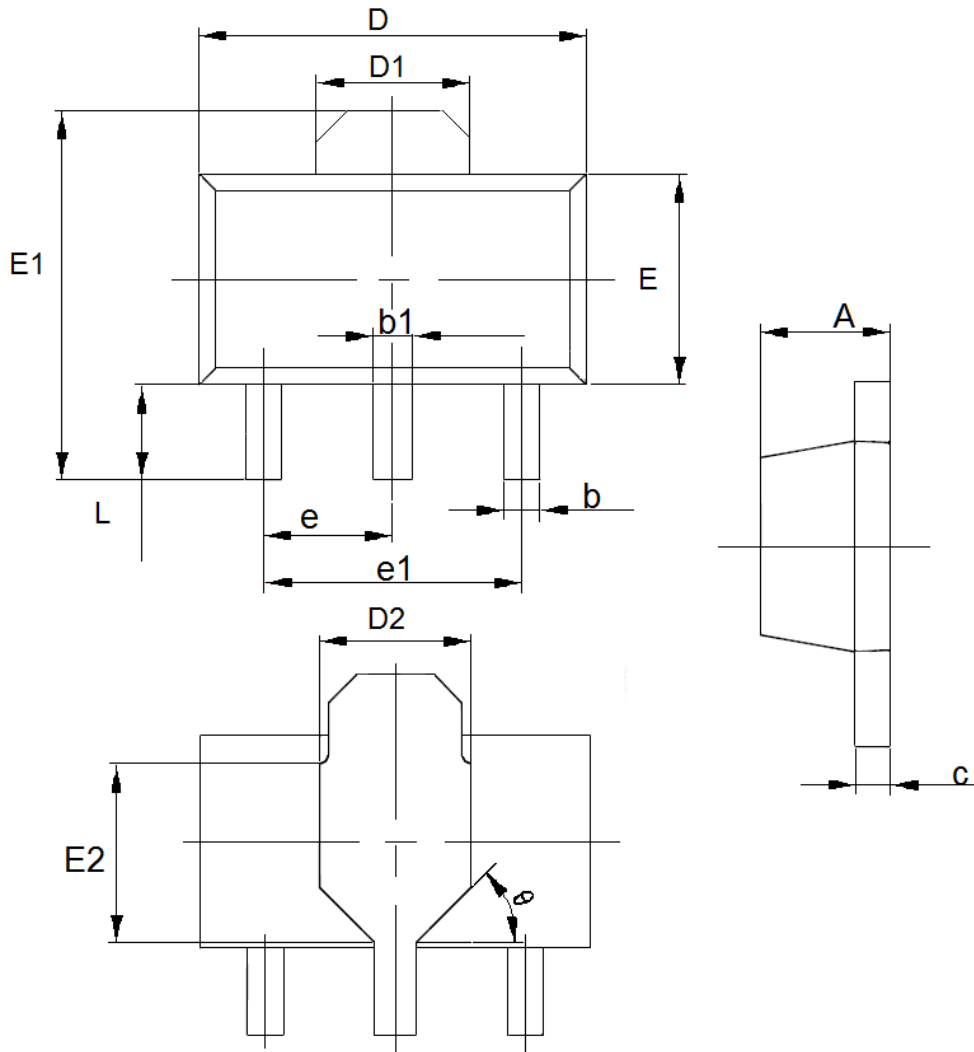
Packaging Information

- Packaging Type: SOT23-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

● Packaging Type: SOT89-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.0177
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3.0(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)		0.0748(TYP)	
e	1.5(TYP)		0.0591(TYP)	
L	0.8	1.2	0.0315	0.0472
θ	45°		45°	

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