

1.Description

XC6206 series is a CMOS step - down voltage regulator with high ripple rejection, low power consumption, low dropout, overcurrent and short - circuit protection. These devices have a very low static bias current (6.0 μ A Typ.), which can provide an output current of 250mA even if the difference between the input and output voltages is very small, and still maintain a good regulation rate.

3.Features

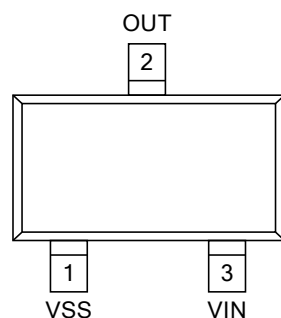
- High precision output voltage:
Accuracy A: $\pm 1\%$, Accuracy B: $\pm 2.5\%$
- Output voltage: 1.5V~5.0V (step size 0.1V)
- Very low static bias current
(Typ.=6.0 μ A)
- Low temperature adjustment coefficient

2.Product Usage

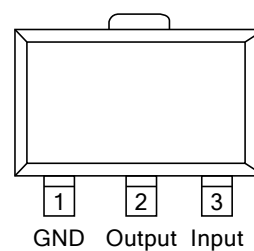
- Battery power supply system
- Cordless telephone equipment
- Wireless control system
- Portable/palm computer
- Portable consumer equipment
- Portable instrument
- Automobile electronic equipment
- Voltage reference source

- The highest input voltage can reach 8V
- With strong load capacity: when $V_{in}=4.3V$ and $V_{out}=3.3V$, $I_{out}=250mA$.
- It can be used as regulator and reference voltage
- Good input stability: Typ. 0.03%/V
- Package form: SOT89 -3, SOT23 -3

4.Pinning information



SOT23-3



SOT89-3

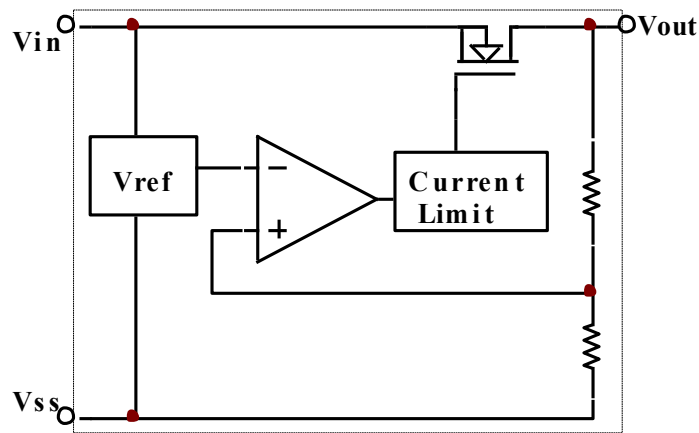


5.Model selection

XC6206P ① ② ③ ④ ⑤

Representat ive number	Describe	Symbol	Describe
① ②	Output voltage	12 ~ 50	e.g. output 3.0V → ① =3, ② =0
③	precision	2	±2.5%
		1	±1%
④	package	M	SOT-23
		P	SOT-89
⑤	Belt loading	R	embossed belt, standard inflow

6.Principle block diagram





7.Limit parameter

Project	Symbol	parameter		Limit value	Company
Voltage	V_{IN}	Input voltage		9	V
	V_{OUT}	Output voltage		$V_{SS}-0.3 \sim V_{out} 0.3$	V
electric current	I_{OUT}	output current		500	mA
power consumption	PD	SOT23	Maximum allowable	300	mW
		SOT89 - 3	power consumption	500	mW
temperature	T_w	Working temperature		-25 to 85	°C
	T_c	Storage temperature		-40 to 125	°C
	T_h	welding temperature		260	°C,10s



8. Electrical characteristics

($C_{in}=C_{out}=10\mu F$, $T_A=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output voltage	$V_{OUT}(E)$	$I_{OUT}=1mA$, $V_{IN}=V_{OUT}(T)+1V$	0.975	$V_{OUT}(T)$	1.025	V
Output Current	$I_{OUT}(max)$	$V_{IN}=V_{OUT}(T)+1V$	100			mA
Drop pressure difference	V_{drop}	$I_{OUT}=50mA$, $1.5V \leq V_{OUT}(T) \leq 2.5V$		200	280	mV
		$2.6V \leq V_{OUT}(T) \leq 3.3V$		160	240	mV
		$3.4V \leq V_{OUT}(T) \leq 5.5V$		120	200	mV
quiescent current	I_{SS}	$V_{IN}=V_{OUT}(T)+1V$		7		μA
Load stability	ΔV_{OUT}	$V_{IN}=V_{OUT}(T)+1V$, $1mA \leq I_{OUT} \leq 80mA$		20		mV
Input stability	$\Delta V_{OUT}/(\Delta V_{IN} \cdot V_{OUT})$	$I_{OUT}=1mA$, $V_{OUT}(T)+0.5V \leq V_{IN} \leq 5.5V$		0.1	0.2	%/V
Output voltage temperature coefficient	$\Delta V_{OUT}/(\Delta T_A \cdot V_{OUT})$	$V_{IN}=V_{OUT}(T)+1V$, $I_{OUT}=10mA$ $-40^\circ C \leq T_A \leq 85^\circ C$		± 100		ppm/ $^\circ C$
input voltage	V_{IN}		1.8		8	V
Ripple suppression ratio	PSRR	$V_{IN}=[V_{OUT}(T)+1]V + 1V_{p-pAC}$ $I_{OUT}=10mA$, $f=1kHz$		40		dB
Short circuit current	I_{short}	$V_{IN}=V_{OUT}(T)+1.5V$, $V_{OUT}=V_{SS}$		30		mA
Overcurrent protection current	I_{limt}	$V_{IN}=V_{OUT}(T)+1.5V$		380		mA

Note:

- $V_{OUT}(T)$: the specified output voltage.
- $V_{OUT}(E)$: effective output voltage (that is, the output voltage when I_{OUT} keeps a certain value and $V_{IN}=(V_{OUT}(T)+1.0V)$).
- $I_{OUT}(max)$: $V_{IN}=V_{OUT}(T)+1V$, slowly increase the output current, and the current value when the output voltage is $\leq V_{OUT}(E) \cdot 95\%$.
- $V_{drop}=V_{IN1}-V_{OUT}(E)$ s: V_{IN1} = the input voltage when the output voltage drops to 98% of $V_{OUT}(E)$. $V_{OUT}(E)s=V_{OUT}(E) \cdot 98\%$
 $V_{OUT}(E)1$ = the output voltage value when $V_{IN}=V_{OUT}(t)+1V$ and I_{OUT} = a certain value.



9. Test Circuit

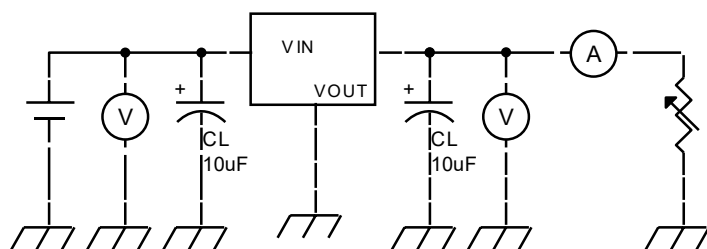


Figure 1

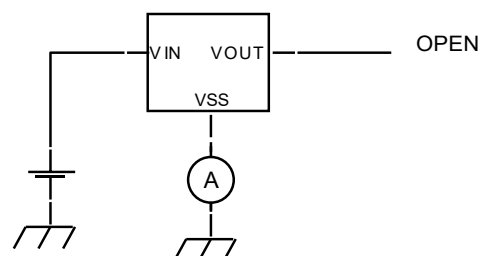
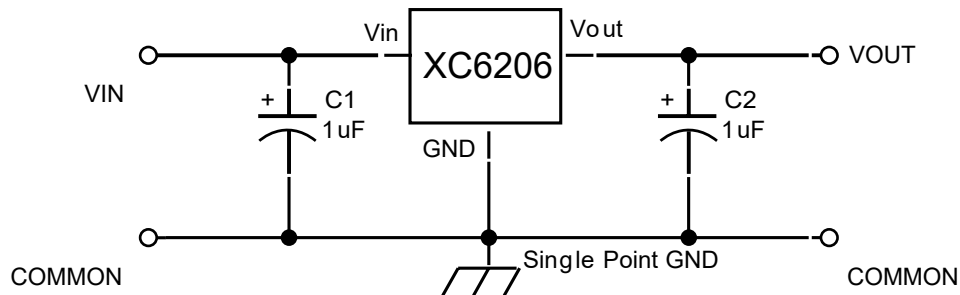


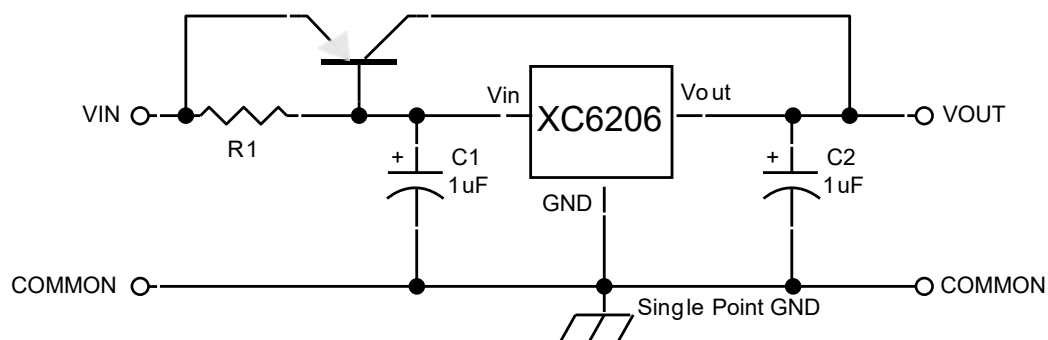
Figure 2



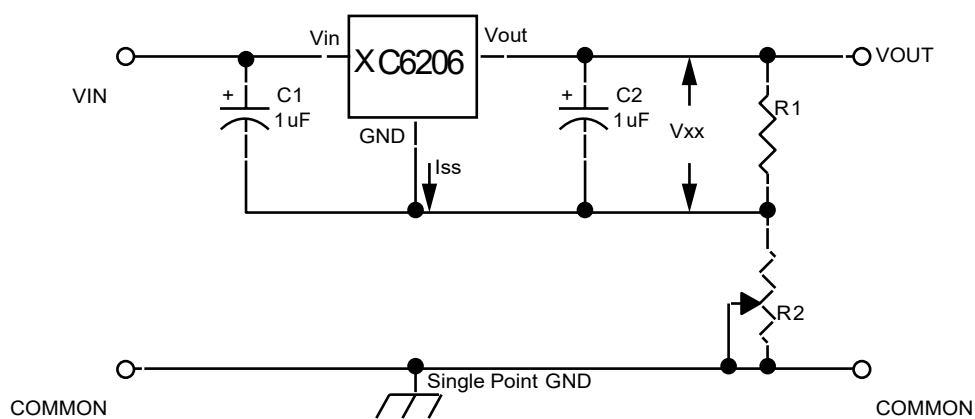
10. Applied Circuit



1. Basic circuit

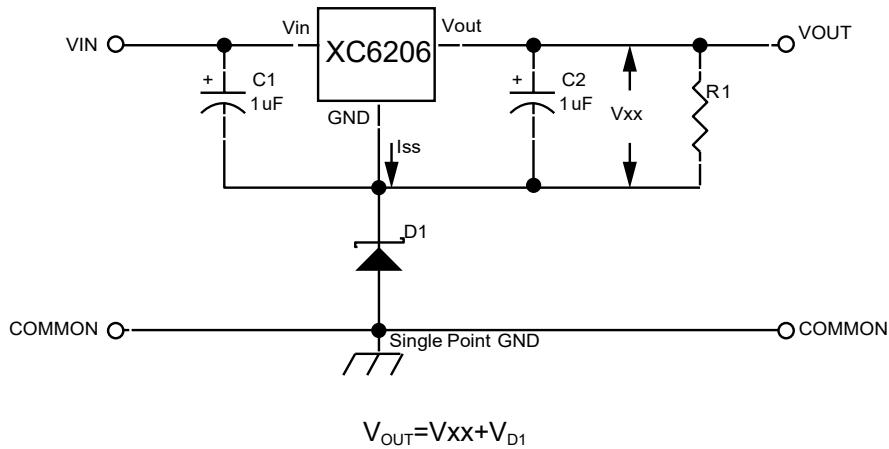


2. Positive voltage regulator with large output current

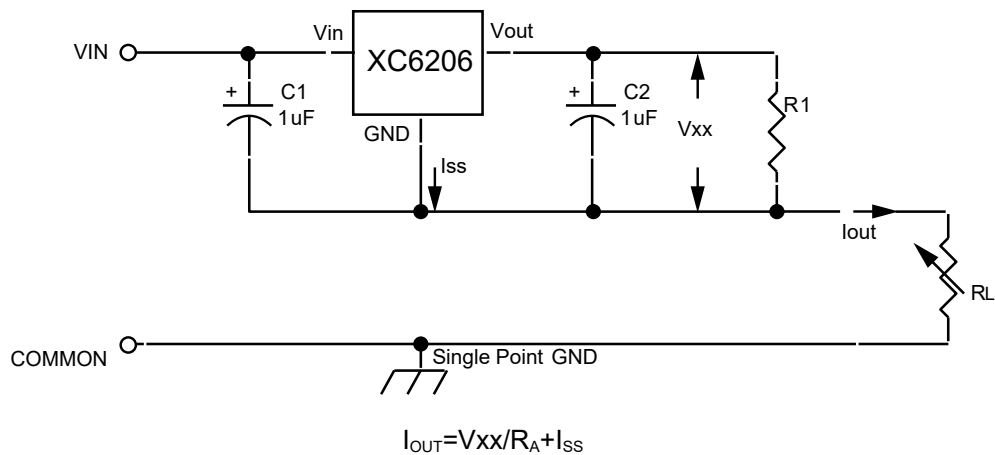


$$V_{OUT} = V_{XX}(1 + R2/R1) + I_{SS}R2$$

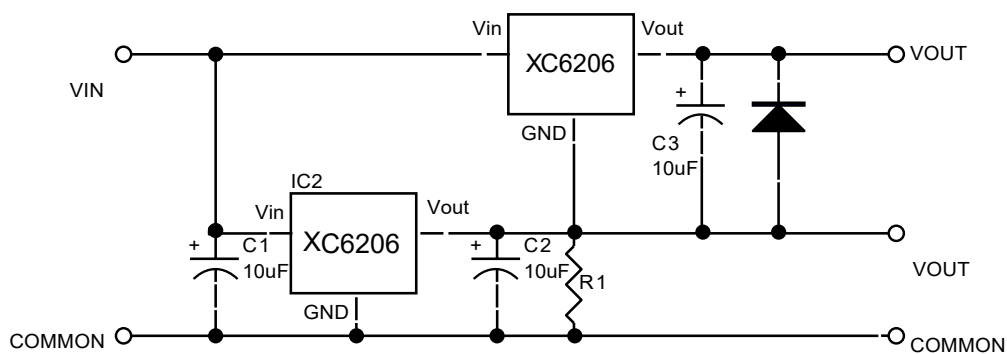
3. Circuit for increasing output voltage (1)



4. Circuit for increasing output voltage (2)



5. Constant current regulator



6. Double output



11.1 Typical characteristic

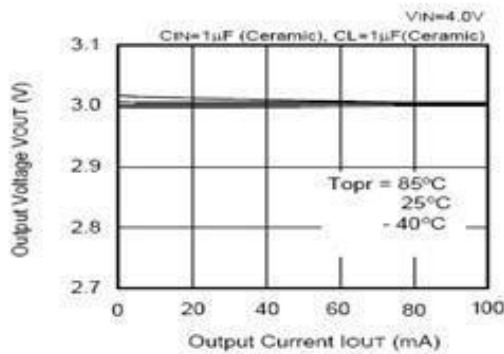


Figure 1: Output voltage-output current
(when the load current increases)

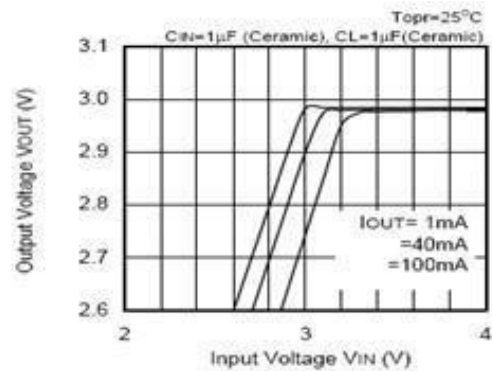


Figure 2: Output voltage and input voltage

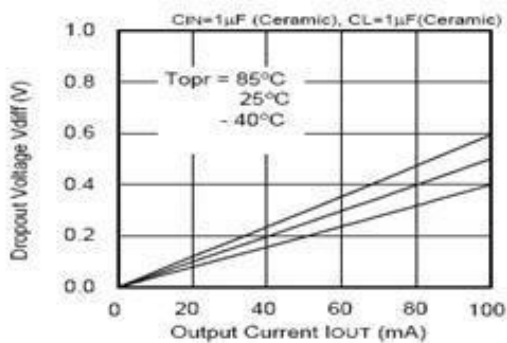


Figure 3: Dropout voltage and output current

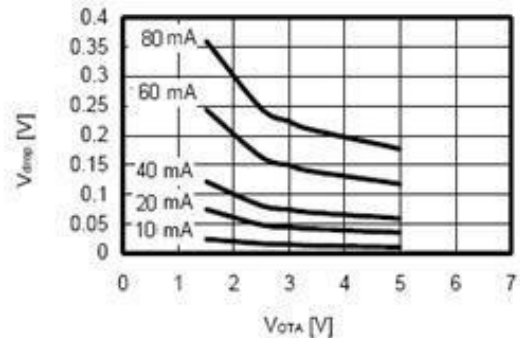


Figure 4: Dropout voltage and output voltage

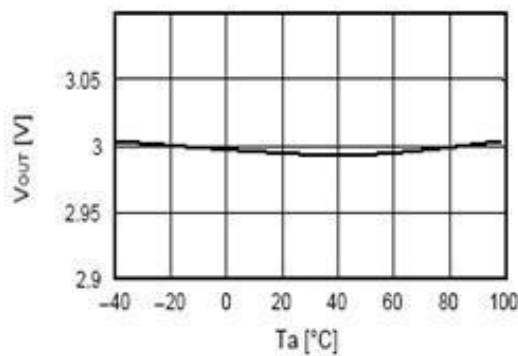


Figure 5: Output voltage and temperature

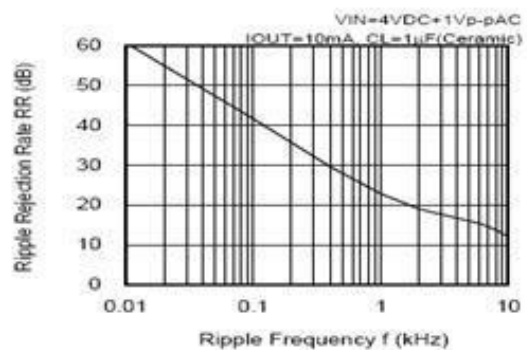
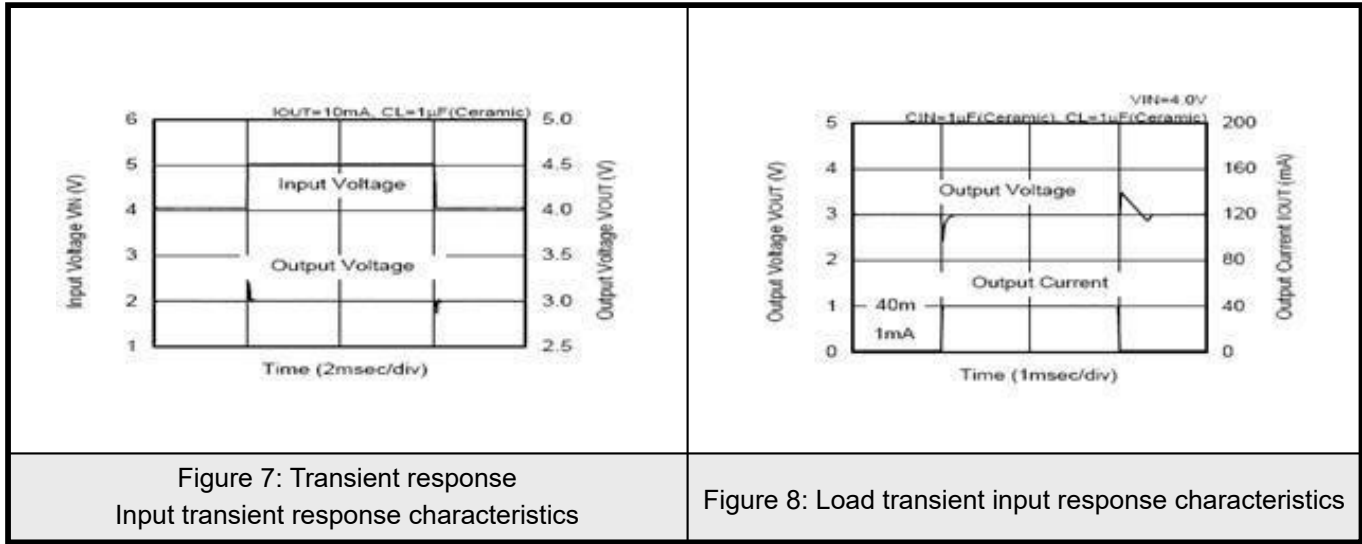


Figure 6: Ripple suppression

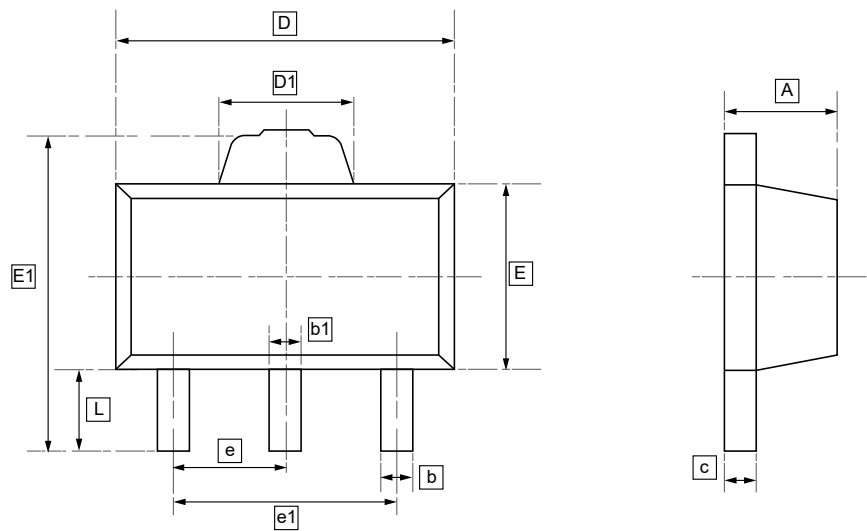


11.2Typical characteristic





12.1SOT-89-3 Package Outline Dimensions

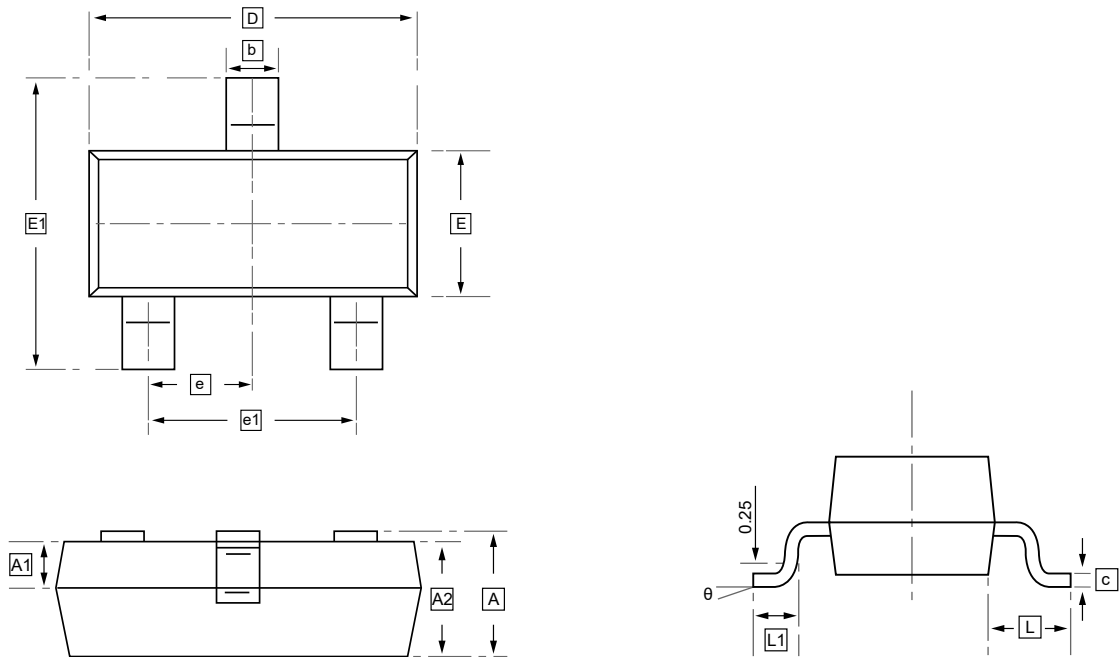


DIMENSIONS (mm are the original dimensions)

Symbol	A	b	b1	c	D	D1	E	E1	e	e1	L
Min	1.400	0.320	0.360	0.350	4.400	1.400	2.300	3.940	1.500	2.900	0.900
Max	1.600	0.520	0.560	0.440	4.600	1.800	2.600	4.250	TYP	3.100	1.100



12.2SOT-23 Package Outline Dimensions

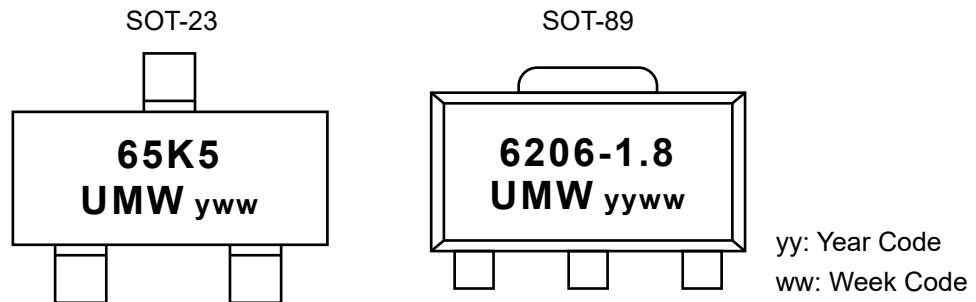


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	e1	L	L1	θ
Min	0.900	0.000	0.900	0.300	0.080	2.800	1.200	2.250	0.950	1.800	0.550	0.300	0°
Max	1.150	0.100	1.050	0.500	0.150	3.000	1.400	2.550	TYP.	2.000	REF.	0.500	8°



13. Ordering information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW XC6206P182MR	65K5	SOT-23	3000	Tape and reel
UMW XC6206P252MR	65T5	SOT-23	3000	Tape and reel
UMW XC6206P282MR	65X5	SOT-23	3000	Tape and reel
UMW XC6206P302MR	65Z5	SOT-23	3000	Tape and reel
UMW XC6206P332MR	662K	SOT-23	3000	Tape and reel
UMW XC6206P362MR	665K	SOT-23	3000	Tape and reel
UMW XC6206P182PR	6206-1.8	SOT-89	1000	Tape and reel
UMW XC6206P252PR	6206-2.5	SOT-89	1000	Tape and reel
UMWXC6206P282PR	6206-2.8	SOT-89	1000	Tape and reel
UMW XC6206P302PR	6206-3.0	SOT-89	1000	Tape and reel
UMW XC6206P332PR	6206-3.3	SOT-89	1000	Tape and reel
UMW XC6206P362PR	6206-3.6	SOT-89	1000	Tape and reel



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