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} =100mA
  240mV@ I_{OUT} =200mA
- Highly Accuracy: ±1％
- Low power consumption：6uA(TYP.)
- Large output current：300mA (V_{IN}＝4.3V,V_{OUT}＝3.3V)
- Excellent Input Stability
- Be available to regulator and reference voltage

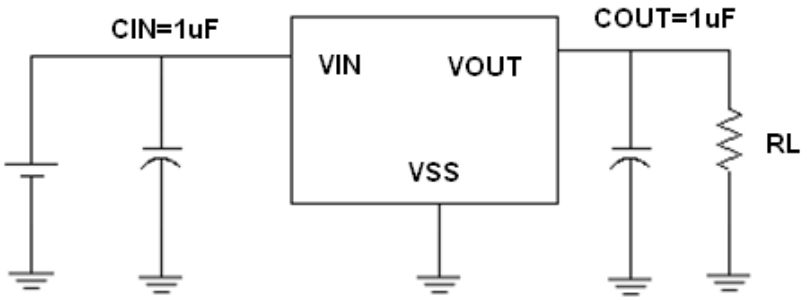
Typical Application

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

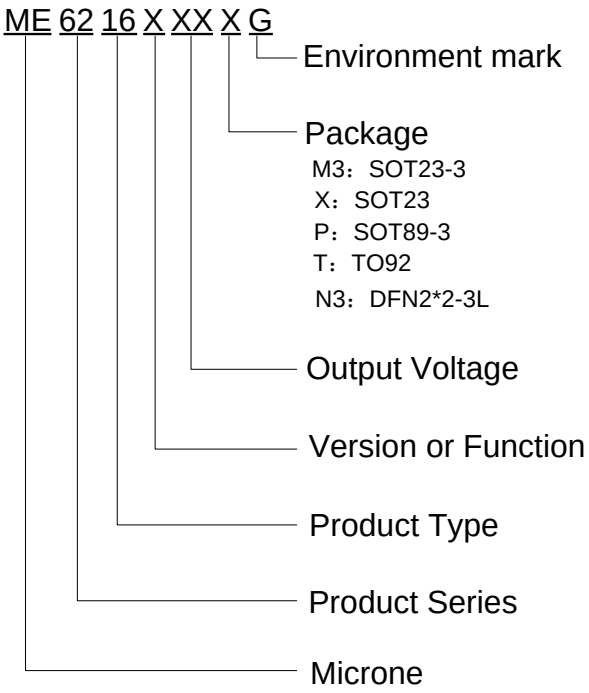
Package

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

Typical Application Circuit



Selection Guide

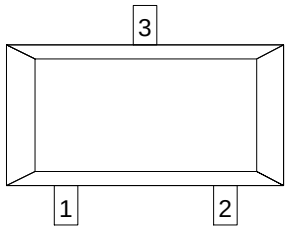


product series	product description
ME6216A10PG	V_{OUT} =1.0V； Package：SOT89-3
ME6216A12M3G	V_{OUT} =1.2V； Package：SOT23-3
ME6216A14M3G	V_{OUT} =1.4V； Package：SOT23-3
ME6216A28M3G	V_{OUT} =2.8V； Package：SOT23-3
ME6216A38M3G	V_{OUT} =3.8V； Package：SOT23-3
ME6216A30XG	V_{OUT} =3.0V； Package：SOT23
ME6216A18TG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

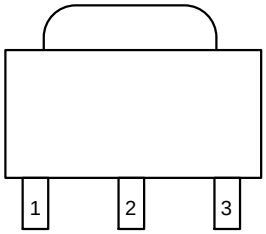
NOTE: 1. At present ,there are fifteen kinds of voltage value: 1.0V、1.2V、1.3V、1.4V、1.5V、1.8V、2.0V、2.5V、2.7V、2.8V、3.0V、3.3V、3.6V、3.8V、5.0V。

2. If you need other voltage and package, please contact our sales staff。

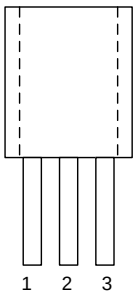
Pin Configuration



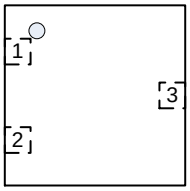
SOT23/SOT23-3



SOT89-3



TO92

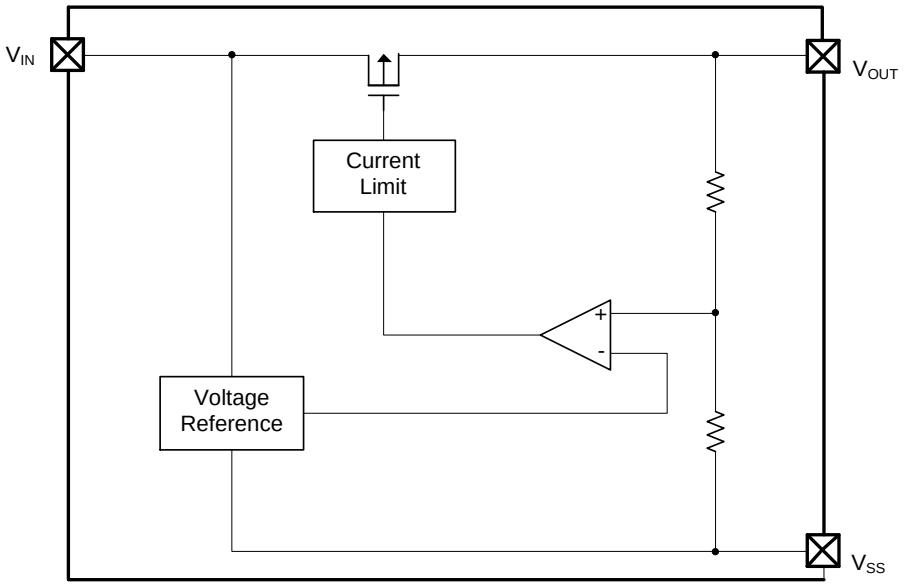


DFN2*2-3

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	VOUT	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}	Vss-0.3 ~ Vout+0.3	V
Internal Power Dissipation	SOT23-3	Pd	0.54	W
	SOT89-3	Pd	1.25	W
	SOT23	Pd	0.38	W
	TO-92	Pd	0.83	W
	DFN3L	Pd	1.25	W
Thermal resistance (Junction to air)	SOT23-3	θ_{JA}	230	℃/W
	SOT89-3	θ_{JA}	100	℃/W
	SOT23	θ_{JA}	328	℃/W
	TO-92	θ_{JA}	151	℃/W
	DFN3L	θ_{JA}	100	℃/W
Operating Ambient Temperature		T_{Opr}	-40 ~ +85	℃
Storage Temperature		T_{stg}	-55 ~ +150	℃
Maximum junction temperature		T_J	-40~+150	℃

Electrical Characteristics

ME6216 (Vout=1.2V)(V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25^{O}C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage (Vout=1.0~1.3V)	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	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤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	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		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,CIN=COUT=1uF,Ta=25^{O}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	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤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	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= 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,CIN=COUT=1uF,Ta=25^{O}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	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤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	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= 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,CIN=COUT=1uF,Ta=25^{O}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	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤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	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= 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,CIN=COUT=1uF,Ta=25^{O}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	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤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	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.07	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= 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,CIN=COUT=1uF,Ta=25^{O}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	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤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	μA
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		550	600	mA

Note :

1. V_{OUT} (T) ： Specified Output Voltage

2.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 I_{OUT} value.)

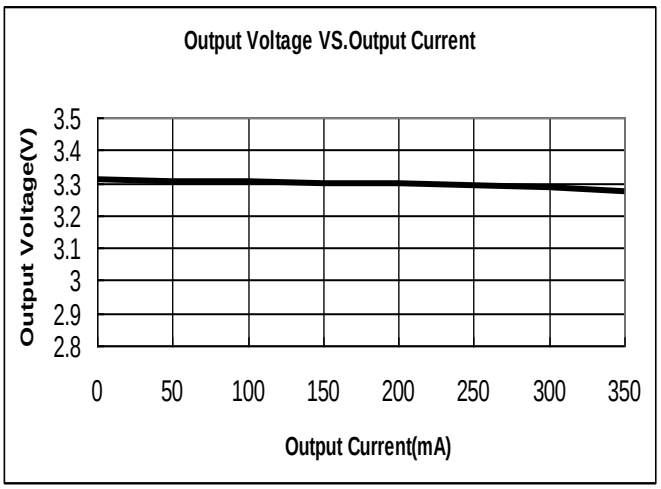
3.V_{dif} ： V_{IN1} –V_{OUT} (E)'

V_{IN1} ： The input voltage when V_{OUT}(E)' appears as input voltage is gradually decreased.

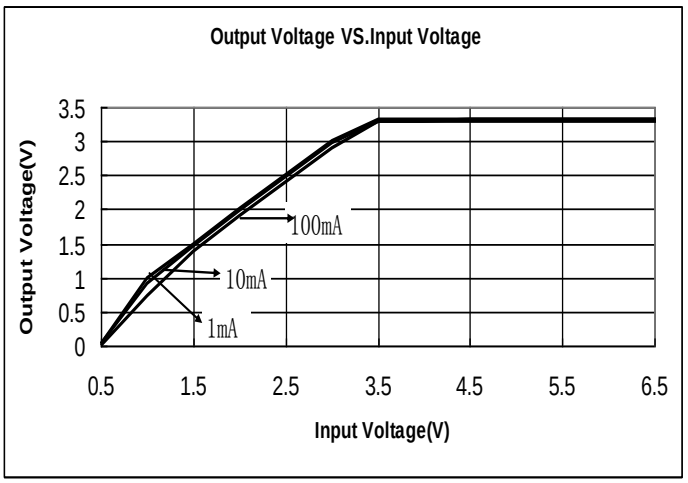
V_{OUT} (E)'=A voltage equal to 98% of the output voltage whenever an amply stabilized I_{OUT} {V_{OUT} (T)+1.0V} is input.

Type Characteristics (ME6216A33)

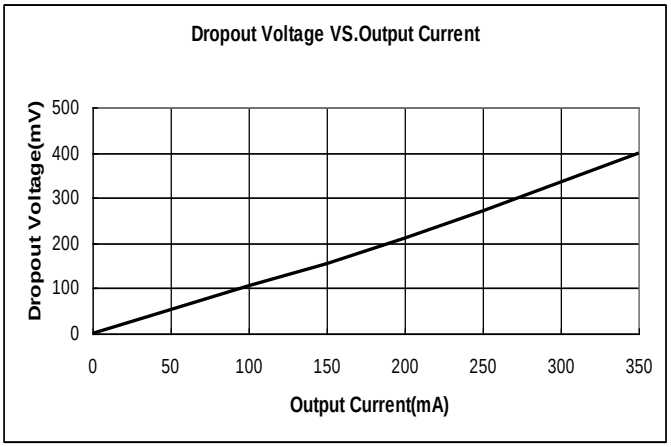
（1）Output Voltage VS. Output Current
（V_{IN}=V_{OUT}+1, **Ta = 25 °C**）



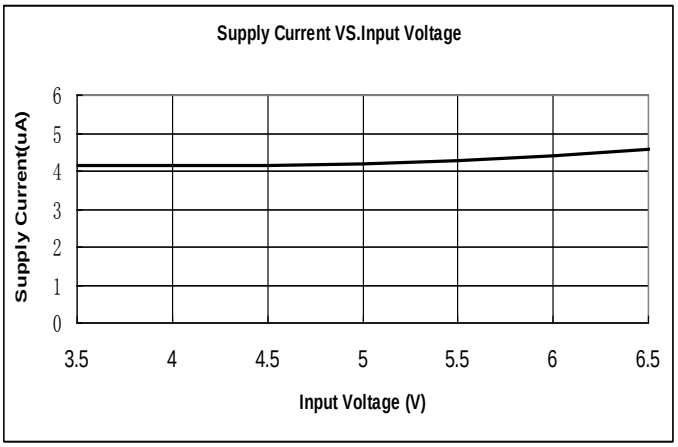
（2）Output Voltage VS. Input Voltage
（**Ta = 25 °C**）



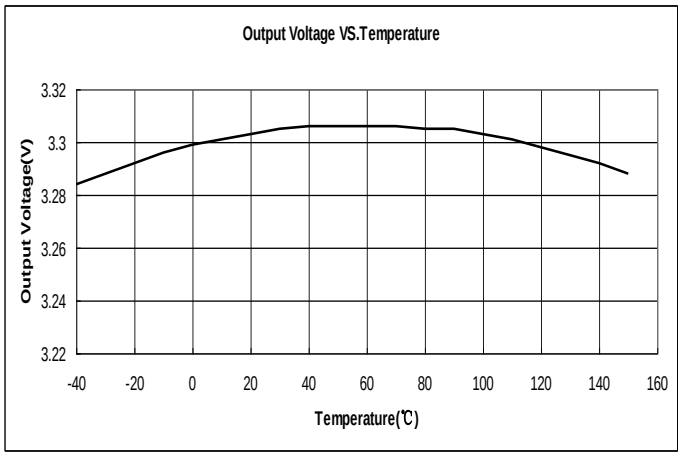
（3）Dropout Voltage VS. Output Current
（V_{IN}=V_{OUT}+1V,**Ta = 25 °C**）



（4）Supply Current VS. Input Voltage
（**Ta = 25 °C**）

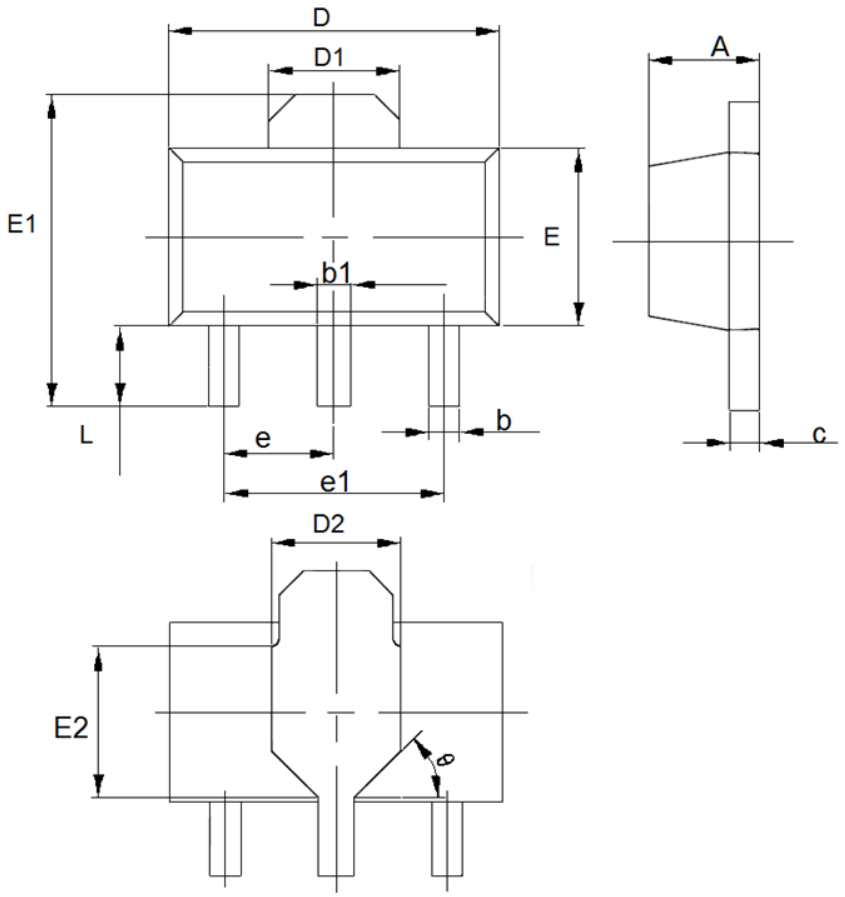


（5）Output Voltage VS. Temperature (V_{IN}=V_{OUT}+1V, I_{OUT} =10mA)



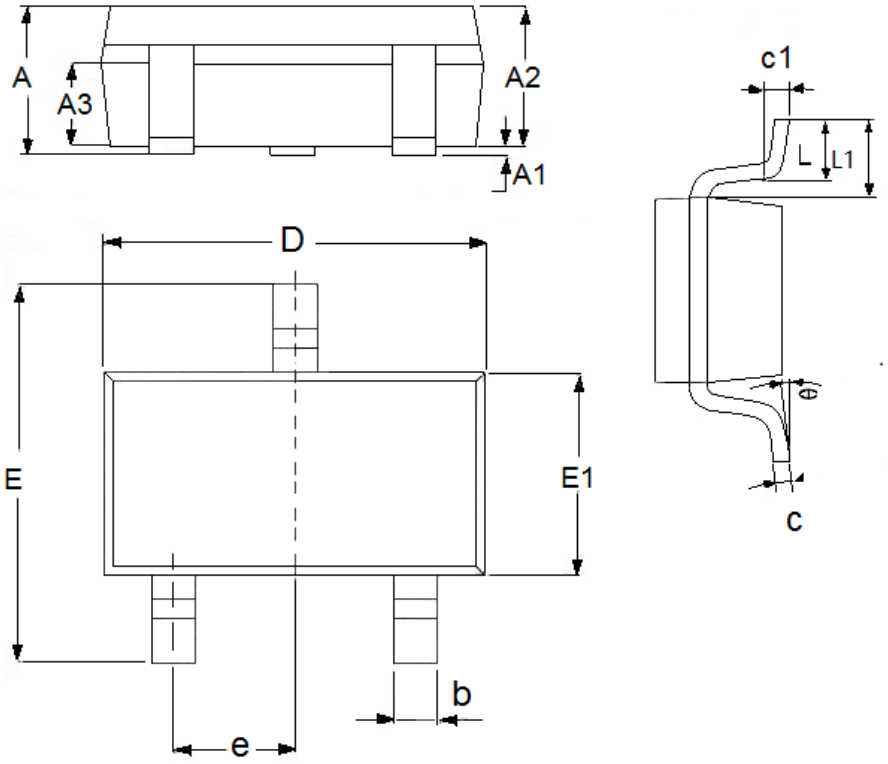
Packaging Information

- **Package Type：SOT89-3**



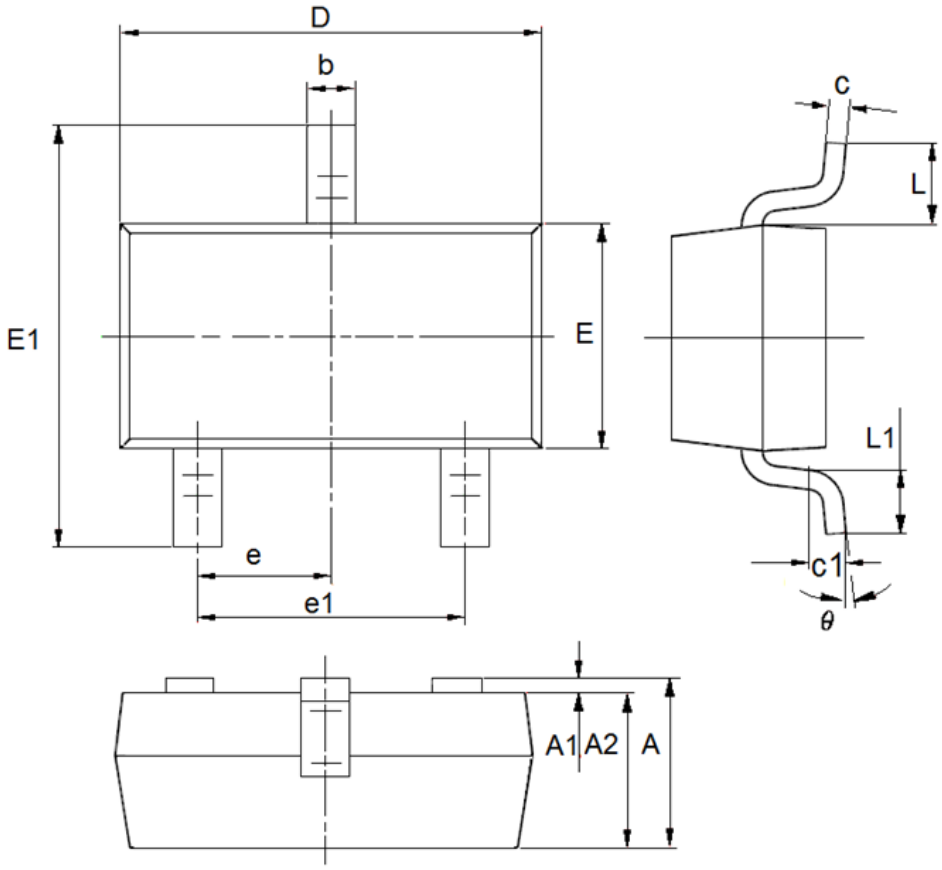
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.063
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.01772
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3.0(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)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



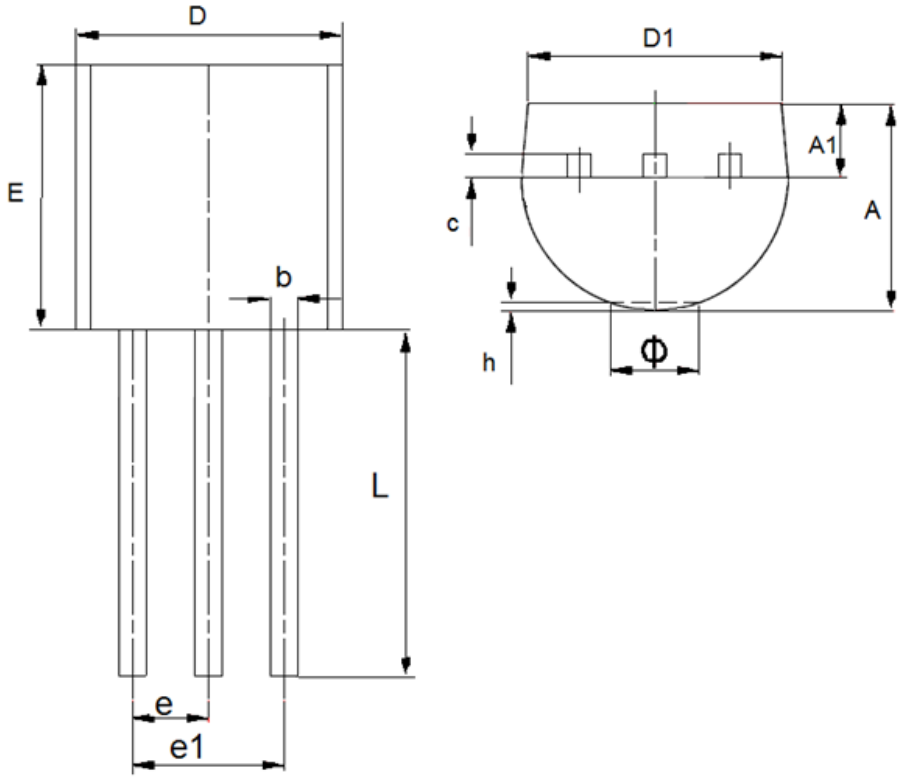
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6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



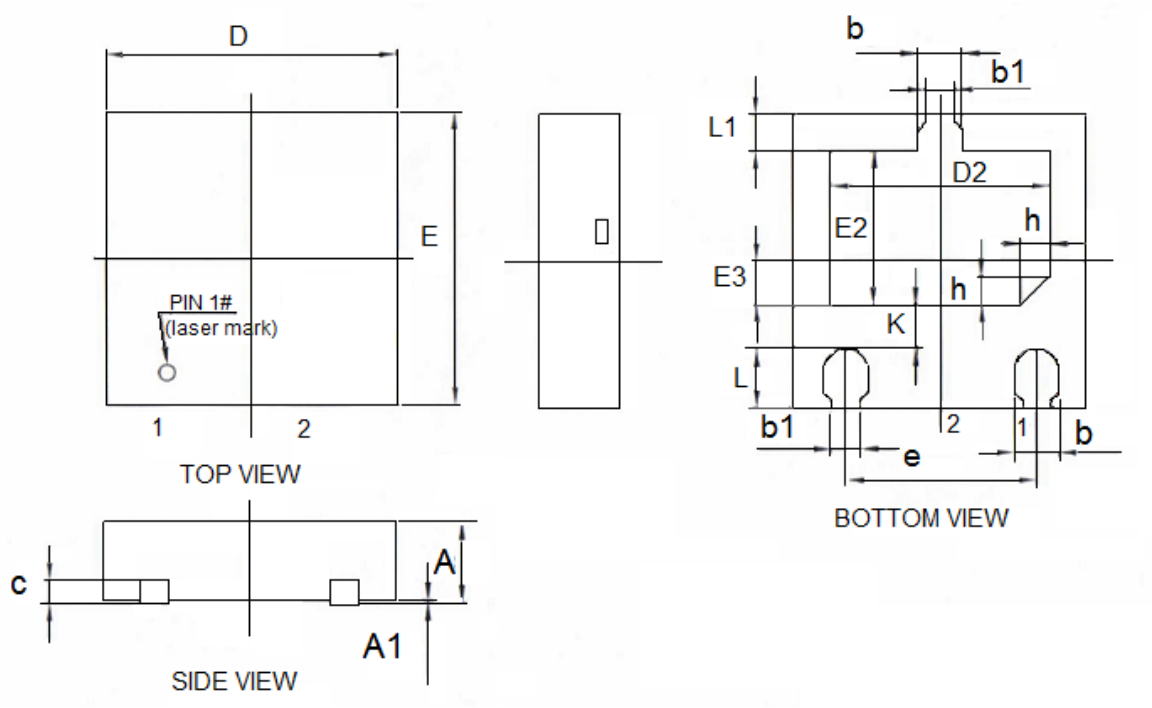
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.2	0.0354	0.0472
A1	0	0.14	0.0000	0.0055
A2	0.9	1.05	0.0354	0.0413
b	0.28	0.52	0.0110	0.0205
c	0.07	0.23	0.0028	0.0091
D	2.8	3.0	0.1102	0.1181
e1	1.8	2.0	0.0709	0.0787
E	1.2	1.4	0.0472	0.0551
E1	2.2	2.6	0.0866	0.1024
e	0.95(TYP)		0.0374(TYP)	
L	0.55(TYP)		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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- The application circuit examples described in this document are only used to indicate the representative use of the product and do not guarantee the design of mass production.
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