



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 : ± 2%
- Low Power Consumption : 8.0μA (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

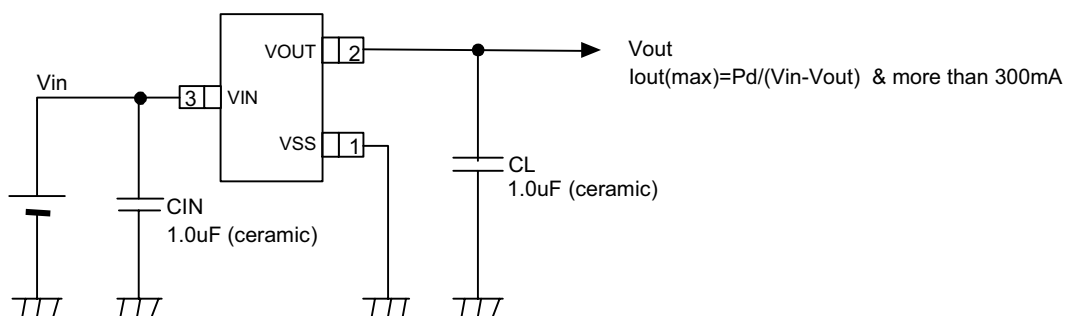
KB6206P ①②③④⑤

DESIGNATOR	SYMBOL	DESCRIPTION
① ②	Integer	Output Voltage : e.g. ① = 3, ② = 0 ⇨ 3.0V
③	2	Accuracy : within ±2%
④	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

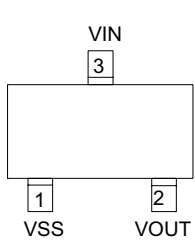
Typical Application



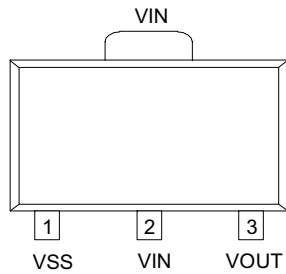
Typical Operating Circuit



Pin Configuration



SOT-23
(TOP VIEW)

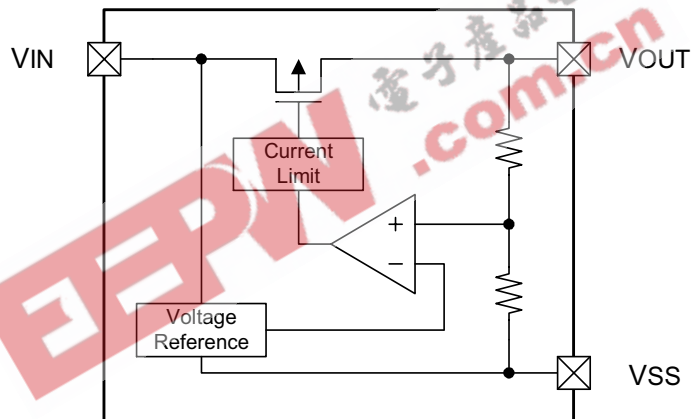


SOT-89
(TOP VIEW)

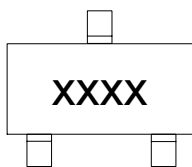
Pin Assignment

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

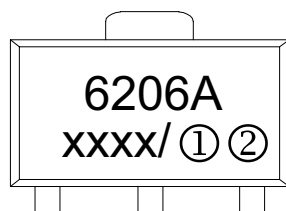
Block Diagram



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	250	mW
	SOT-89		500	
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	Δ 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 IOUT=40mA		0.01	0.30	%/V	①
	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 (i.e. The output voltage when "VOUT(T)+1.0V" is provided at the VIN pin while maintaining a certain IOUT value.)

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

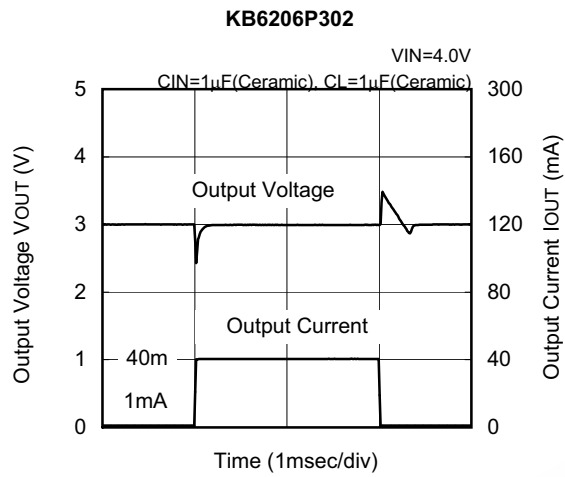
(NOTE 4) VOUT1 = A voltage equal to 98% of the Output Voltage whenever an amply stabilized IOUT {VOUT(T) + 1.0V} is input.

(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



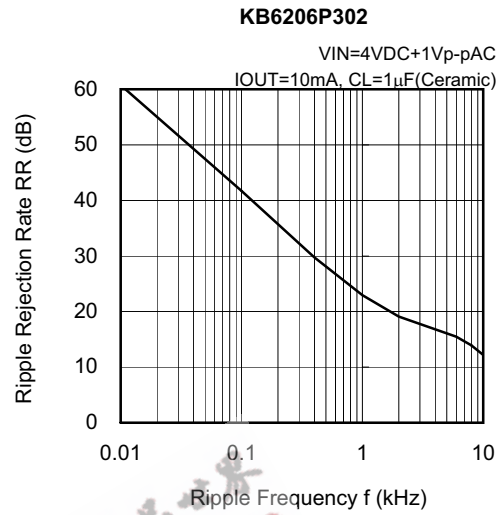
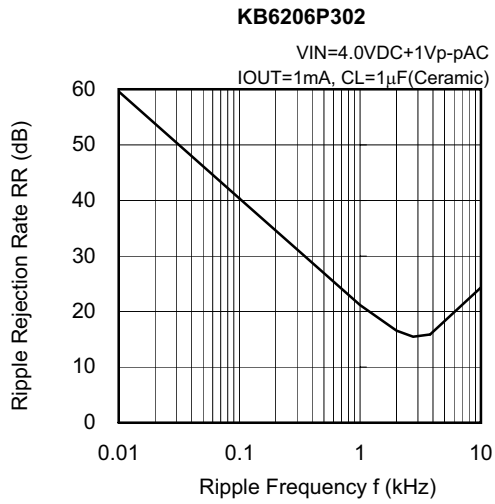
load Transient Response



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Ripple Rate

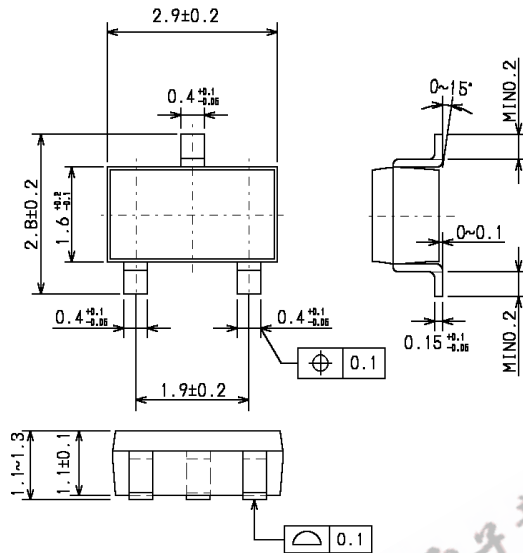


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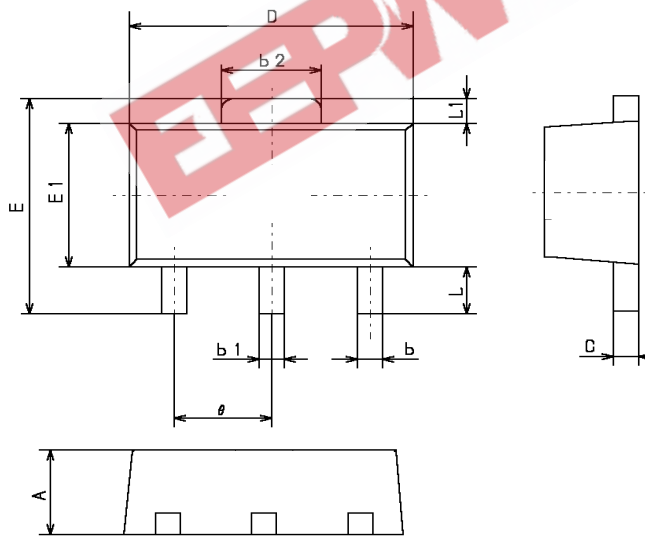


PACAGE DESCRIPTION

○ SOT-23



○ SOT-89



SYMBOLS	DIMENSIOS 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	—