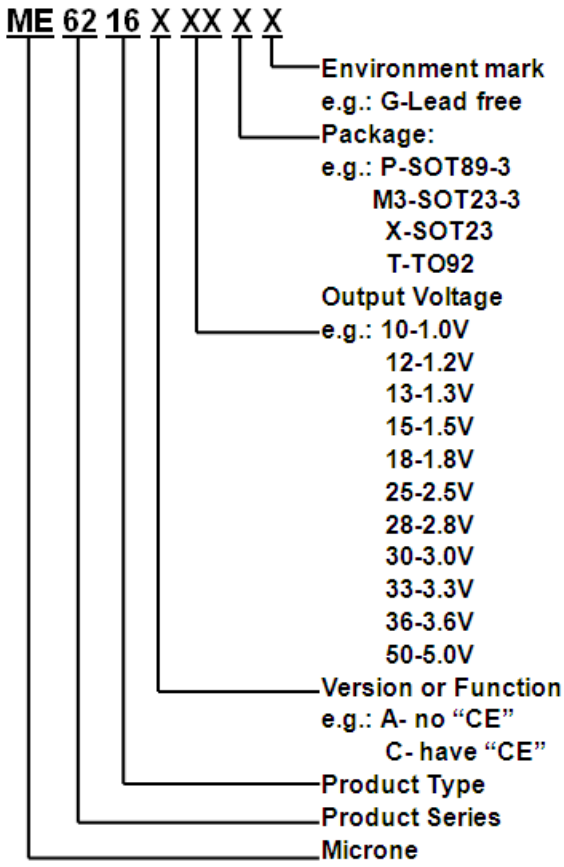
Low power consumption, Low ESR Cap. Compatible ME6216 Series

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.

Selection Guide

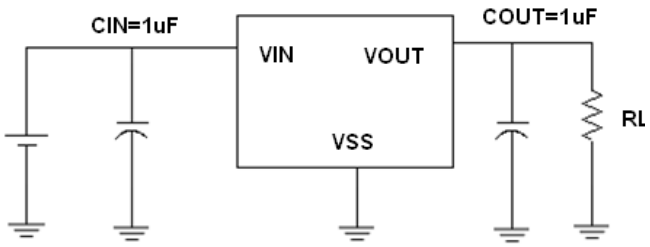


Features

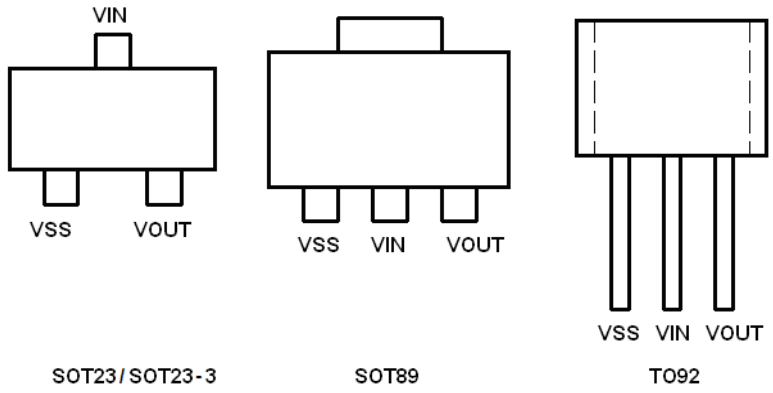
- Highly Accurate：±1%
- Output voltage range：1.0V~5.0V
- Low power consumption：5uA(TYP.)
- Large output current：300mA (V_{IN}＝4.3V,V_{OUT}＝3.3V)
- Input voltage: up to 6 V
- Dropout voltage：
  0.11V at 100mA and 0.22V at 200mA
  (V_{IN}＝4.3V,V_{OUT}＝3.3V)
- Excellent Input Stability
- Be available to regulator and reference voltage
- Packages:SOT23-3，SOT89-3，SOT23，TO-92

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

Typical Application Circuit



Pin Configuration



SOT23/SOT23-3 SOT89 TO92

Pin Assignment

ME6216Axx

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

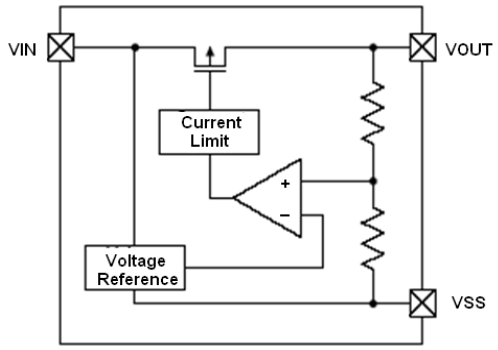
ME6216Bxx

Pin	Name	Function
P SOT89-3		
2	VSS	Ground
1	VOUT	Output
3	VIN	Input

Absolute Maximum Ratings

Parameter		Symbol	Description	Units
Input Voltage		V_{IN}	6.5	V
Output Current		I_{OUT}	500	mA
Output Voltage		V_{OUT}	Vss-0.3 ~ Vout+0.3	V
Power Dissipation	SOT23-3	Pd	300	mW
	SOT89-3	Pd	500	mW
	SOT23	Pd	300	mW
	TO-92	Pd	500	mW
Operating Ambient Temperature		T_{Opr}	-25 ~ +85	℃
Storage Temperature		T_{stg}	-40 ~ +125	℃

Block Diagram



Electrical Characteristics

ME6216-1.0V

(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	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		200	250	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		6	10	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =50mA		280	300	mV
	V_{dif2}	I_{OUT} =80mA		390	410	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		310		mA

ME6216-1.2V

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

PARAMETER	SYMBOL	CONDITION	MIX	TYP	MAX	UNIT
Output Voltage	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	300	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V		6	10	mV

		1mA≤I_{OUT}≤100mA				
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =50mA		150	170	mV
	V_{dif2}	I_{OUT} =80mA		220	240	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		310		mA

ME6216-1.3V

(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	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	300	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		6	10	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =50mA		160	180	mV
	V_{dif2}	I_{OUT} =80mA		250	270	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		340		mA

ME6216-1.5V

(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	350	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		5	10	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =50mA		120	140	mV
	V_{dif2}	I_{OUT} =80mA		190	210	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		400		mA

ME6216-1.8V

(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	350	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		5	10	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =50mA		100	120	mV
	V_{dif2}	I_{OUT} =80mA		150	170	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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		40	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		420		mA

ME6216-2.5V

(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		260	300	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		9	18	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =80mA		100	120	mV
	V_{dif2}	I_{OUT} =200mA		260	280	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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		40	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		420		mA

ME6216-3.0V

(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		300	350	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		10	18	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =80mA		90	110	mV
	V_{dif2}	I_{OUT} =200mA		220	240	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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		40	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		450		mA

ME6216-3.3V

(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	350	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		10	18	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =80mA		80	100	mV
	V_{dif2}	I_{OUT} =200mA		220	240	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		6	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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		40	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		450		mA

ME6216-5.0V

(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		300	400	mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		10	18	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =80mA		65	80	mV
	V_{dif2}	I_{OUT} =200mA		160	180	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤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		40	80	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		550		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)'

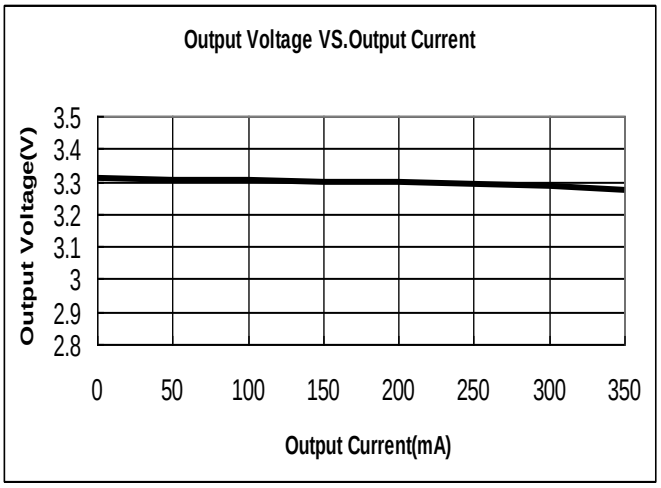
   V_{IN1} ： The input voltage when V_{OUT}(E)' appears as input voltage is gradually decreased.

   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)

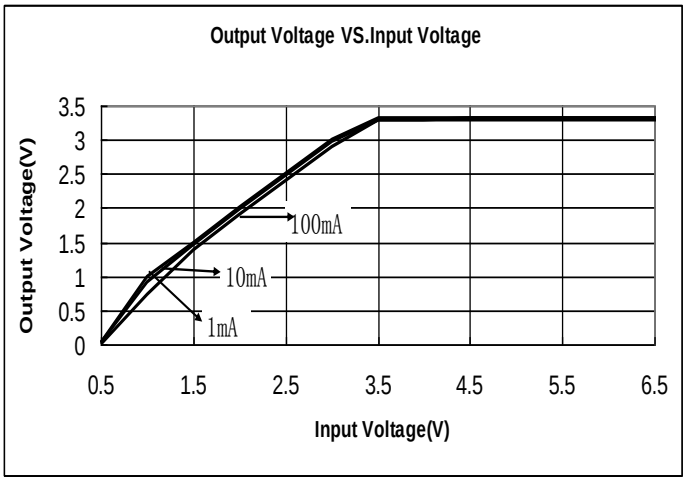
（1）Output Voltage VS. Output Current

（V_{IN}=V_{OUT}+1, **Ta = 25 °C**）



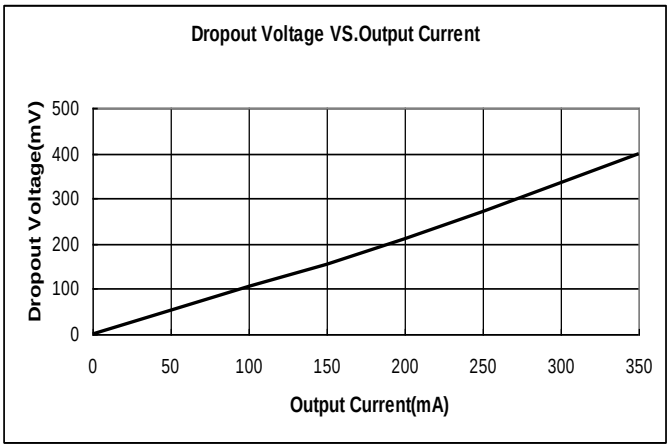
（2）Output Voltage VS. Input Voltage

（**Ta = 25 °C**）



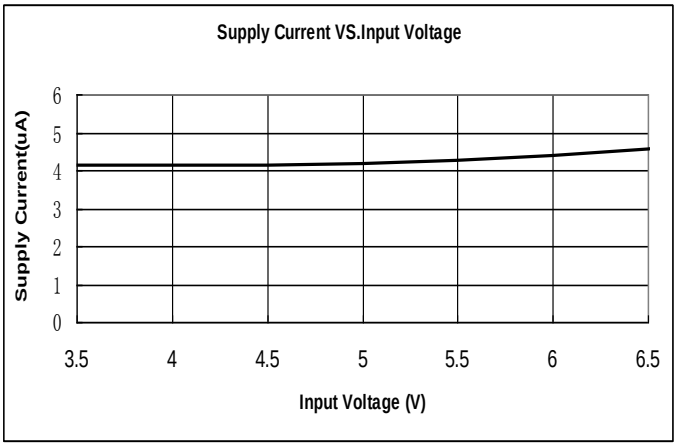
（3）Dropout Voltage VS. Output Current

（V_{IN}=V_{OUT}+1V,**Ta = 25 °C**）

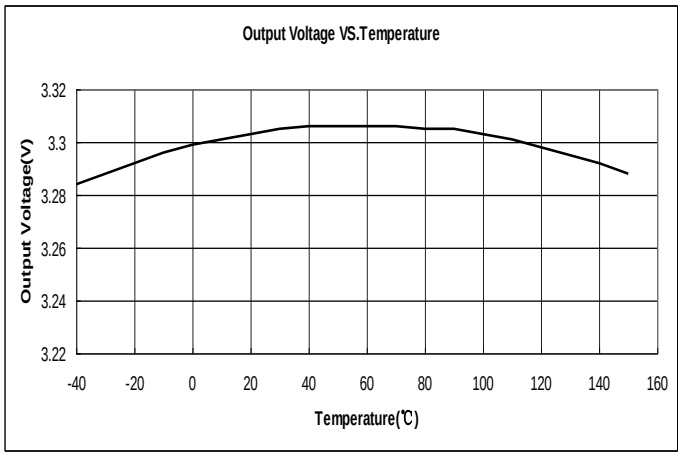


（4）Supply Current VS. Input Voltage

（**Ta = 25 °C**）

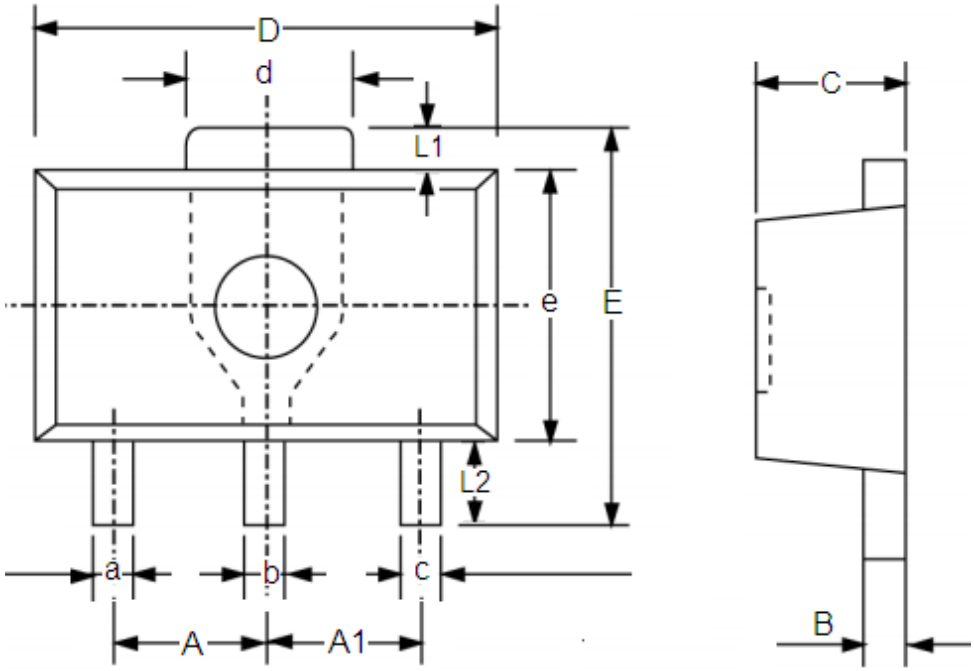


（5）Output Voltage VS. Temperature (V_{IN}=V_{OUT}+1V, I_{OUT} =10mA)



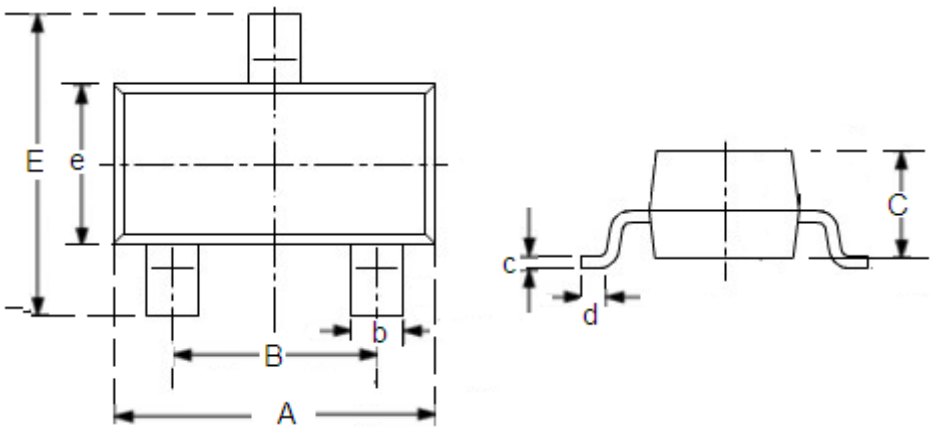
Packaging Information

- SOT89-3



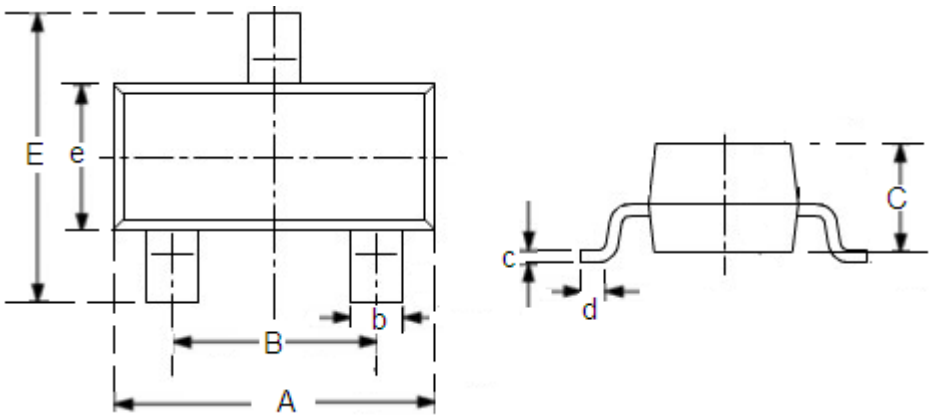
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
A1	1.4	1.6	0.0551	0.0630
a	0.36	0.48	0.0142	0.0189
b	0.41	0.53	0.0161	0.0209
c	0.36	0.48	0.0142	0.0189
d	1.4	1.75	0.0551	0.0689
B	0.38	0.43	0.015	0.0169
C	1.4	1.6	0.0551	0.0630
D	4.4	4.6	0.1732	0.181
E	-	4.25	-	0.1673
e	2.4	2.6	0.0945	0.1023
L1	0.4	-	0.0157	-
L2	0.8	-	0.0315	-

● SOT23-3



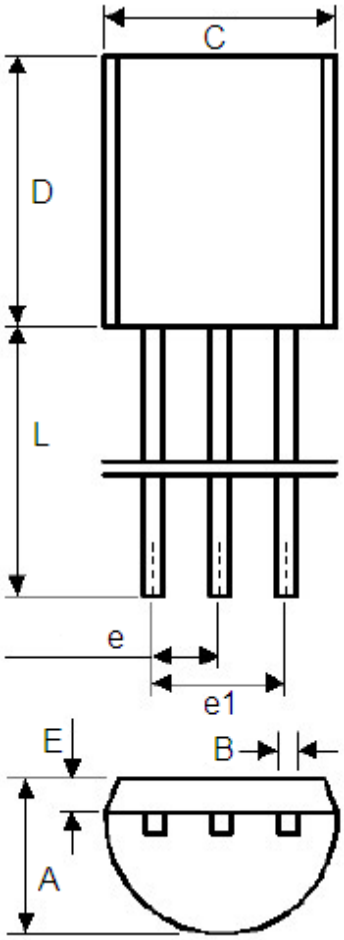
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.7	3.1	0.1063	0.122
B	1.7	2.1	0.0669	0.0827
b	0.35	0.5	0.0138	0.0197
C	1.0	1.2	0.0394	0.0472
c	0.1	0.25	0.0039	0.0098
d	0.2	-	0.0079	-
E	2.6	3.0	0.1023	0.1181
e	1.5	1.8	0.059	0.0708

● SOT23



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.7	3.1	0.1063	0.122
B	1.7	2.1	0.0669	0.0827
b	0.35	0.5	0.0138	0.0197
C	1.0	1.2	0.0394	0.0472
c	0.1	0.25	0.0039	0.0098
d	0.2	-	0.0079	-
E	2.1	2.64	0.0827	0.1039
e	1.2	1.4	0.0472	0.0551

● TO-92



	Min	Max	Min	Max
A	3.4	3.8	0.13386	0.1496
B	0.3	0.5	0.0118	0.0197
C	4.4	4.8	0.1732	0.189
D	4.4	4.8	0.1732	0.189
E	0.9	1.5	0.0354	0.059
e	1.17	1.37	0.046	0.0539
e1	2.39	2.69	0.094	0.1059
L	12	16	0.4724	0.6299

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