



## Low power consumption, Low ESR Cap. Compatible

### General Description

ME6216 series are highly precise, low power consumption, positive voltage regulators manufactured using CMOS technologies. The series provides large currents with a significantly small dropout voltage.

The series is compatible with low ESR ceramic capacitors. The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin.

### Features

- Output voltage range: 1.0V~5.0V
- Input voltage: up to 6 V
- Dropout Voltage: 110mV@  $I_{OUT} = 100\text{mA}$   
240mV@  $I_{OUT} = 200\text{mA}$
- Highly Accuracy:  $\pm 1\%$
- Low power consumption: 6uA(TYP.)
- Large output current: 300mA ( $V_{IN} = 4.3\text{V}, V_{OUT} = 3.3\text{V}$ )
- Excellent Input Stability
- Be available to regulator and reference voltage

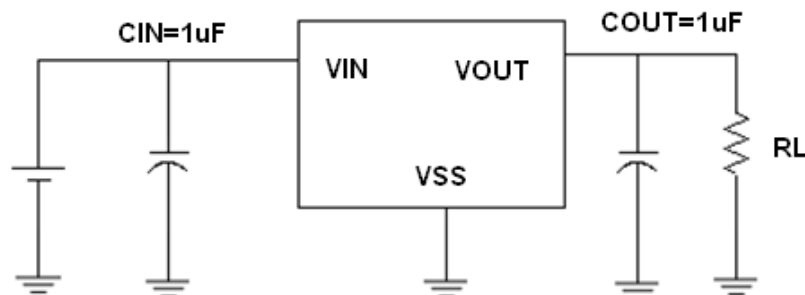
### Typical Application

- Communication tools
- Mobile phones
- Portable games
- Portable AV systems
- Cameras, Video systems
- Reference voltage sources

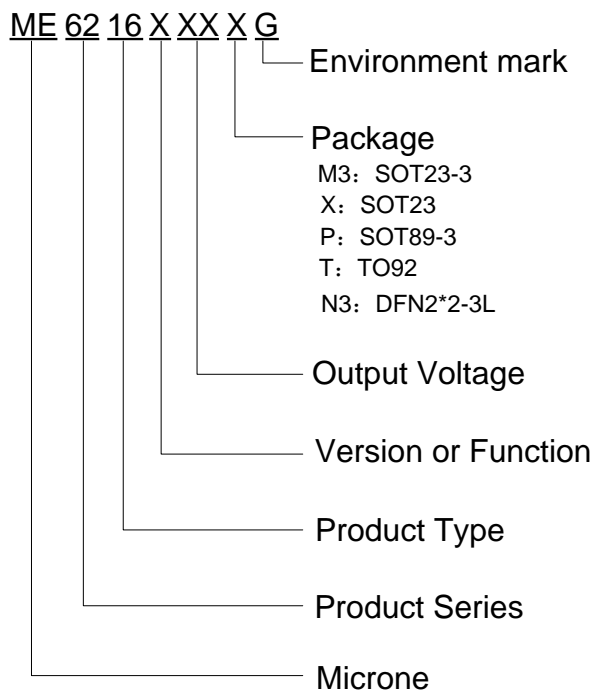
### Package

- 3-pin SOT89-3, SOT23-3, SOT23, TO92, DFN2\*2-3L

### Typical Application Circuit



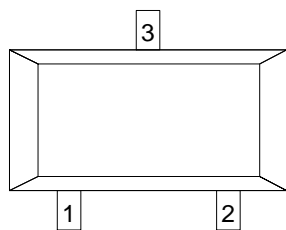
## Selection Guide



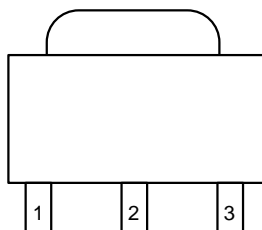
product series	product description
ME6216A10PG	V <sub>OUT</sub> =1.0V; Package: SOT89-3
ME6216A12M3G	V <sub>OUT</sub> =1.2V; Package: SOT23-3
ME6216A14M3G	V <sub>OUT</sub> =1.4V; Package: SOT23-3
ME6216A28M3G	V <sub>OUT</sub> =2.8V; Package: SOT23-3
ME6216A38M3G	V <sub>OUT</sub> =3.8V; Package: SOT23-3
ME6216A30XG	V <sub>OUT</sub> =3.0V; Package: SOT23
ME6216A18TG	V <sub>OUT</sub> =1.8V; Package: TO92
ME6216A18N3AG	V <sub>OUT</sub> =1.8V; Package: DFN2*2-3L(2.0*2.0*0.55-1.30)

- NOTE:**
1. At present ,there are fifteen kinds of voltage value: 1.0V、 1.2V、 1.3V、 1.4V、 1.5V、 1.8V、 2.0V、 2.5V、 2.7V、 2.8V、 3.0V、 3.3V、 3.6V、 3.8V、 5.0V。
  2. If you need other voltage and package, please contact our sales staff。

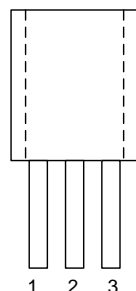
## Pin Configuration



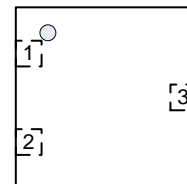
SOT23/SOT23-3



SOT89-3



TO92

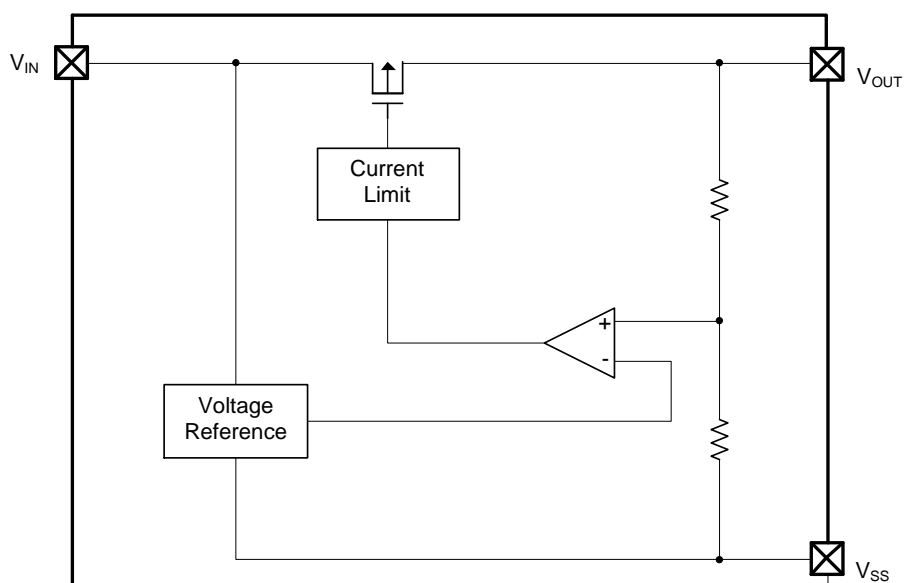


DFN2\*2-3

## Pin Assignment

Pin					Name	Function
M3	P	X	T	N3		
SOT23-3	SOT89-3	SOT23	TO-92	DFN3L		
1	1	1	1	3	VSS	Ground
2	3	2	3	2	VOU	Output
3	2	3	2	1	VIN	Input

## Block Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Description	Units	
Input Voltage	$V_{IN}$	6.5	V	
Output Current	$I_{OUT}$	390	mA	
Output Voltage	$V_{OUT}$	$V_{SS}-0.3 \sim V_{OUT}+0.3$	V	
Internal Power Dissipation	SOT23-3	$P_d$	0.54	W
	SOT89-3	$P_d$	1.25	W
	SOT23	$P_d$	0.38	W
	TO-92	$P_d$	0.83	W
	DFN3L	$P_d$	1.25	W
Thermal resistance (Junction to air)	SOT23-3	$\theta_{JA}$	230	$^{\circ}C/W$
	SOT89-3	$\theta_{JA}$	100	$^{\circ}C/W$
	SOT23	$\theta_{JA}$	328	$^{\circ}C/W$
	TO-92	$\theta_{JA}$	151	$^{\circ}C/W$
	DFN3L	$\theta_{JA}$	100	$^{\circ}C/W$
Operating Ambient Temperature	$T_{Opr}$	-40 ~ +85	$^{\circ}C$	
Storage Temperature	$T_{stg}$	-55 ~ +150	$^{\circ}C$	
Maximum junction temperature	$T_J$	-40~+150	$^{\circ}C$	

## Electrical Characteristics

ME6216 ( $V_{out}=1.2V$ )( $V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1\mu F, T_a=25^{\circ}C$  Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage ( $V_{out}=1.0\sim 1.3V$ )	$V_{OUT}(E)$ (Note 2)	$I_{OUT}=10mA,$ $V_{IN}=V_{OUT}+1V$	$V_{OUT}(T)$ -0.015	$V_{OUT}(T)$ (Note 1)	$V_{OUT}(T)$ +0.015	V
Input Voltage	$V_{IN}$				6	V
Maximum Output Current	$I_{OUT} (max)$	$V_{IN}= V_{OUT} +1V$		250		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}= V_{OUT} +1V$ $1mA \leq I_{OUT} \leq 100mA$		8	12	mV
Dropout Voltage (Note 3)	$V_{dif1}$	$I_{OUT} =100mA$		320	350	mV
	$V_{dif2}$	$I_{OUT} =200mA$		570	600	mV
Supply Current	$I_{SS}$	$V_{IN}= V_{OUT} +1V$		6	8	$\mu A$
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} =10mA$ $V_{out}+1V \leq V_{IN} \leq 6V$		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	$V_{in}= [V_{OUT} +1]V$ +1Vp-pAC $I_{OUT} =10mA, f=1kHz$		65		dB
Short Circuit Current	$I_{short}$	$V_{in}= V_{OUT} (T)+1V$ $V_{OUT} =V_{SS}$		50	70	mA
Over Current Protection	$I_{limit}$	$V_{IN}= V_{OUT} +1V$		310	340	mA

**ME6216 (Vout=1.4V)** ( $V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1\mu F, T_a=25^{\circ}C$  Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA,$ $V_{IN}=V_{OUT}+1V$	X 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Input Voltage	$V_{IN}$				6	V
Maximum Output Current	$I_{OUT} (max)$	$V_{IN}= V_{OUT} +1V$		250		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}= V_{OUT} +1V$ $1mA \leq I_{OUT} \leq 100mA$		8	12	mV
Dropout Voltage (Note 3)	$V_{dif1}$	$I_{OUT} =100mA$		280	300	mV
	$V_{dif2}$	$I_{OUT} =200mA$		510	530	mV
Supply Current	$I_{SS}$	$V_{IN}= V_{OUT} +1V$		6	8	$\mu A$
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} =10mA$ $V_{out}+1V \leq V_{IN} \leq 6V$		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	$V_{in}= [V_{OUT} +1]V$ $+1Vp-pAC$ $I_{OUT} =10mA, f=1kHz$		65		dB
Short Circuit Current	$I_{short}$	$V_{in}= V_{OUT} (T)+1V$ $V_{OUT} =VSS$		50	70	mA
Over Current Protection	$I_{limit}$	$V_{IN}= V_{OUT} +1V$		380	420	mA

**ME6216 (Vout=1.8V)** ( $V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1\mu F, T_a=25^{\circ}C$  Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA,$ $V_{IN}=V_{OUT}+1V$	X 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Input Voltage	$V_{IN}$				6	V
Maximum Output Current	$I_{OUT} (max)$	$V_{IN}= V_{OUT} +1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}= V_{OUT} +1V$ $1mA \leq I_{OUT} \leq 100mA$		8	12	mV
Dropout Voltage (Note 3)	$V_{dif1}$	$I_{OUT} =100mA$		190	210	mV
	$V_{dif2}$	$I_{OUT} =200mA$		380	400	mV
Supply Current	$I_{SS}$	$V_{IN}= V_{OUT} +1V$		6	8	$\mu A$
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} =10mA$ $V_{out}+1V \leq V_{IN} \leq 6V$		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	$V_{in}= [V_{OUT} +1]V$ $+1Vp-pAC$ $I_{OUT} =10mA, f=1kHz$		65		dB
Short Circuit Current	$I_{short}$	$V_{in}= V_{OUT} (T)+1V$ $V_{OUT} =VSS$		50	70	mA
Over Current Protection	$I_{limit}$	$V_{IN}= V_{OUT} +1V$		380	420	mA

**ME6216(Vout=2.8V)** ( $V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1\mu F, T_a=25^{\circ}C$  Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA,$ $V_{IN}=V_{OUT}+1V$	X 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Input Voltage	$V_{IN}$				6	V
Maximum Output Current	$I_{OUT (max)}$	$V_{IN}= V_{OUT} +1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}= V_{OUT} +1V$ $1mA \leq I_{OUT} \leq 100mA$		8	14	mV
Dropout Voltage (Note 3)	$V_{dif1}$	$I_{OUT} =100mA$		120	140	mV
	$V_{dif2}$	$I_{OUT} =200mA$		230	250	mV
Supply Current	$I_{SS}$	$V_{IN}= V_{OUT} +1V$		5	8	$\mu A$
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} =10mA$ $V_{out}+1V \leq V_{IN} \leq 6V$		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	$V_{in}= [V_{OUT} +1]V$ $+1Vp-pAC$ $I_{OUT} =10mA, f=1kHz$		65		dB
Short Circuit Current	$I_{short}$	$V_{in}= V_{OUT} (T)+1V$ $V_{OUT} =VSS$		50	70	mA
Over Current Protection	$I_{limit}$	$V_{IN}= V_{OUT} +1V$		380	420	mA

**ME6216(Vout=3.3V)** ( $V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1\mu F, T_a=25^{\circ}C$  Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA,$ $V_{IN}=V_{OUT}+1V$	X 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Input Voltage	$V_{IN}$				6	V
Maximum Output Current	$I_{OUT (max)}$	$V_{IN}= V_{OUT} +1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}= V_{OUT} +1V$ $1mA \leq I_{OUT} \leq 100mA$		14	18	mV
Dropout Voltage (Note 3)	$V_{dif1}$	$I_{OUT} =100mA$		100	120	mV
	$V_{dif2}$	$I_{OUT} =200mA$		210	260	mV
Supply Current	$I_{SS}$	$V_{IN}= V_{OUT} +1V$		4	8	$\mu A$
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} =10mA$ $V_{out}+1V \leq V_{IN} \leq 6V$		0.07	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	$V_{in}= [V_{OUT} +1]V$ $+1Vp-pAC$ $I_{OUT} =10mA, f=1kHz$		65		dB
Short Circuit Current	$I_{short}$	$V_{in}= V_{OUT} (T)+1V$ $V_{OUT} =VSS$		50	70	mA
Over Current Protection	$I_{limit}$	$V_{IN}= V_{OUT} +1V$		380	420	mA

**ME6216(Vout=5.0V)** ( $V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1\mu F, T_a=25^{\circ}C$  Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA,$ $V_{IN}=V_{OUT}+1V$	X 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Input Voltage	$V_{IN}$				6	V
Maximum Output Current	$I_{OUT (max)}$	$V_{IN}= V_{OUT} +1V$		500		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}= V_{OUT} +1V$ $1mA \leq I_{OUT} \leq 100mA$		8	14	mV
Dropout Voltage (Note 3)	$V_{dif1}$	$I_{OUT} =100mA$		90	110	mV
	$V_{dif2}$	$I_{OUT} =200mA$		170	200	mV
Supply Current	$I_{SS}$	$V_{IN}= V_{OUT} +1V$		7	8	$\mu A$
Power Supply Ripple Rejection Ratio	PSRR	$V_{in} = [V_{OUT} +1]V$ $+1Vp-pAC$ $I_{OUT} =10mA, f=1kHz$		65		dB
Short Circuit Current	$I_{short}$	$V_{in}= V_{OUT} (T)+1V$ $V_{OUT} =VSS$		50	70	mA
Over Current Protection	$I_{limit}$	$V_{IN}= V_{OUT} +1V$		550	600	mA

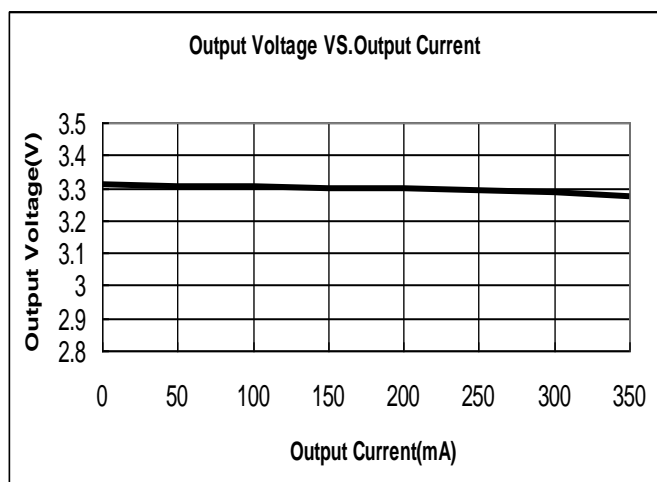
**Note :**

- $V_{OUT} (T)$  : Specified Output Voltage
- $V_{OUT} (E)$  : Effective Output Voltage ( i.e. The output voltage when " $V_{OUT} (T)+1.0V$ " is provided at the  $V_{in}$  pin while maintaining a certain  $I_{OUT}$  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  $I_{OUT} \{V_{OUT} (T)+1.0V\}$  is input.

## Type Characteristics (ME6216A33)

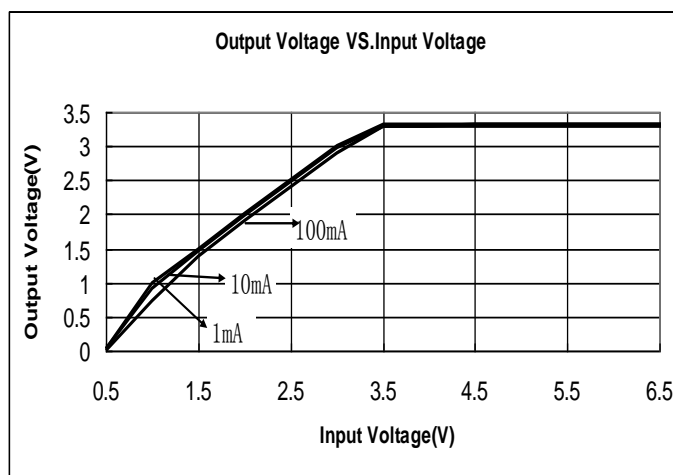
(1) Output Voltage VS. Output Current

( $V_{IN}=V_{OUT}+1$ ,  $T_a = 25\text{ }^\circ\text{C}$ )



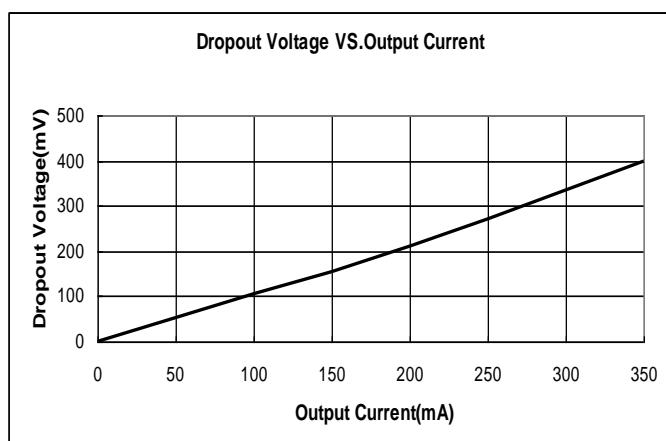
(2) Output Voltage VS. Input Voltage

( $T_a = 25\text{ }^\circ\text{C}$ )



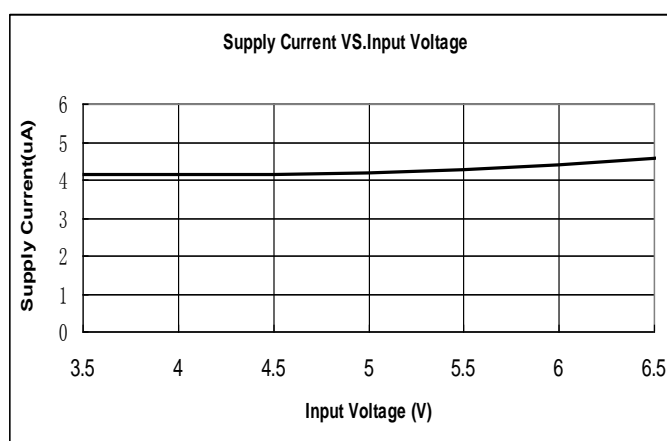
(3) Dropout Voltage VS. Output Current

( $V_{IN}=V_{OUT}+1V$ ,  $T_a = 25\text{ }^\circ\text{C}$ )

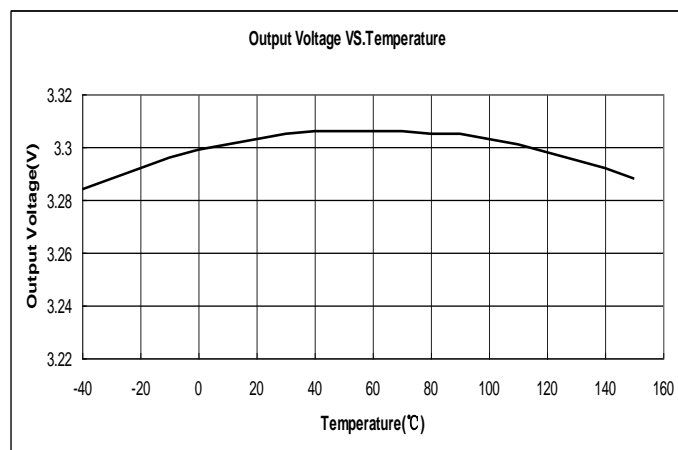


(4) Supply Current VS. Input Voltage

( $T_a = 25\text{ }^\circ\text{C}$ )



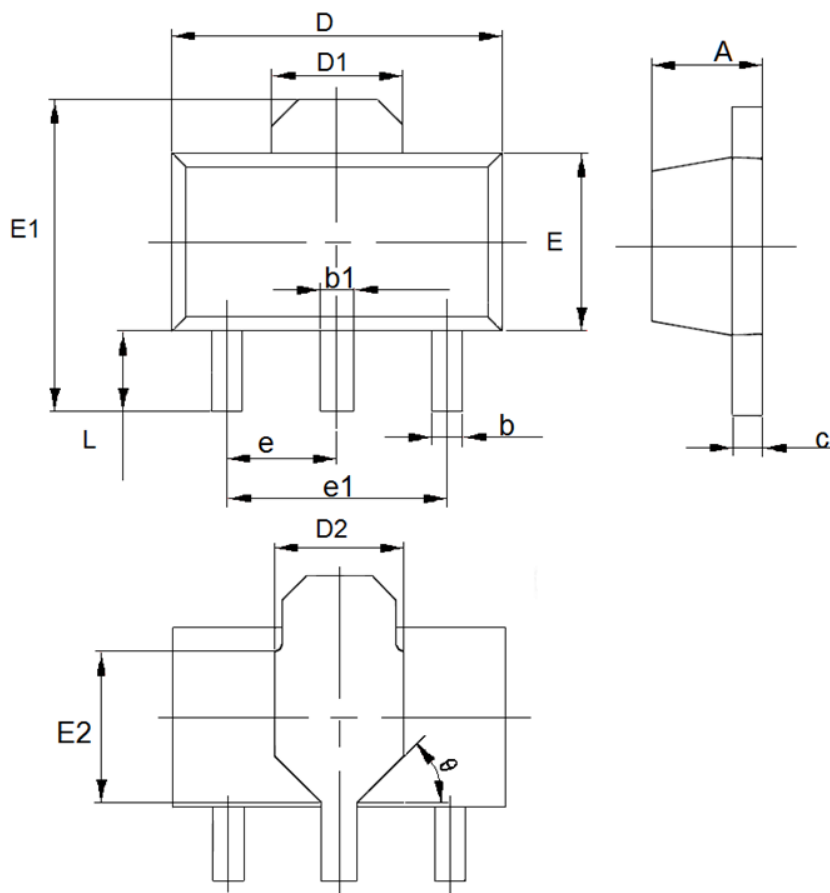
(5) Output Voltage VS. Temperature ( $V_{IN}=V_{OUT}+1V$ ,  $I_{OUT} = 10mA$ )





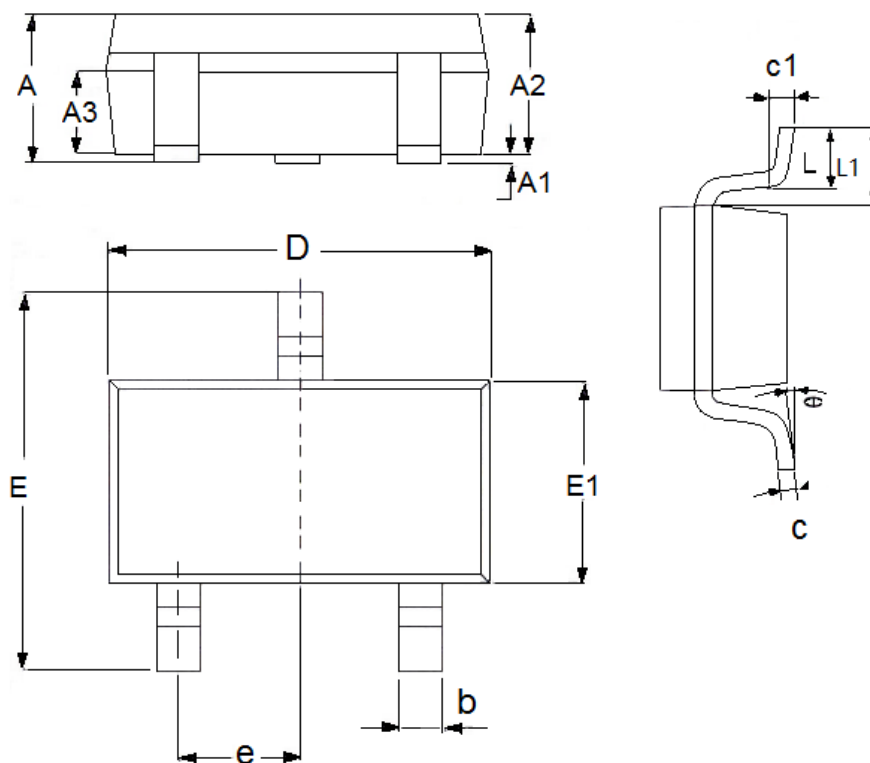
## Packaging Information

- Package Type: SOT89-3



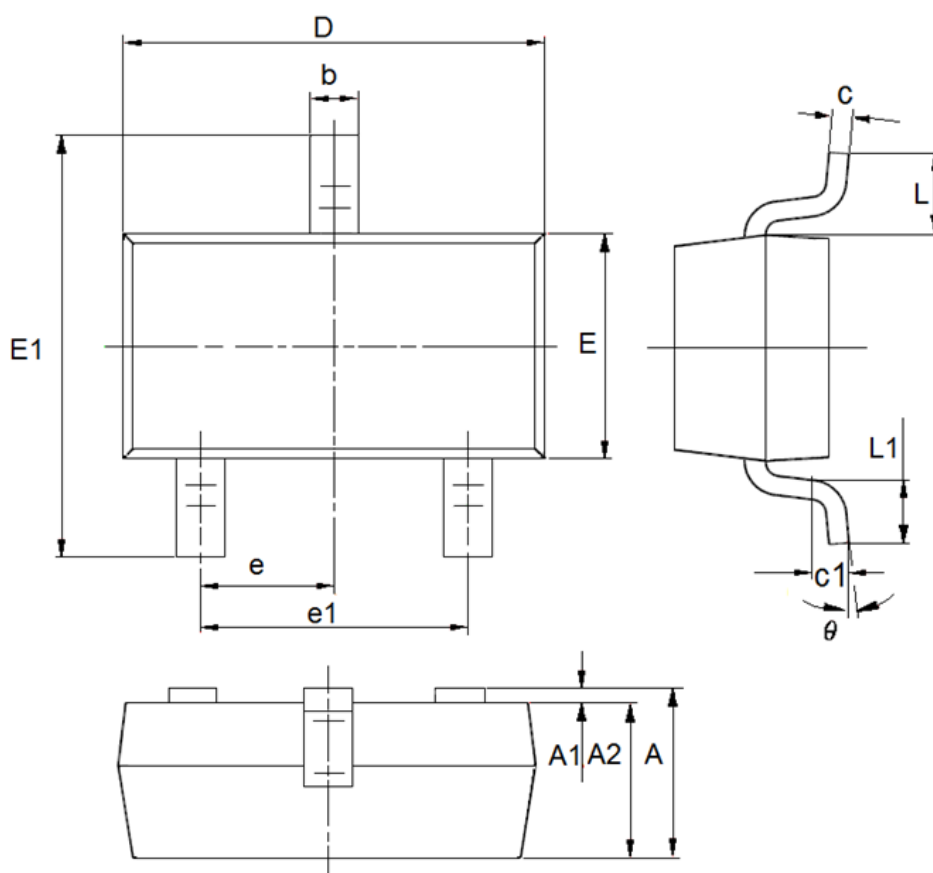
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.063
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.01772
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3.0(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)		0.0748(TYP)	
e	1.5(TYP)		0.0591(TYP)	
L	0.8	1.2	0.0315	0.0472
θ	45°		45°	

- Package Type: SOT23-3



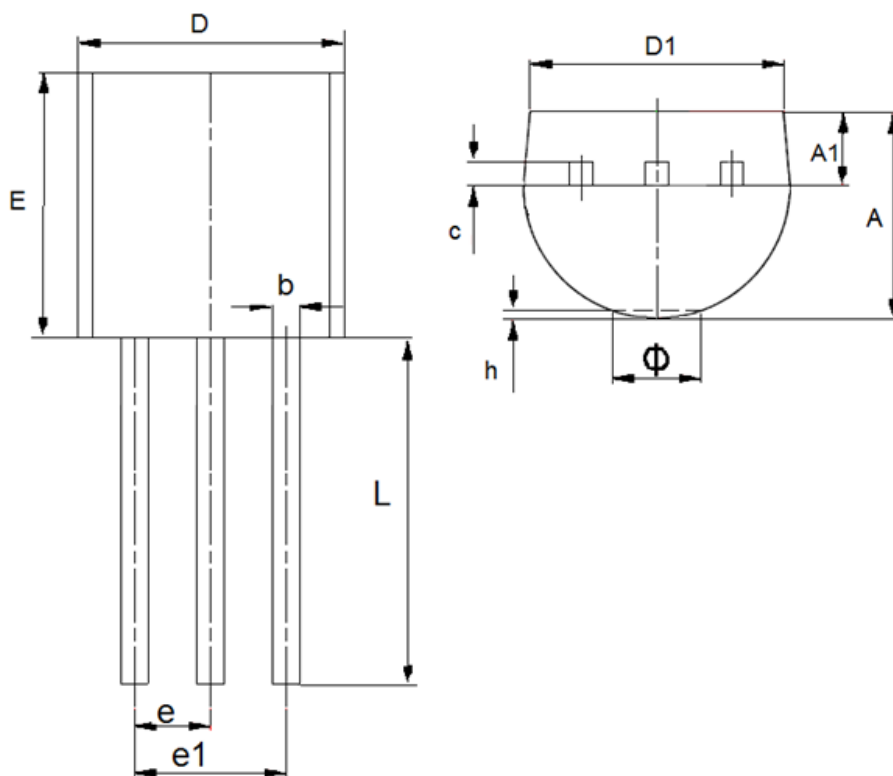
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6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

- Package Type: SOT23



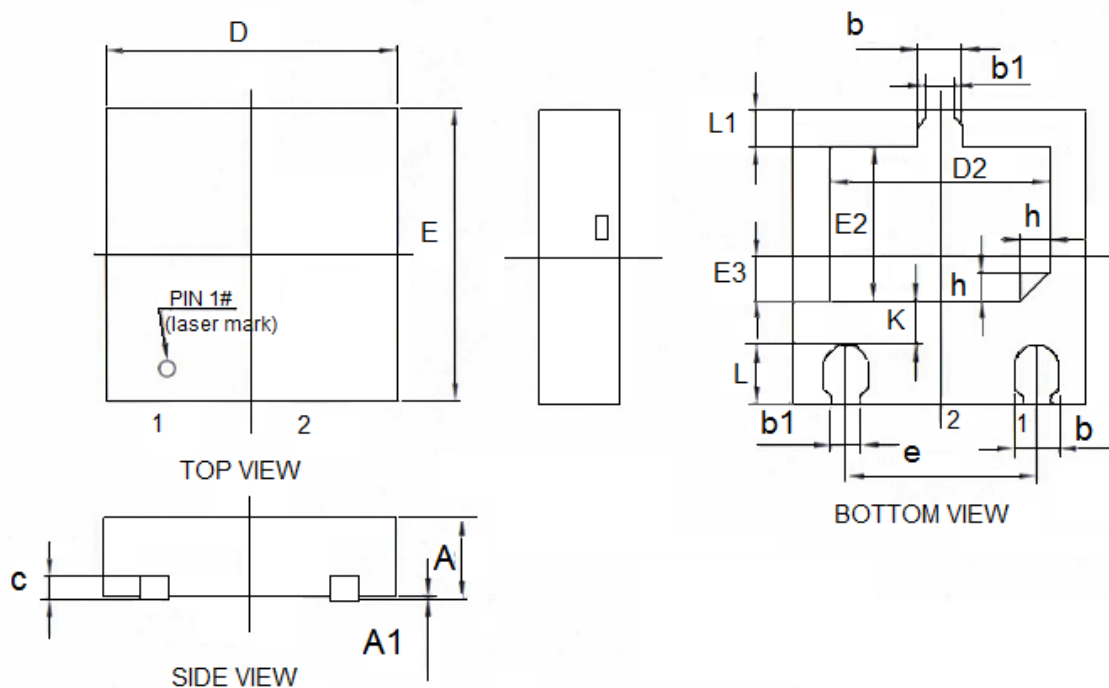
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.2	0.0354	0.0472
A1	0	0.14	0.0000	0.0055
A2	0.9	1.05	0.0354	0.0413
b	0.28	0.52	0.0110	0.0205
c	0.07	0.23	0.0028	0.0091
D	2.8	3.0	0.1102	0.1181
e1	1.8	2.0	0.0709	0.0787
E	1.2	1.4	0.0472	0.0551
E1	2.2	2.6	0.0866	0.1024
e	0.95(TYP)		0.0374(TYP)	
L	0.55(TYP)		0.0217(TYP)	
L1	0.25	0.55	0.0098	0.0217
θ	0	8°	0.0000	8°
c1	0.25(TYP)		0.0098(TYP)	

- Package Type: TO-92



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	3.3	3.7	0.1299	0.1457
A1	1.1	1.4	0.0433	0.0551
b	0.38	0.55	0.015	0.0217
c	0.36	0.51	0.0142	0.0201
D	4.3	4.7	0.1693	0.185
D1	3.43	—	0.135	—
E	4.3	4.7	0.1693	0.185
e	1.27		0.05	
e1	2.44	2.64	0.0961	0.1039
L	14.1	14.5	0.5551	0.5709
h	0	0.38	0	0.015
Φ	—	1.6	—	0.063

- Package Type: DFN3L(2.0\*2.0\*0.55-1.30)



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.5	0.6	0.0197	0.0236
A1	0	0.05	0	0.002
c	0.152REF		0.006REF	
b	0.25	0.35	0.0098	0.0138
D	1.9	2.1	0.0748	0.0827
b1	0.2REF		0.0079REF	
E	1.9	2.1	0.0748	0.0827
E2	0.95	1.15	0.0374	0.0453
E3	0.2	0.4	0.0079	0.0157
e	1.3BSC		0.0512BSC	
L	0.35	0.45	0.0138	0.0177
L1	0.2	0.3	0.00787402	0.01181103
h	0.2REF		0.0079REF	
D2	1.4	1.6	0.0551	0.063
K	0.2	0.4	0.0079	0.01579

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