



## Low ESR Cap. Compatible Positive Voltage Regulators

### General Description

The KB6206 series are precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The KB6206 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 also operates as a short protect for the output current limiter and the output pin. Output voltage can be set internally by laser trimming technologies. It is selectable in 100mV increments within a range of 1.2V to 5.0V.

SOT-23 (250mW) and SOT-89 (500mW) packages are available.

### Features

- Maximum Operating Voltage : 9.0V
- Dropout Voltage : 160mV @ 100mA  
: 400mV @ 200mA
- Output Current : more than 300mA (type)
- Highly Accurate :  $\pm 2\%$
- Low Power Consumption : 8.0 $\mu$ A (TYP.)
- Operational Temperature Range : -40°C ~ 85°C
- Low ESR Capacitor can be used

### Applications

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

### Ordering Information

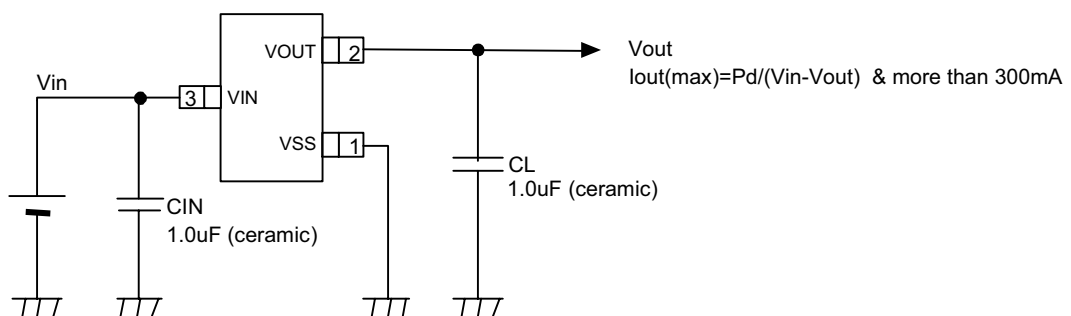
KB6206P ①②③④⑤

DESIGNATOR	SYMBOL	DESCRIPTION
① ②	Integer	Output Voltage : e.g. ① = 3, ② = 0 $\Rightarrow$ 3.0V
③	2	Accuracy : within $\pm 2\%$
④	Packaging Type :	
	M	SOT-23 (Pd=250mW)
	P	SOT-89 (Pd=500mW)
⑤	E	Pb Free

Available:

----- 2.0V  
 ----- 2.1V  
 ----- 2.5V  
 ----- 2.8V  
 ----- 3.0V  
 ----- 3.3V  
 ----- 3.6V

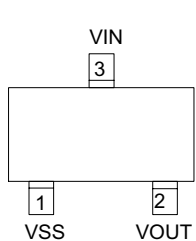
### Typical Application



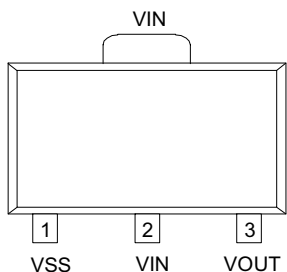
Typical Operating Circuit



## Pin Configuration



SOT-23  
(TOP VIEW)

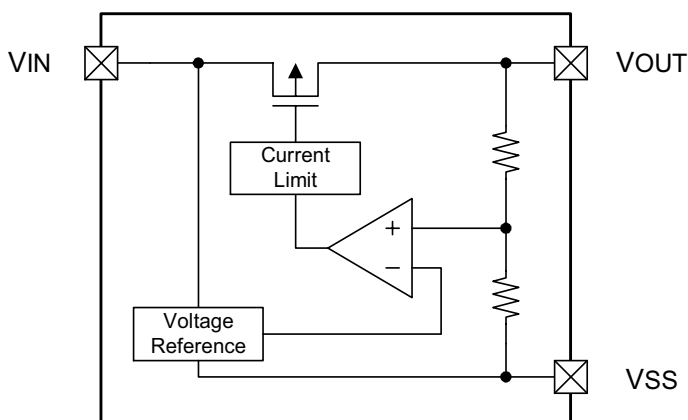


SOT-89  
(TOP VIEW)

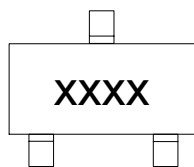
## Pin Assignment

PIN NUMBER		PIN NAME	FUNCTION
SOT-23	SOT-89		
1	1	VSS	Ground
3	2	VIN	Power Input
2	3	VOUT	Output

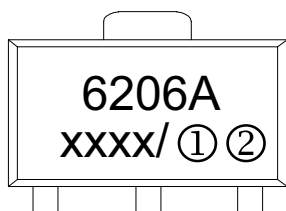
## Block Diagram



## Marking Rule



SOT-23 (TOP VIEW)



SOT-89 (TOP VIEW)

xxxx: Date Code

①②: Output Voltage(e.g. 33=3.3V)



## Absolute Maximum Ratings (Note 1)

PARAMETER	SYMBOL	DESCRIPTION	UNIT
Input Voltage	VIN	9.0	V
Output Current	IOUT	500	mA
Output Voltage	VOUT	VSS - 0.3 ~ VIN + 0.3	V
Power Dissipation	SOT-23	Pd	mW
	SOT-89		
Operating Ambient Temperature	Topr	- 40 ~ + 85	°C
Storage Temperature	Tstg	- 55 ~ + 125	°C

## Electrical Characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	CIRCUIT
Output Voltage	VOUT (E)	IOUT = 40mA	x 0.98 2.940	VOUT(T) 3.000	x 1.02 3.060	V	①
Maximum Output Current	IOUTMAX			300		mA	①
Load Regulation	$\Delta$ VOUT	1mA ≤ IOUT ≤ 100mA		25		mV	①
Dropout Voltage	Vdif 1	IOUT=90mA		200		mV	①
	Vdif 2	IOUT=200mA		400		mV	
Supply Current	IDD	VIN=4.0V		8.0	10	μA	②
Line Regulations	$\frac{VOUT}{\Delta VIN \cdot VOUT}$	VOUT(T)+1.0V ≤ VIN ≤ 6V		0.01	0.30	%/V	①
		IOUT=40mA					
Input Voltage	VIN		0.8		9	V	-
Output Voltage Temperature Characteristics	$\frac{\Delta VOUT}{\Delta Topr \cdot VOUT}$	IOUT=40mA -40°C ≤ Topr ≤ 85°C		100		ppm /°C	①
Current Limiter	Ishort	VIN=VOUT+1.5V, VOUT=VSS	5	20	50	mA	①

(NOTE 1) VOUT(T) = Specified Output Voltage

(NOTE 2) VOUT(E) = Effective Output Voltage (ie. The output voltage when "VOUT(T)+1.0V" is provided at the VIN pin while maintaining a certain IOUT value.)

(NOTE 3)  $V_{dif} = \{VIN 1^{(NOTE5)} + VOUT 1^{(NOTE4)}\}$

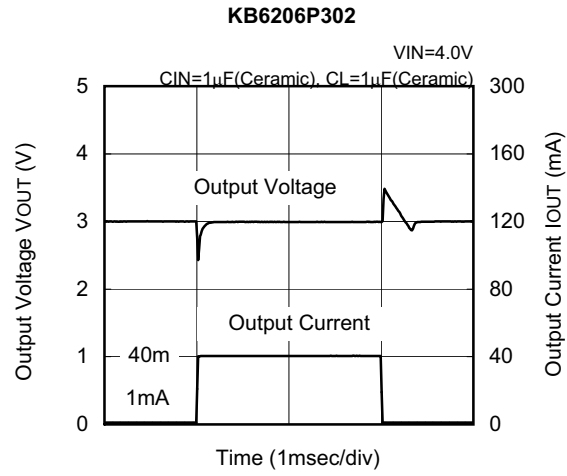
(NOTE 4) VOUT1 = A voltage equal to 98% of the Output Voltage whenever an amply stabilized IOUT {VOUT(T) + 1.0V} is input.

(NOTE 5) VIN 1 = The Input Voltage when VOUT1 appears as Input Voltage is gradually decreased.

(NOTE 6) Unless otherwise stated, VIN = VOUT(T)+1.0V

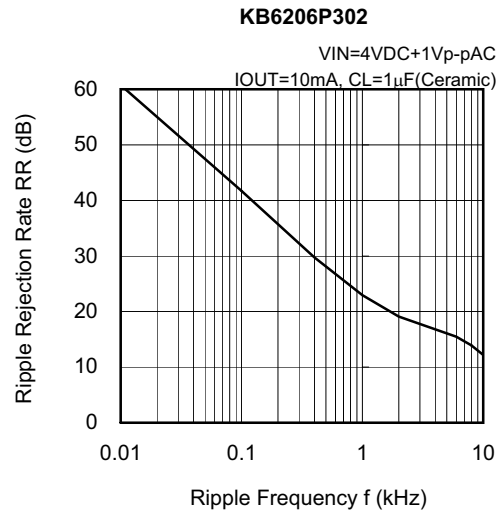
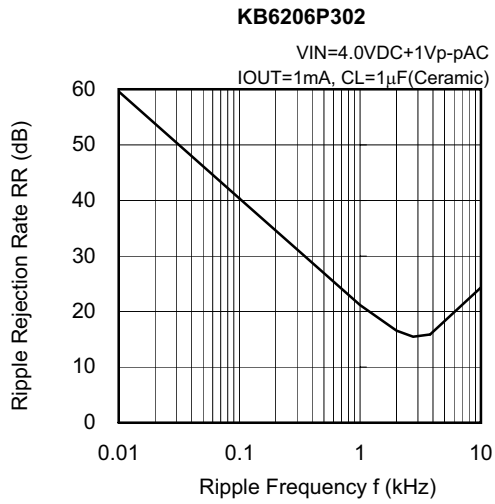


## Load Transient Response





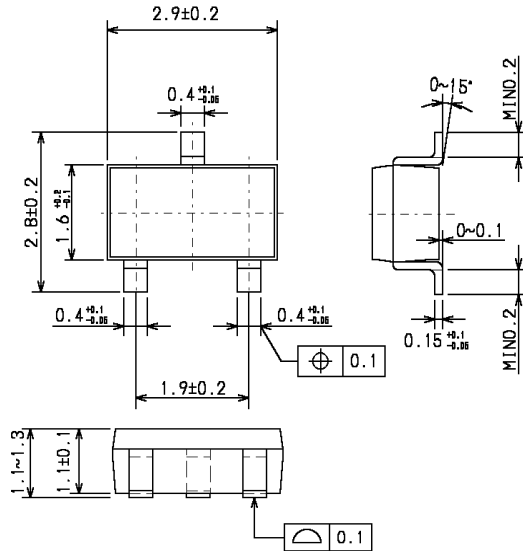
## Ripple Rate



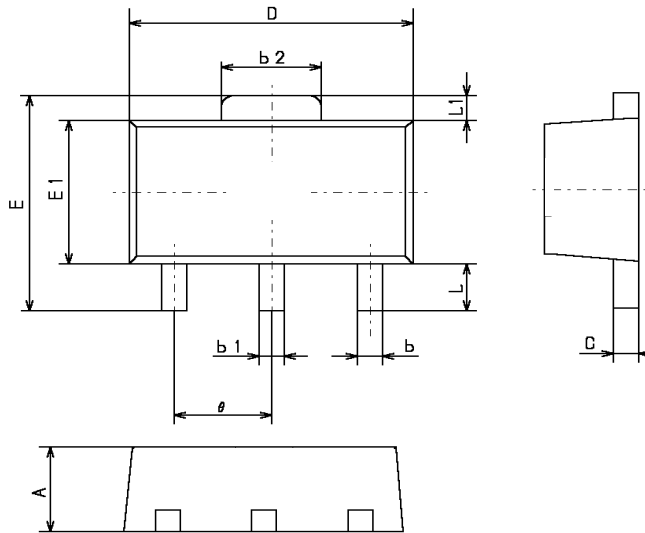


## PACAGE DESCRIPTION

### ○ SOT-23



### ○ SOT-89



SYMBOLS	DIMENSIOIS IN MILLIMETERS		
	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.36	0.42	0.48
b 1	0.41	0.47	0.53
b 2	1.40	1.60	1.75
C	0.38	0.40	0.43
D	4.40	4.50	4.60
E	—	—	4.25
E 1	2.40	2.50	2.60
e	1.40	1.50	1.60
L	0.80	—	—
L 1	—	0.40	—