ME6209

Low Power Consumption LDO ME6209 Series

General Description

The ME6209 series are a group of positive voltage output, three – pin regulator, that provide a high current even when the input/output Voltage differential is small. Low power consumption and high accuracy is achieved through CMOS technology. They allow input voltages as high as 18V.

Features

- Ultra low quiescent current: 3.0uA(typ)

- High input voltage (up to 18V)

- Low dropout voltage :

  80mV@Iout=40mA（V_{OUT}=3.3V）

- Output voltage accuracy：

  ±1%（VOUT =2.8V、3.3V、5.0V）

  ±2%（Others）

- Maximum output current：250mA (V_{OUT} =3.3V）

- Low temperature coefficient

Typical Application

- Cameras, video recorders

- Voltage regulator for microprocessor

- Voltage regulator for LAN cards

- Wireless communication equipment

- Audio/Video equipment

Package

- 3-pin　SOT23-3、SOT89-3、TO-92

Typical Application Circuit

Selection Guide

ME 62 09 X XX XX G
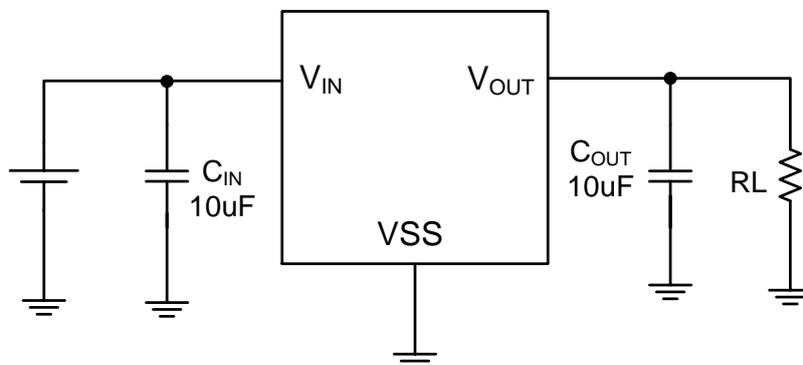
- Environment mark
- Package
  - P：SOT89-3
  - M3：SOT23-3
  - T：TO92
- Output Voltage
- Function
- Product Type
- Product Series
- Microne
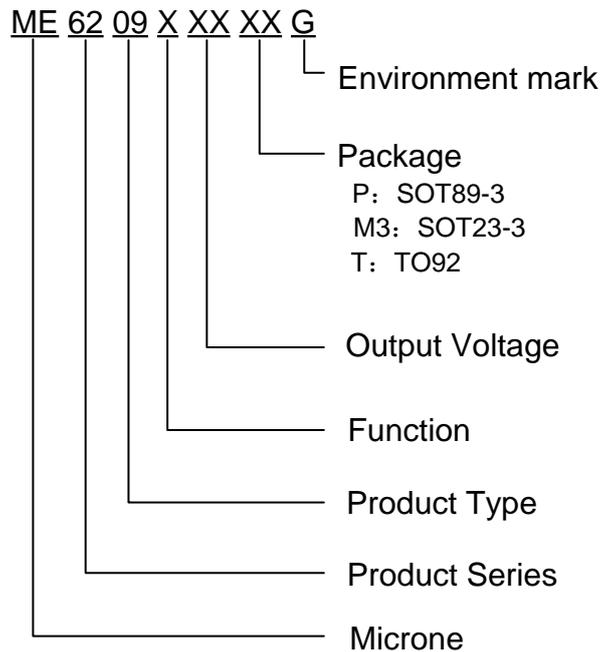
product series	product description
ME6209A18M3G	V_{OUT} =1.8V± 2%; Package：SOT23-3
ME6209A25TG	V_{OUT} =2.5V± 2%; Package：TO-92
ME6209A27M3G	V_{OUT} =2.7V± 2%; Package：SOT23-3
ME6209A28M3G	V_{OUT} =2.8V± 1%; Package：SOT23-3
ME6209A33PG	V_{OUT} =3.3V± 1%; Package:： SOT89-3
ME6209A44PG	V_{OUT} =4.4V± 2%; Package:： SOT89-3
ME6209A50M3G	V_{OUT} =5.0V± 1%; Package：SOT23-3

NOTE: At present ,there are eleven kinds of voltage value：

1.8V、2.5V、2.7V、2.8V、3.0V、3.3V、3.6V、4.0V、4.4V、4.5V、5.0V。

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

## Pin Configuration
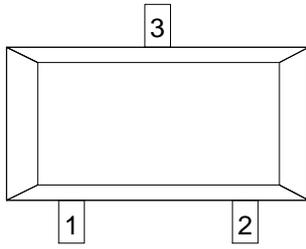
SOT23-3
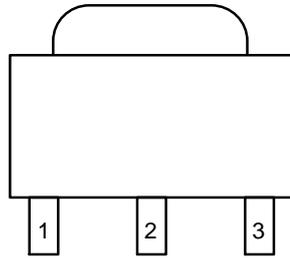
SOT89-3
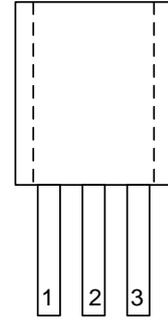
TO-92

Pin Assignment

Pin Num		Symbol	Function
SOT89-3/TO-92	SOT23-3		
1	1	V_{SS}	Ground
2	3	V_{IN}	Input
3	2	V_{OUT}	Output

Block Diagram
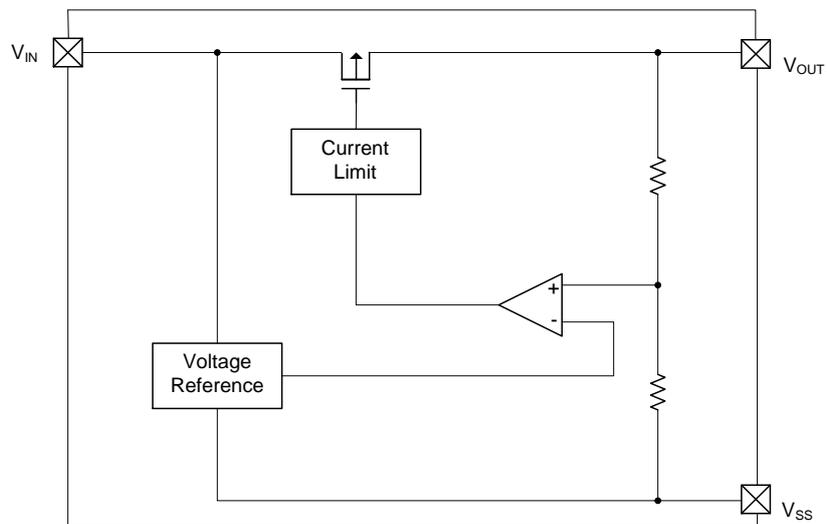
Absolute Maximum Ratings

Parameter		Symbol	Ratings	Units
Input Voltage		V_{IN}	18	V
Output Voltage		V_{OUT}	Vss-0.3 ~ V_{IN} +0.3	V
Output Current		I_{OUT}	500	mA
Operating Temperature Range		T_{OPR}	-40 ~ +85	ºC
Storage Temperature Range		T_{STG}	-55 ~ +150	ºC
Maximum junction temperature		T_J	-40 ~ +150	ºC
Power Dissipation	SOT23-3	P_D	0.54	W
	SOT89-3		1.25	
	TO-92		0.83	
Thermal resistance	SOT23-3	θ_{JA}	230	ºC /W
	SOT89-3		100	
	TO-92		150	

Electrical Characteristics

ME6209A18 ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				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≤I_{OUT}≤60mA		10	40	mV
Dropout Voltage (Note 3)	V_{DIF}	I_{OUT} =40mA		150		mV
Supply Current	I_{SS}	V_{IN}=V_{OUT}+1V		3	5	μ A
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT} =10mA V_{OUT}+1V ≤V_{IN}≤18V		0.1	0.2	%/V
△VOUT/△Ta	Temperature Coefficient	V_{IN}=V_{OUT}+1V, I_{OUT} =10mA -40℃<Ta<85℃		±0.7		mV/℃

ME6209A25 ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V
Maximum Output Current	I_{OUT} _max	V_{IN}=V_{OUT}+1V		250		mA

Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		10	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		100		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	μA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.1	0.2	%/V
△VOUT/△Ta	Temperature Coefficient	$V_{IN}=V_{OUT}+1V, I_{OUT}=10mA$ -40℃<Ta<85℃		±0.7		mV/℃

ME6209A27   ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	$I_{OUT}=10mA$, $V_{IN}=V_{OUT}+1V$	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V
Maximum Output Current	I_{OUT} _max	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		10	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		90		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	μA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.1	0.2	%/V
△VOUT/△Ta	Temperature Coefficient	$V_{IN}=V_{OUT}+1V, I_{OUT}=10mA$ -40℃<Ta<85℃		±0.7		mV/℃

ME6209A28   ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
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}				18	V
Maximum Output Current	I_{OUT} _max	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		10	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		90		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	μA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.1	0.2	%/V
△VOUT/△Ta	Temperature Coefficient	$V_{IN}=V_{OUT}+1V, I_{OUT}=10mA$ -40℃<Ta<85℃		±0.7		mV/℃

ME6209A30   ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	I_{OUT}=10mA, $V_{IN}=V_{OUT}+1V$	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				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≤I_{OUT}≤60mA		20	40	mV
Dropout Voltage (Note 3)	V_{DIF}	I_{OUT} =40mA		80		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	μA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT} =10mA $V_{OUT}+1V$ ≤V_{IN}≤18V		0.1	0.2	%/V
△VOUT/△Ta	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, I_{OUT} =10mA -40℃<Ta<85℃		±0.7		mV/℃

ME6209A33   ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
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}				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≤I_{OUT}≤60mA		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	I_{OUT} =40mA		80		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	μ A
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT} =10mA $V_{OUT}+1V$ ≤V_{IN}≤18V		0.05	0.2	%/V
△VOUT/△Ta	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, I_{OUT} =10mA -40℃<Ta<85℃		±0.7		mV/℃

ME6209A36   ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	I_{OUT}=10mA, $V_{IN}=V_{OUT}+1V$	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				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≤I_{OUT}≤60mA		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	I_{OUT} =40mA		80		mV

Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	µA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.05	0.2	%/V
$\triangle VOUT/\triangle Ta$	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, $I_{OUT}=10mA$ $-40℃<Ta<85℃$		±0.7		mV/℃

ME6209A40　($V_{IN}=V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，$Ta=25^{O}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	$I_{OUT}=10mA$, $V_{IN}=V_{OUT}+1V$	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V
Maximum Output Current	I_{OUT}_max	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		75		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	µA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.1	0.2	%/V
$\triangle VOUT/\triangle Ta$	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, $I_{OUT}=10mA$ $-40℃<Ta<85℃$		±0.7		mV/℃

ME6209A44　($V_{IN}=V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，$Ta=25^{O}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	$I_{OUT}=10mA$, $V_{IN}=V_{OUT}+1V$	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V
Maximum Output Current	I_{OUT}_max	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		70		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	µA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.05	0.2	%/V
$\triangle VOUT/\triangle Ta$	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, $I_{OUT}=10mA$ $-40℃<Ta<85℃$		±0.7		mV/℃

ME6209A45　($V_{IN}=V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，$Ta=25^{O}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT}(E)$ (Note 2)	$I_{OUT}=10mA$, $V_{IN}=V_{OUT}+1V$	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V

Maximum Output Current	I_{OUT} _max	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		70		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	µA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.05	0.2	%/V
$\triangle VOUT / \triangle Ta$	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, $I_{OUT}=10mA$ $-40℃<Ta<85℃$		±0.7		mV/℃

ME6209A50   ($V_{IN}= V_{OUT}+1.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

| Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
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}				18	V
Maximum Output Current	I_{OUT} _max	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 60mA$		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	$I_{OUT}=40mA$		70		mV
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+1V$		3	5	µA
Line Regulations	$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.05	0.2	%/V
$\triangle VOUT / \triangle Ta$	Temperature Coefficient	$V_{IN}=V_{OUT}+1V$, $I_{OUT}=10mA$ $-40℃<Ta<85℃$		±0.7		mV/℃

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} and {V_{OUT} (T)+ 1.0V} is input.

Precautions

- During the test, if AC/DC power supply and the ceramic chip capacitors collocation are used, there may be serious voltage spike phenomenon instantaneously. When the power supply access to 16V, the voltage is rushed to about 30V instantaneously. Because of exceeding the limit voltage of chip, the chip is damaged. If you string a small resistance of 1 ohm in the input end during the test, the peak phenomenon can be avoided.

- In the test, there is serious burr phenomenon only when the AC/DC power is used with ceramic chip capacitors. But electrolytic capacitors and tantalum capacitance won't appear above phenomenon. Please be sure to pay attention to this point when you use AC/DC power.

- In normal use, when any type of capacitor is used with battery or the supply of fire power, the above phenomenon doesn't occur.

Type Characteristics (ME6209A40)

（1） Output Voltage VS. Output Current（ **Ta = 25 ℃**）

Output Voltage VS.Output Current

（2） Output Voltage VS. Input Voltage

Output Voltage VS.Input Voltage

Io=0mA

Io=40mA

(3) Quiescent Current VS. Input Voltage
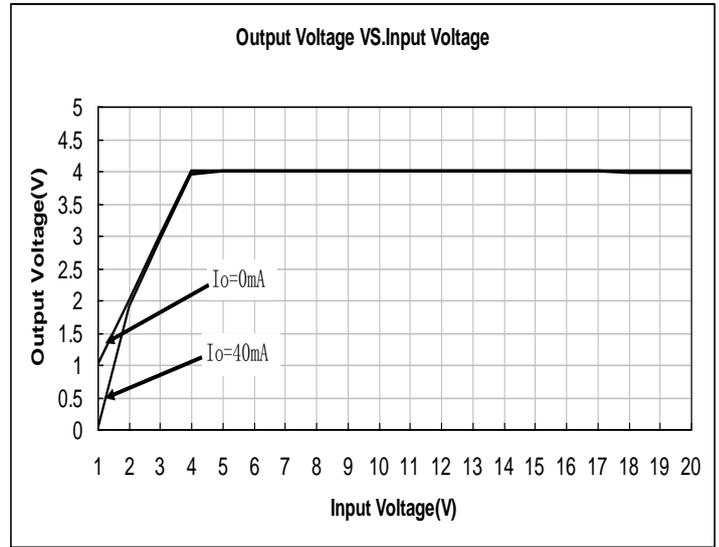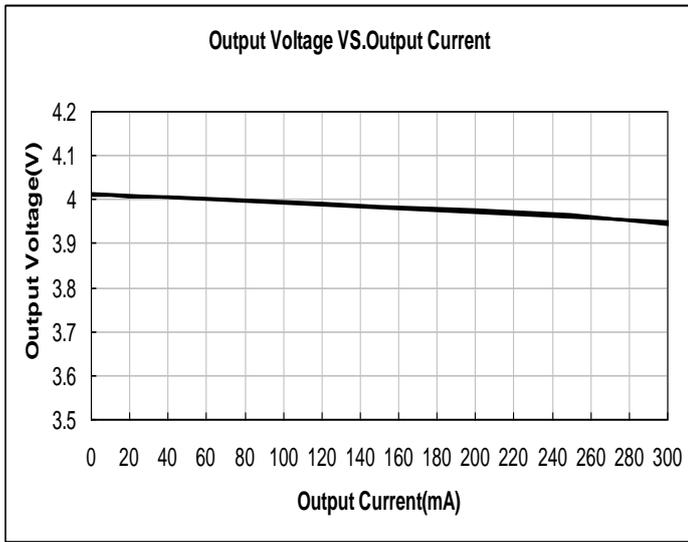
Quiescent Current VS.Input Voltage

(4) Dropout Voltage VS. Output Current

Dropout Voltage VS.Output Current
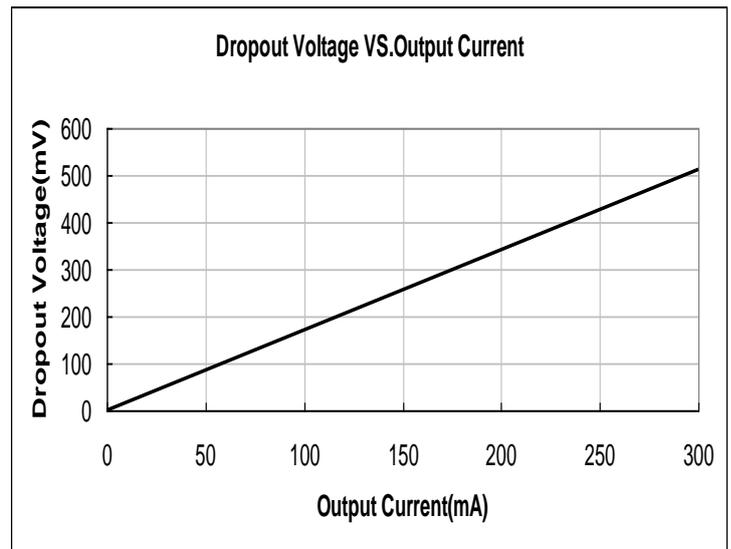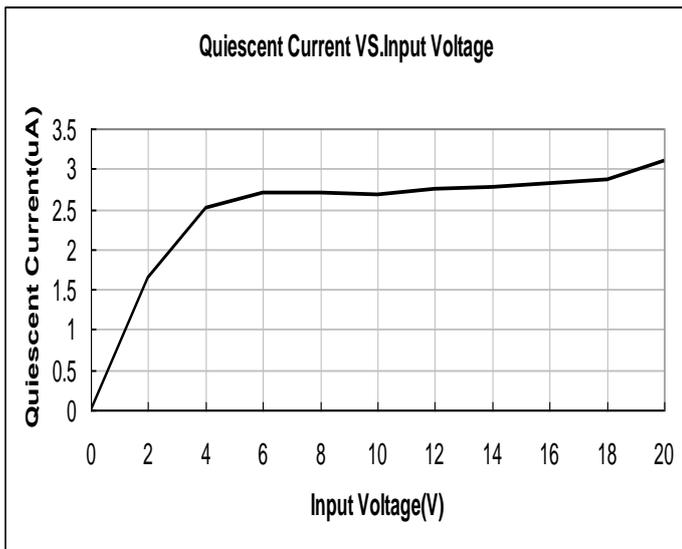
(5) Output Voltage VS. Temperature（**ME6209A33PG**）

Output Voltage VS.Temperature
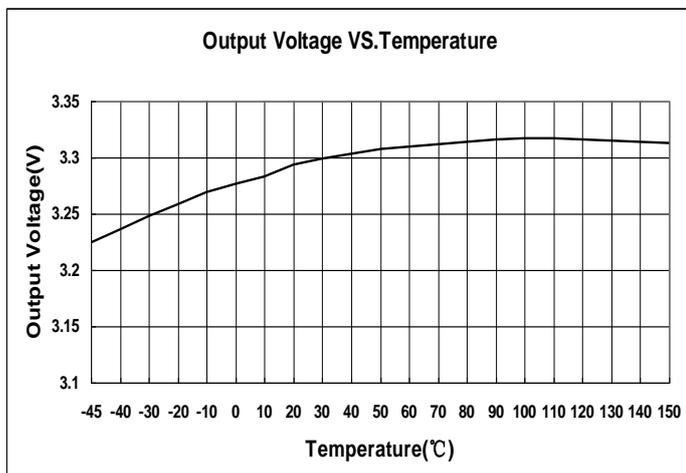
Packaging Information

- **Packaging Type: SOT23-3**
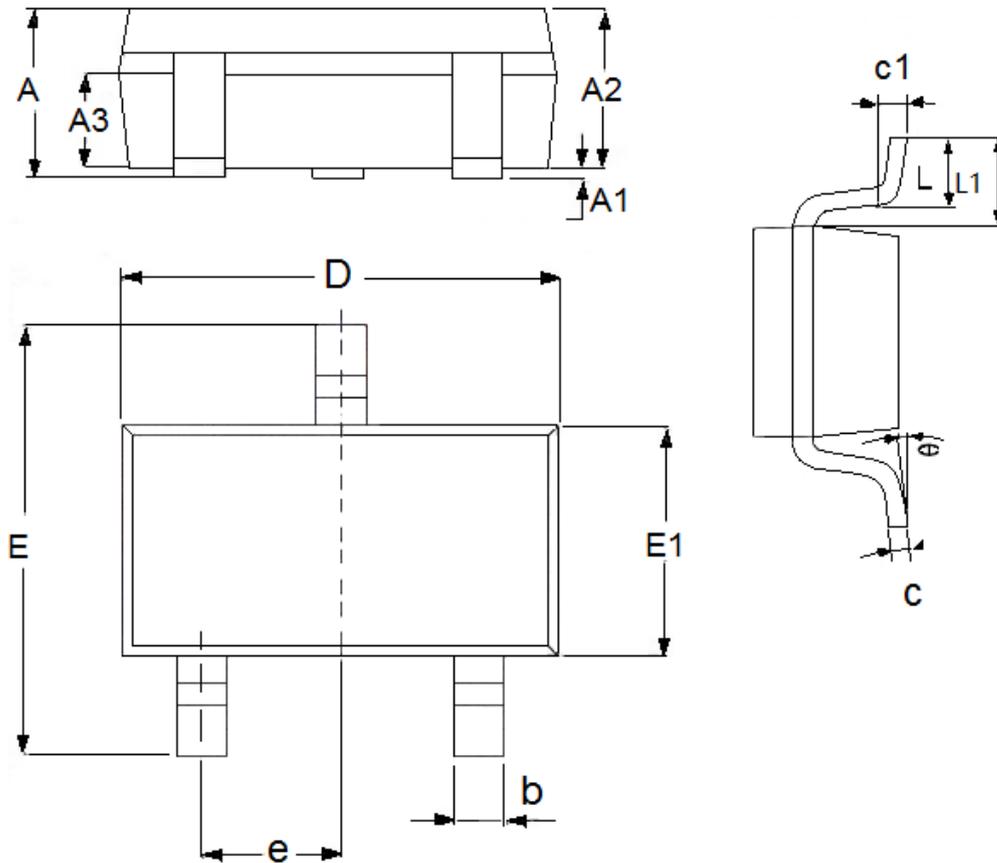
DIM	Millimeters		Inches	
	Min	**Max**	**Min**	**Max**
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
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**
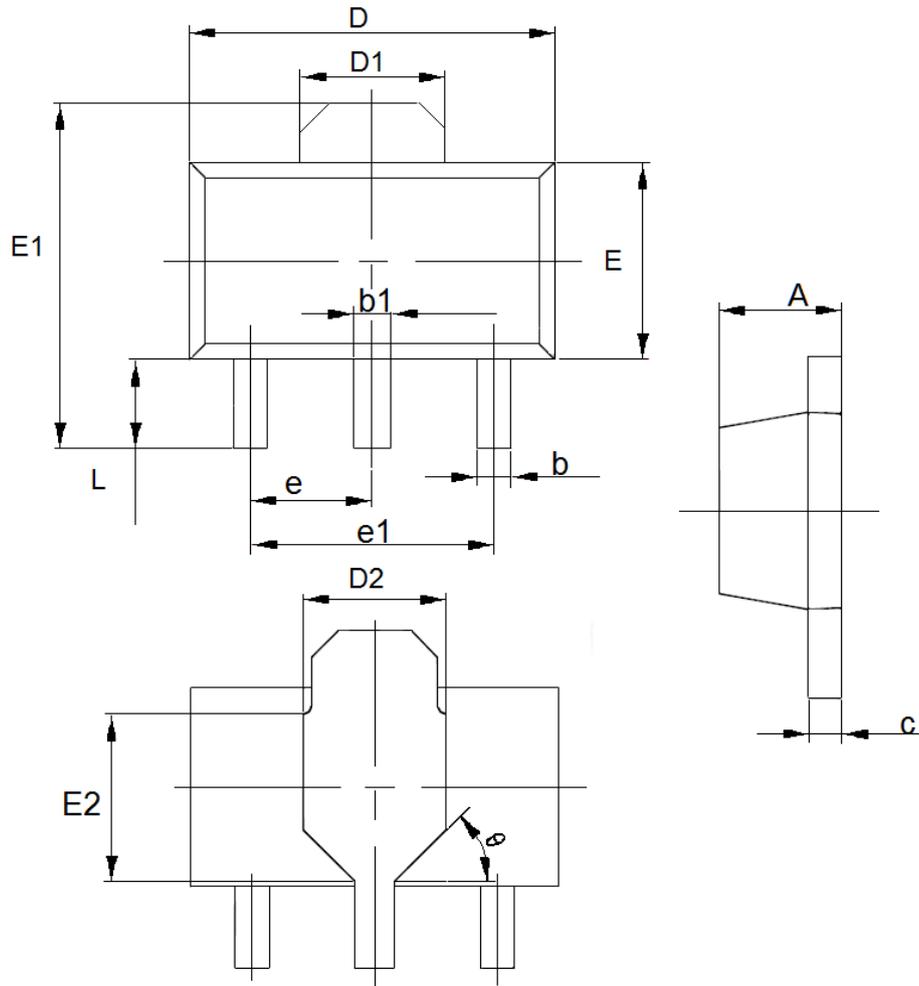
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.0177
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3.0(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)		0.0748(TYP)	
e	1.5(TYP)		0.0591(TYP)	
L	0.8	1.2	0.0315	0.0472
θ	45°		45°	

- **Packaging Type:TO-92**
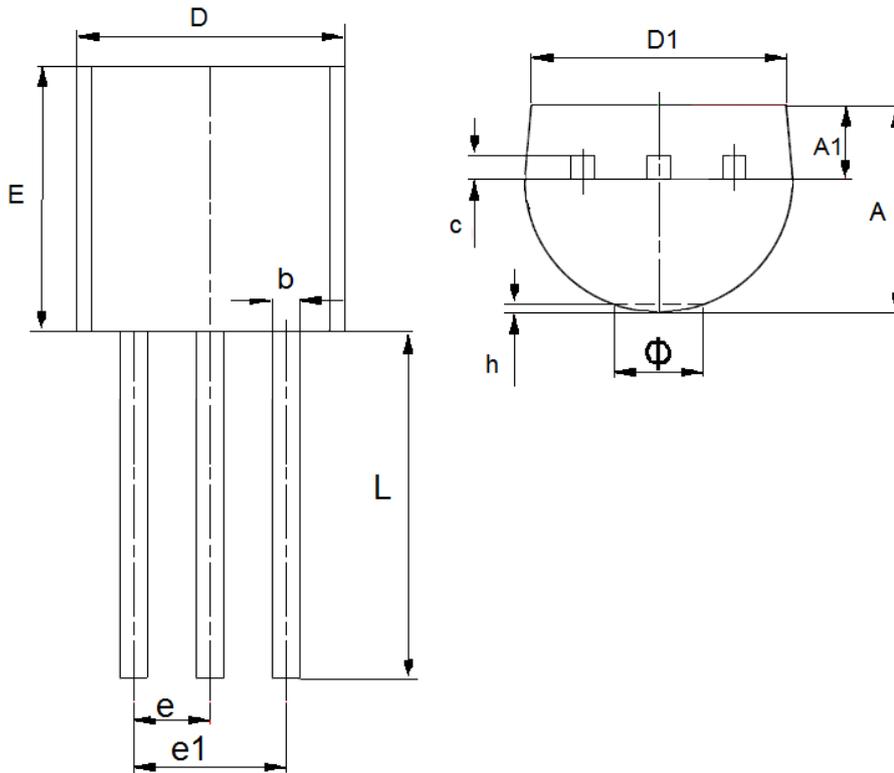
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	3.3	3.7	0.1299	0.1457
A1	1.1	1.4	0.0433	0.0551
b	0.38	0.55	0.015	0.0217
c	0.36	0.51	0.0142	0.0201
D	4.3	4.7	0.1693	0.185
D1	3.43	—	0.135	—
E	4.3	4.7	0.1693	0.185
e	1.27TYP		0.05TYP	
e1	2.44	2.64	0.0961	0.1039
L	14.1	14.5	0.5551	0.5709
h	0	0.38	0	0.015
Φ	—	1.6	—	0.063

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for LDO Voltage Regulators *category:*

Click to view products by Micro One *manufacturer:*

Other Similar products are found below :

M38D29FFHP#U1 702103A 717726C 742457H MP20051DN-LF-Z R5F111PGGFB#30 AP7363-SP-13 NCP103AMX285TCG

NCV8664CST33T3G NCV8752AMX28TCG L9454 AP7362-HA-7 LX13043CLD TCR3DF185,LM(CT TCR3DF24,LM(CT

TCR3DF285,LM(CT TCR3DF31,LM(CT TCR3DF45,LM(CT TLF4949EJ L9708 L970813TR 030014BB 059985X EAN61387601

EAN61573601 NCP121AMX173TCG NCP4687DH15T1G NCV8703MX30TCG 701326R 702087BB 755078E TCR2EN28,LF(S

LM1117DT-1.8/NO LT1086CM#TRPBF AZ1085S2-1.5TRE1 MAX15101EWL+T NCV8170AXV250T2G SCD337BTG

TCR3DF27,LM(CT TCR3DF19,LM(CT TCR3DF125,LM(CT TCR2EN18,LF(S MAX15103EWL+T TS2937CZ-5.0 C0 MAX8878EUK30-

T MAX663CPA NCV4269CPD50R2G NCV8716MT30TBG AZ1117IH-1.2TRG1 MP2013GQ-P