



### Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- Low Quiescent Current: 5uA at 6V
- Output voltage accuracy: tolerance  $\pm 2\%$

### Applications

- Battery-powered equipment
- Reference voltage sources
- Cameras, video cameras
- Portable AV systems
- Mobile phones
- Portable games

### General Description

TX6206 series are a highly precise, lower consumption, 3 terminal, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The TX6206 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is

compatible with low ESR ceramic capacitors. The current limiter's foldback circuit operates as a short circuit protection as well as the output current limiter for the output pin. Output voltages are internally by laser trimming technologies. It is selectable in 0.1V increments within a range of 1.2V to 5.0V. TX6206 series are available in SOT-23, SOT23-3 and SOT-89 packages.

### Order Information

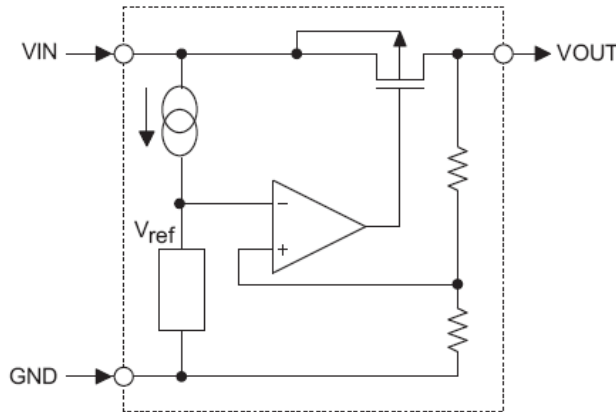
#### TX6206-①②③④

Designator	Symbol	Description
①②	Integer	Output Voltage (1.2~5.0V)
③	N	Package: SOT23
	M	Package: SOT23-3
	P	Package: SOT89
④	R	RoHS / Pb Free
	G	Halogen Free

Note: "①②" stands for output voltages. Other voltages can be specially customized

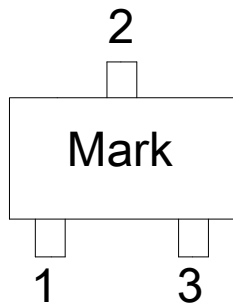


**Block Diagram**



**Pin Assignment**

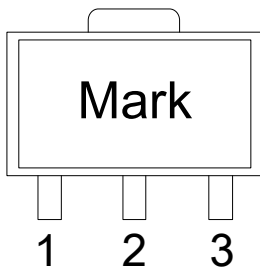
SOT23 and SOT23-3 (Top View)



**Table1:** TX6206-XXNR/TX6206-XXMR series (SOT23/SOT23-3 PKG)

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VIN	Input voltage pin
3	VOUT	Output voltage pin

SOT89 (Top View)



**Table2:** TX6206-XXPR series (SOT89 PKG)

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VIN	Input voltage pin
3	VOUT	Output voltage pin

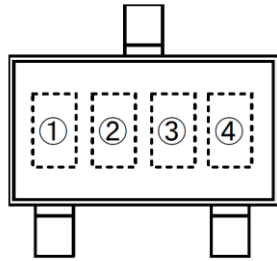


**TX6206**

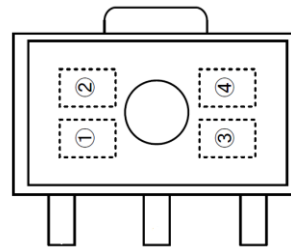
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**Marking Rule**



SOT-23  
(TOP VIEW)



SOT-89  
(TOP VIEW)

① represents product number

MARK	PRODUCT SERIES
6	TX6206****

② represents 3 pins regulator

MARK		PRODUCT SERIES
VOLTAGE=0.1~3.0V	VOLTAGE=3.1V~6.0V	
5	6	TX6206

③ represents output voltage

MARK	VOLTAGE(V)			MARK	VOLTAGE(V)		
0	-	3.1	-	F	1.6	4.6	-
1	-	3.2	-	H	1.7	4.7	-
2	-	3.3	-	K	1.8	4.8	-
3	-	3.4	-	L	1.9	4.9	-
4	-	3.5	-	M	2.0	5.0	-
5	-	3.6	-	N	2.1	-	-
6	-	3.7	-	P	2.2	-	-
7	-	3.8	-	R	2.3	-	-
8	-	3.9	-	S	2.4	-	-
9	-	4.0	-	T	2.5	-	-
A	-	4.1	-	U	2.6	-	-
B	1.2	4.2	-	V	2.7	-	-
C	1.3	4.3	-	X	2.8	-	-
D	1.4	4.4	-	Y	2.9	-	-
E	1.5	4.5	-	Z	3.0	-	-

④ X



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**Absolute Maximum Ratings** (The following specifications apply for Ta=25°C, unless specified otherwise)

Parameter	Symbol	Ratings	Units
Input Voltage	V <sub>IN</sub>	8	V
Output Current	I <sub>OUT</sub>	300*	mA
Output Voltage	V <sub>OUT</sub>	V <sub>SS</sub> -0.3~V <sub>IN</sub> +0.3	V
Power Dissipation	SOT-23	P <sub>d</sub>	0.20
	SOT23-3		0.25
	SOT-89		0.50
Operating Temperature Range	T <sub>opr</sub>	-40~+85	°C
Storage Temperature Range	T <sub>stg</sub>	-55~+125	°C

\*I<sub>OUT</sub>=P<sub>d</sub>/(V<sub>IN</sub>-V<sub>OUT</sub>)

\*P<sub>d</sub> is measured at Ta=25°C

**Electrical Characteristics**

TX6206 for any output voltage

(Ta=25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V <sub>out</sub>	V <sub>in</sub> =V <sub>out</sub> +1V 1.0mA≤I <sub>out</sub> ≤30mA 1.2V≤V <sub>OUT</sub> ≤2.5V	V <sub>out</sub> -0.05	--	V <sub>out</sub> +0.05	V
		V <sub>in</sub> =V <sub>out</sub> +1V 1.0mA≤I <sub>out</sub> ≤30mA 2.5V≤V <sub>OUT</sub> ≤5.0V	V <sub>out</sub> ×0.98	--	V <sub>out</sub> ×1.02	V
Output Current*1	I <sub>out</sub>	V <sub>in</sub> -V <sub>out</sub> =1V	--	300	--	mA
Low dropout*2	V <sub>drop</sub>	Refer to the next table				
Line Regulation	ΔV <sub>out</sub> 1/(V <sub>in</sub> -V <sub>out</sub> )	1.6V≤V <sub>in</sub> ≤8V I <sub>out</sub> =40mA	--	0.05	0.2	%/V
Load Regulation	ΔV <sub>out</sub> /ΔI <sub>out</sub>	V <sub>in</sub> = V <sub>out</sub> +1V 1.0mA≤I <sub>out</sub> ≤80mA	--	12	30	mV
Output voltage Temperature Coefficiency	ΔV <sub>out</sub> /(Ta·V <sub>out</sub> )	I <sub>out</sub> =30mA 0°C≤Ta≤70°C	--	±50	--	Ppm/°C
Supply Current	I <sub>ss</sub>	--	--	5	8	uA
Input Voltage	V <sub>in</sub>	--	--	6	8	V
PSRR	PSRR	F=1KHz V <sub>in</sub> =V <sub>out</sub> +1V	--	55	--	dB
Output Noise	EN	BW=10HZ~100KHz	--	30	--	uVrms



# TX6206

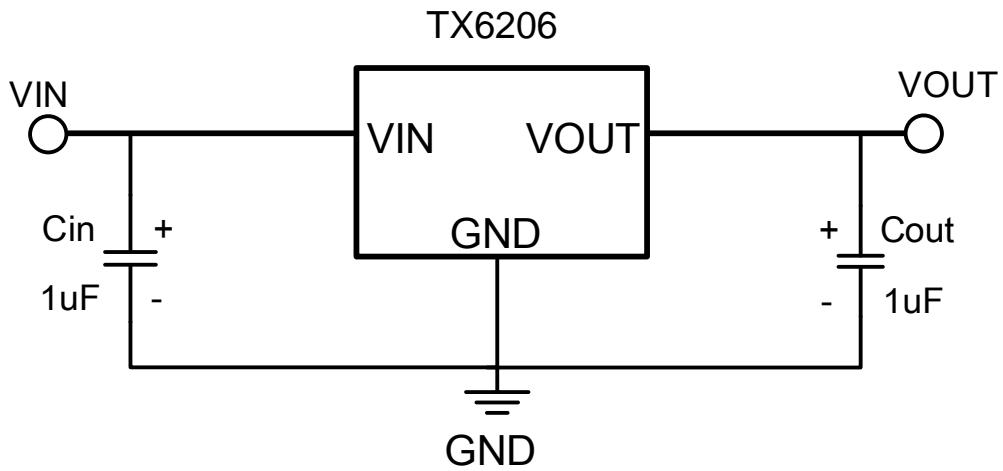
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Electrical Characteristics by Output Voltage:

Output Voltage Vout (V)	Dropout Voltage Vdif (V)		
	Conditions	Typ.	Max.
Vout ≤ 1.5V	Iout = 100 mA	0.35	0.57
1.8 ≤ Vout ≤ 2		0.28	0.42
2.8 ≤ Vout ≤ 5.0		0.19	0.35

### Typical Application





# TX6206

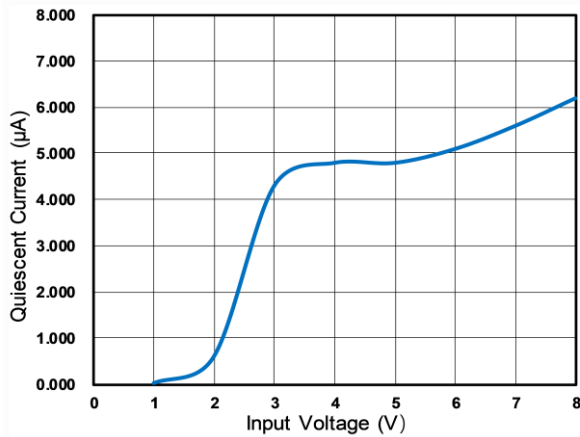
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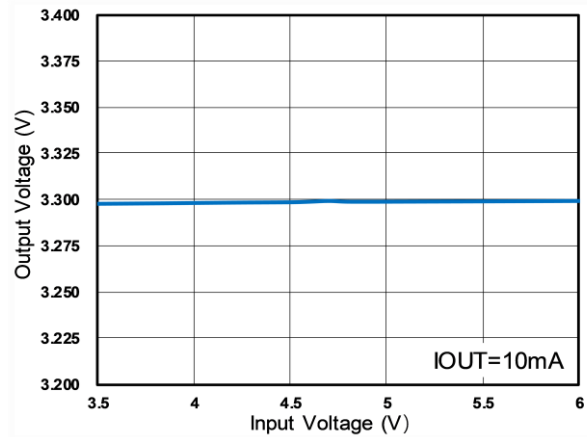
### Typical Performance Characteristics

Note:  $C_{IN}=0.33\mu F$   $C_{OUT}=0.1\mu F$   $V_{OUT}=3.3V$   $T=25^{\circ}C$  unless specified otherwise

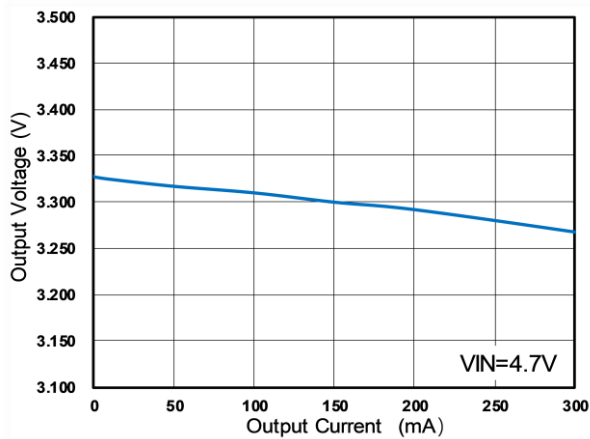
(1) Quiescent Current VS Input Voltage



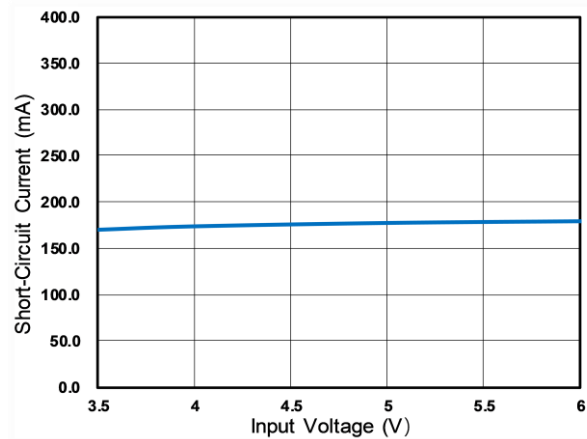
(2) Output Voltage VS Input Voltage



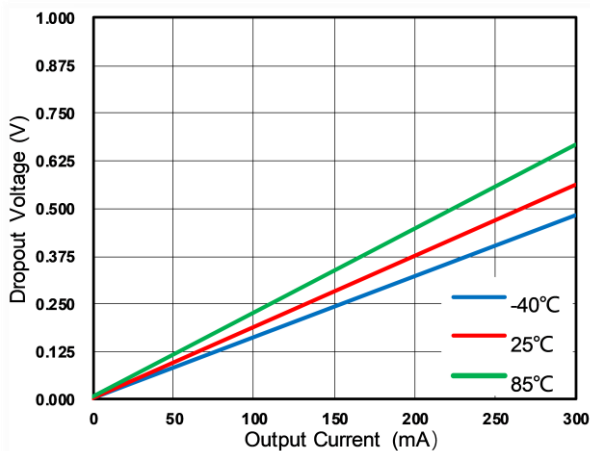
(3) Output Voltage VS Output Current



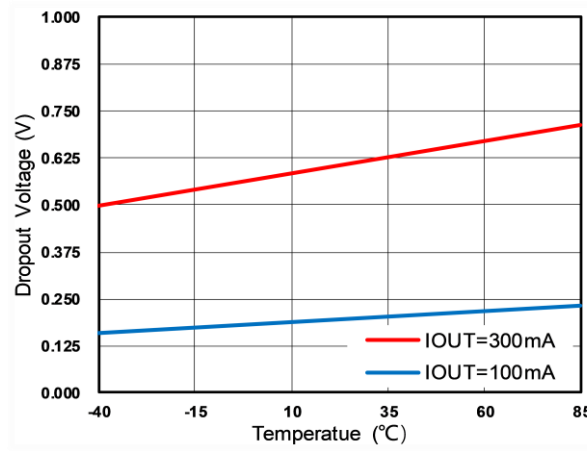
(4) Short-Circuit Current VS Input Voltage



(5) Dropout Voltage VS Output Current



(6) Dropout Voltage VS Temperature



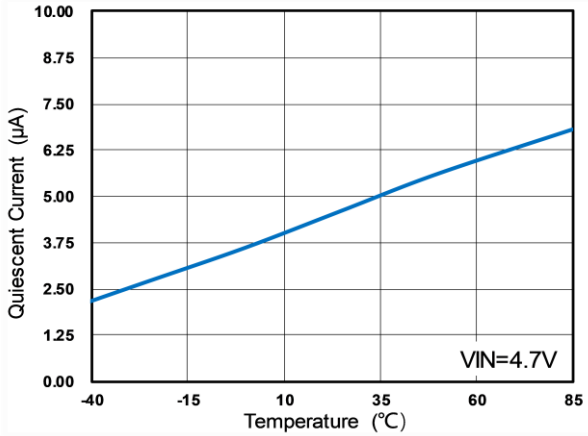


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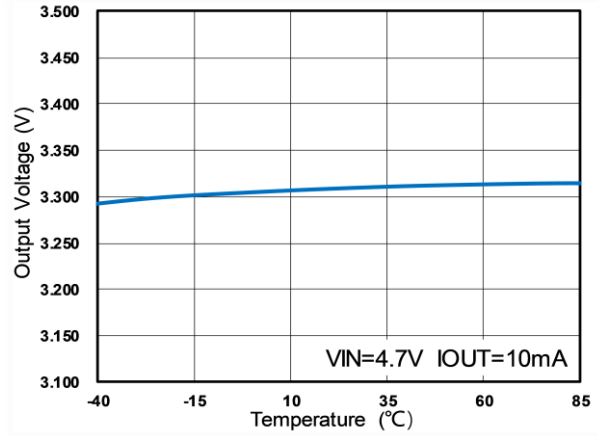
# TX6206

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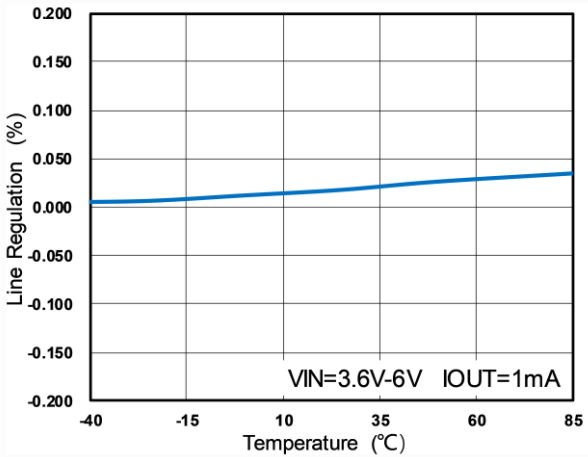
(7) Quiescent Current VS Temperature



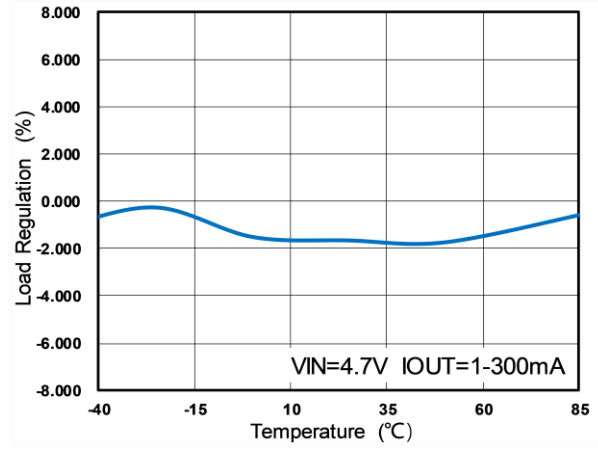
(8) Output Voltage VS Temperature



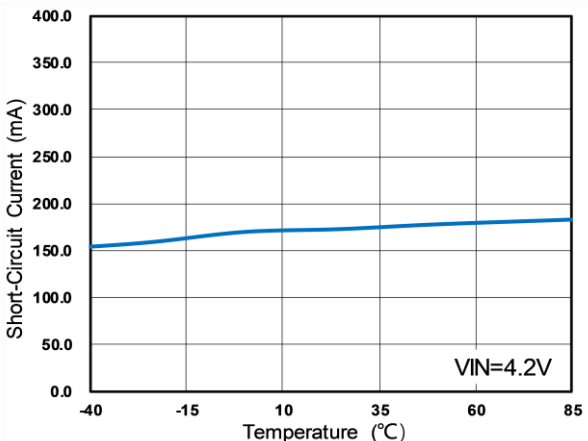
(9) Line Regulation VS Temperature



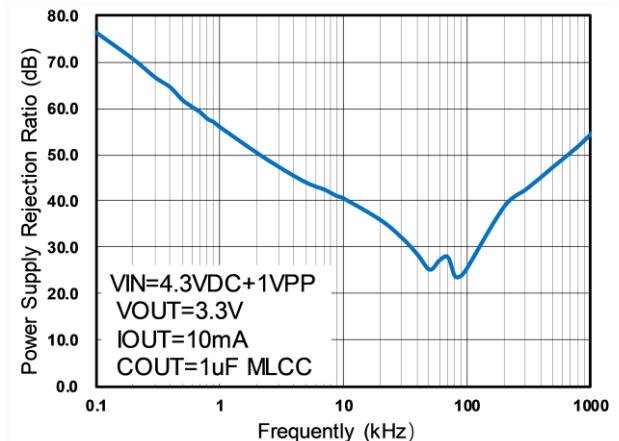
(10) Load Regulation VS Temperature



(11) Short-Circuit Current VS Temperature



(12) PSRR



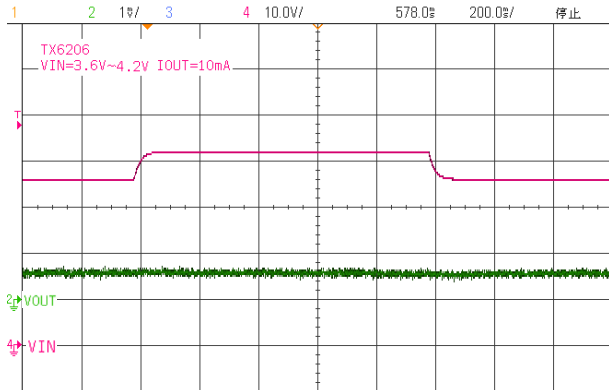


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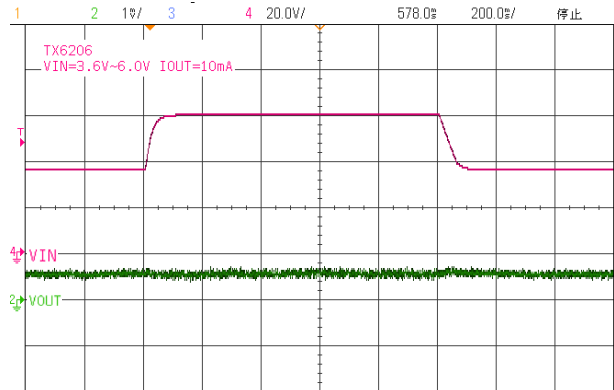
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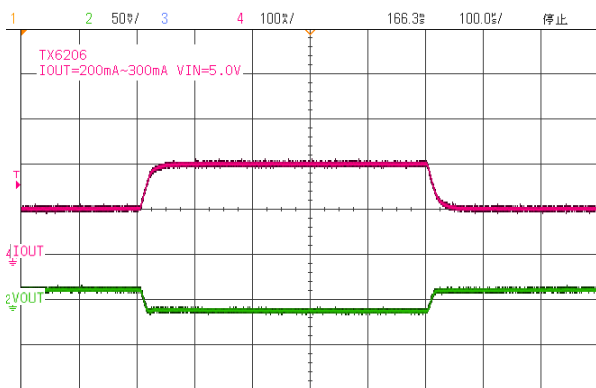
(13) Input Transient Response (VIN=3.6V-4.2V)



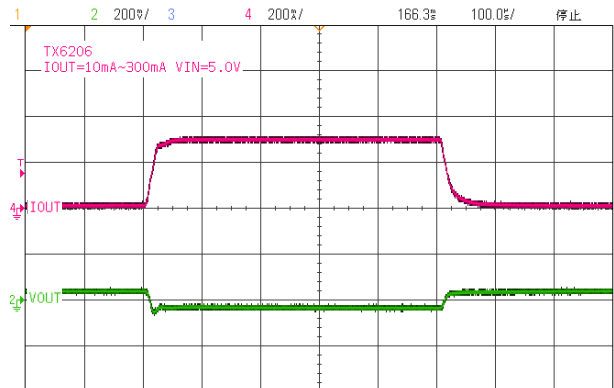
(14) Input Transient Response (VIN=3.6V-6.0V)



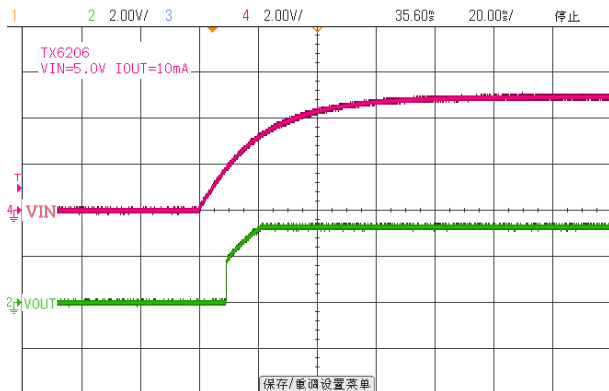
(15) Load Transient Response (IOUT=200mA-300mA)



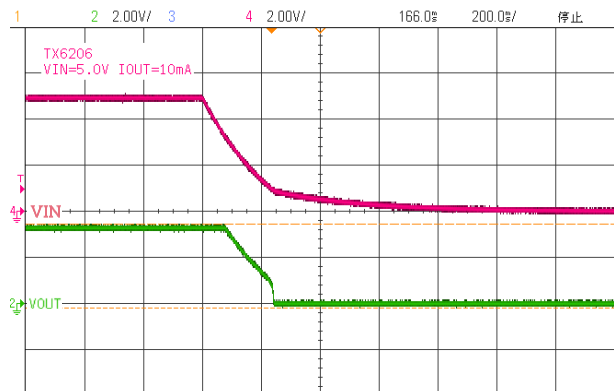
(16) Load Transient Response (IOUT=10mA-300mA)



(17) Power ON (VIN=5.0V IOUT=10mA)



(18) Power OFF (VIN=5.0V IOUT=10mA)







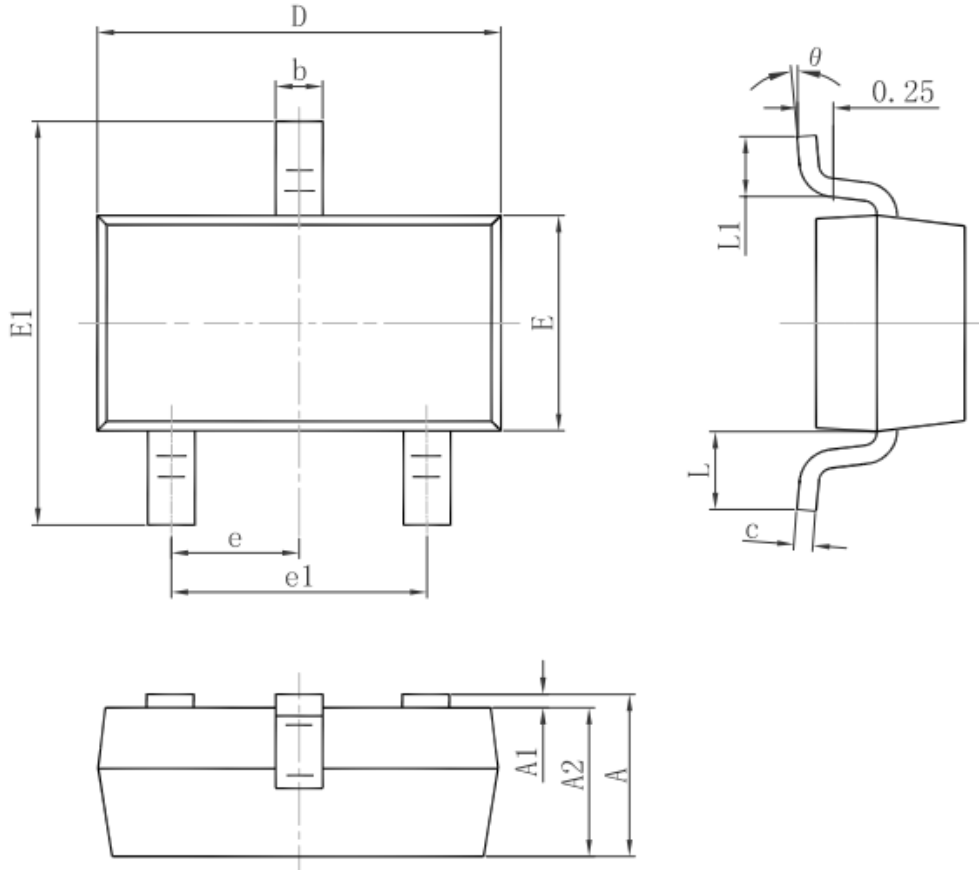
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**300mA Low Power LDO**

**Package Information**

**3-pin SOT23 Outline Dimensions**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

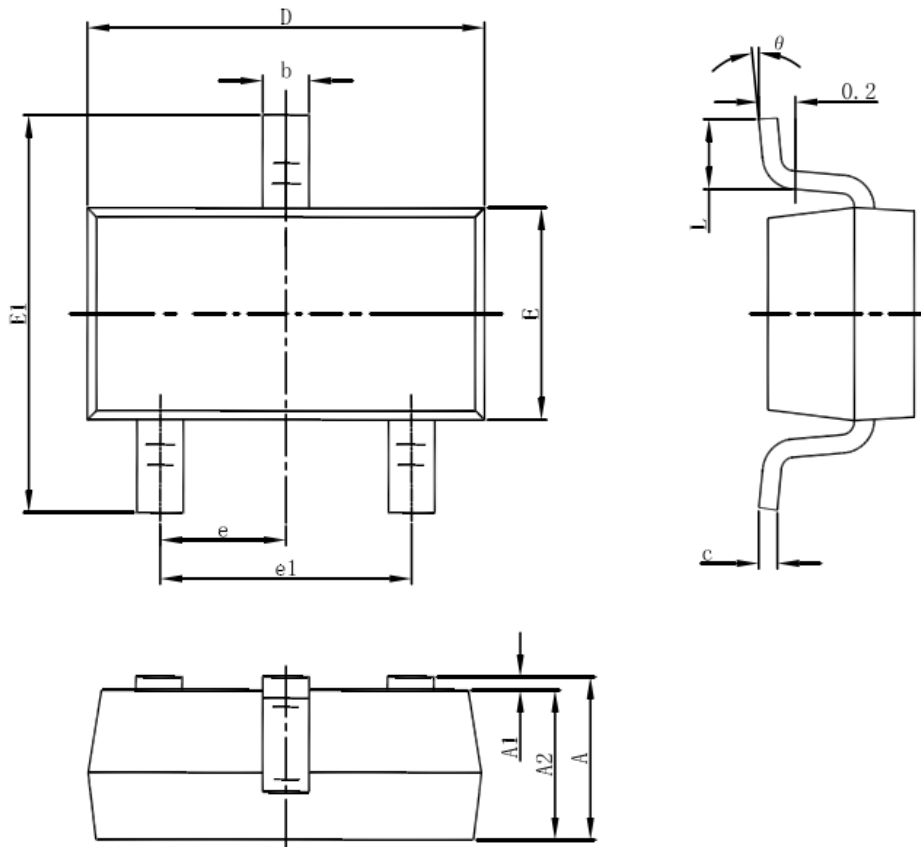


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**3-pin SOT23-3 Outline Dimensions**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

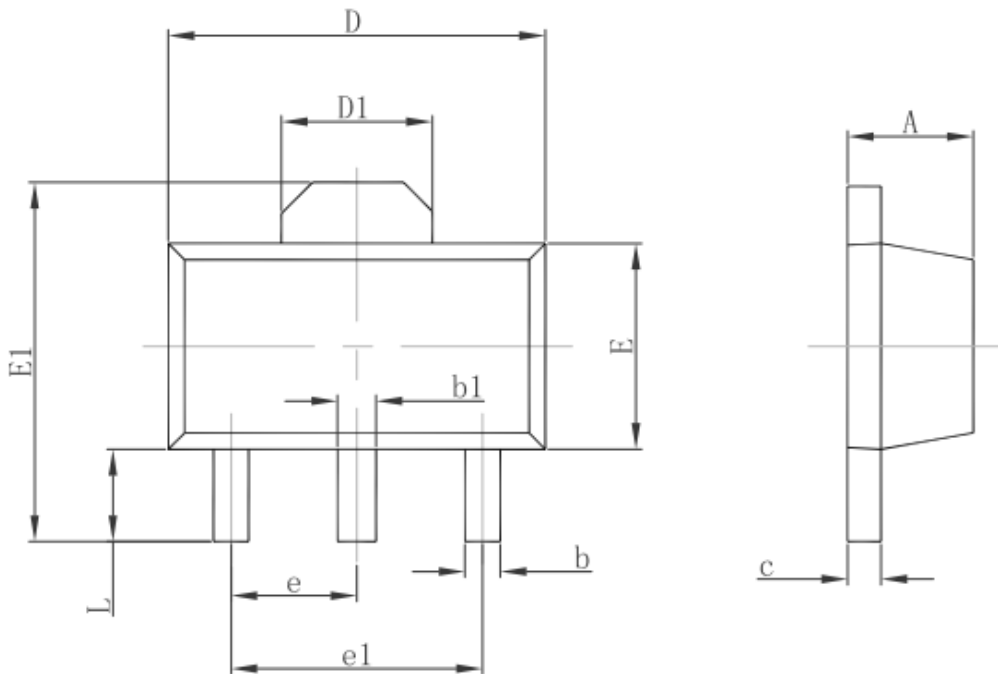


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**3-pin SOT89 Outline Dimensions**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047



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# **TX6206**

## **300mA Low Power LDO**

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