UMW XC6206

Linear voltage regulator

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 (6.0μA 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.

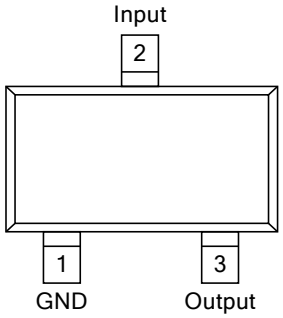
2.Product Usage

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

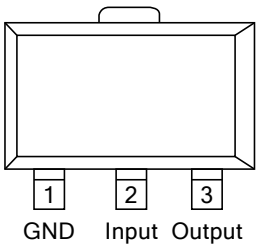
3.Features

- High precision output voltage:
  Accuracy A: ±1%, Accuracy B: ±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
- The highest input voltage can reach 8V
- With strong load capacity: when Vin=4.3V and Vout=3.3V, Iout=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



SOT-23



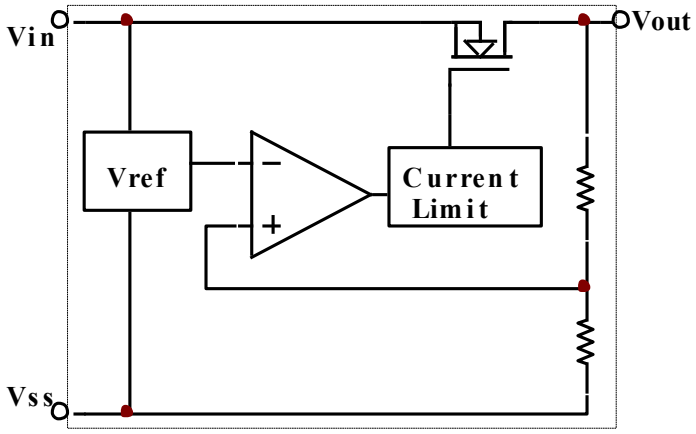
SOT-89

5.Model Selection

XC6206P 18 2 M R
① ② ③ ④

Representative Number	Describe	Symbol	Describe
①	Output voltage	12 ~ 50	e.g. output 3.0V → ① =3, ② =0
②	precision	2	±2.5%
		1	±1%
③	package	M	SOT-23
		P	SOT-89
④	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		Vss-0.3 ~Vout 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	Tw	Working temperature		-25 to 85	°C
	Tc	Storage temperature		-40 to 125	°C
	Th	welding temperature		260	°C,10s

8.Electrical Characteristics

(Cin=Cout=1μF,T_A=25°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	Precision1	$V_{OUT}(T)$ *0.99	$V_{OUT}(T)$	$V_{OUT}(T)$ *1.01	V
			Precision2	$V_{OUT}(T)$ *0.975	$V_{OUT}(T)$	$V_{OUT}(T)$ *1.025	V
Output current	I_{OUT}(max)	V_{IN}=$V_{OUT}(T)$+1V		100			mA
Drop pressure difference	Vdrop	I_{OUT}=50mA	1.5V≤$V_{OUT}(T)$≤2.5V		200	280	mV
			2.6V≤$V_{OUT}(T)$≤3.3V		160	240	mV
			3.4V≤$V_{OUT}(T)$≤5.5V		120	200	mV
quiescent current	I_{SS}	V_{IN}=$V_{OUT}(T)$+1V			6		μA
Load stability	ΔV_{OUT}	V_{IN}=$V_{OUT}(T)$+1V, 1mA≤I_{OUT}≤80mA			20		mV
Input stability	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	I_{OUT}=1mA, $V_{OUT}(T)$+0.5V ≤V_{IN}≤5.5V			0.1	0.2	%/V
Output voltage temperature coefficient	$\Delta V_{OUT}/(\Delta T_A*V_{OUT})$	V_{IN}=$V_{OUT}(T)$+1V, I_{OUT}=10mA -40°C≤T_A≤85°C			±100		ppm/°C
input voltage	V_{IN}			1.8		8	V
Ripple suppression ratio	PSRR	V_{IN}=[$V_{OUT}(T)$+1]V +1Vp-pAC I_{OUT}=10mA, f=1kHz			40		dB
Short circuit current	Ishort	V_{IN}=$V_{OUT}(T)$+1.5V, V_{OUT}=V_{SS}			30		mA
Overcurrent protection current	Ilimt	V_{IN}=$V_{OUT}(T)$+1.5V			380		mA

Note:

1. $V_{OUT}(T)$: the specified output voltage.

2. $V_{OUT}(E)$: effective output voltage (that is, the output voltage when I_{OUT} keeps a certain value and V_{IN}= ($V_{OUT}(T)$+1.0V)) .

3. I_{OUT}(max):V_{IN}=$V_{OUT}(T)$+1V, slowly increase the output current, and the current value when the output voltage is ≤ $V_{OUT}(E)$*95%.

4. Vdrop=V_{IN}1 – V_{OUT}(e) s: V_{IN}1 = the input voltage when the output voltage drops to 98% of $V_{OUT}(E)$1. $V_{OUT}(E)$s= $V_{OUT}(E)$*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

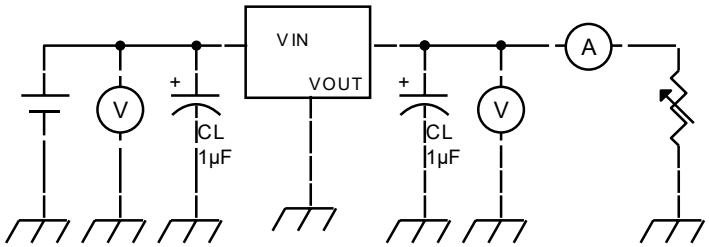


Figure 1

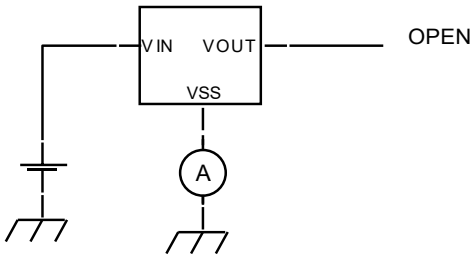
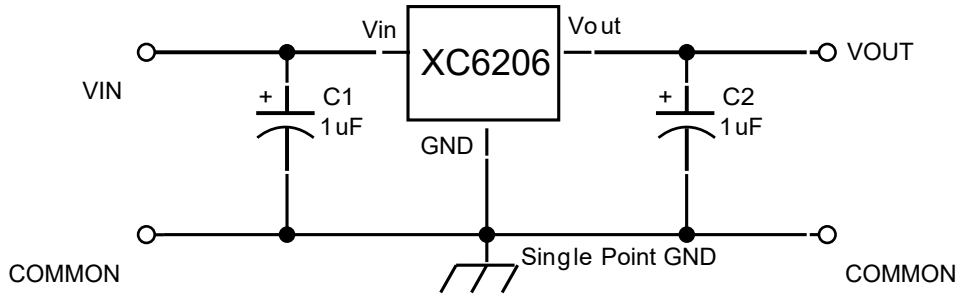
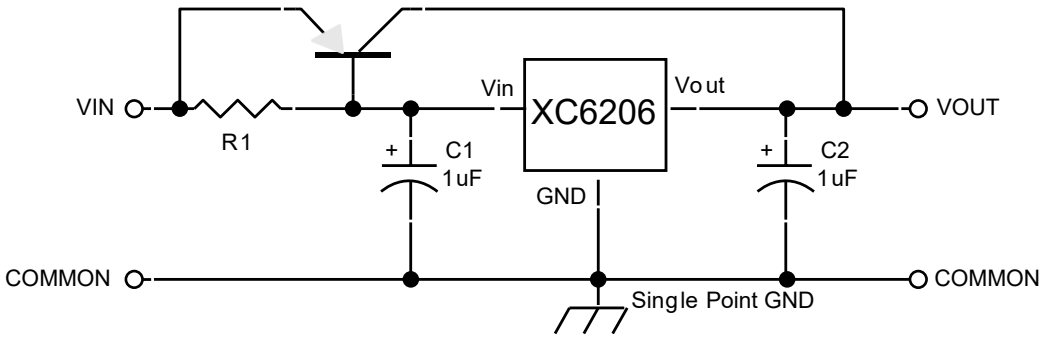


Figure 2

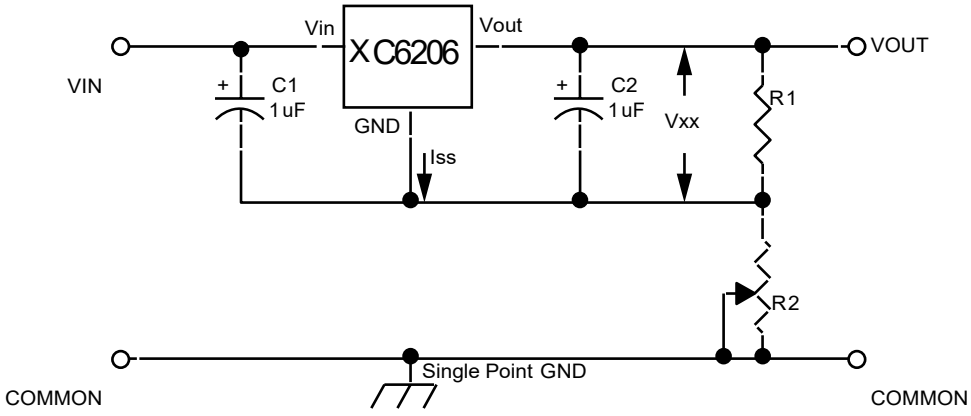
10.Applied Circuit



1. Basic circuit

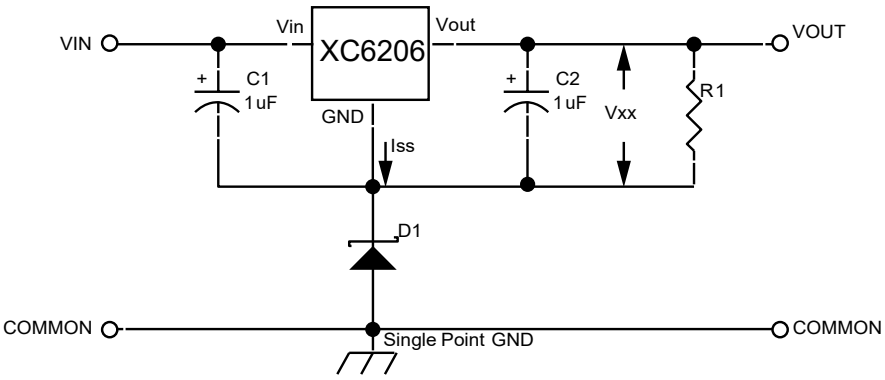


2. Positive voltage regulator with large output current



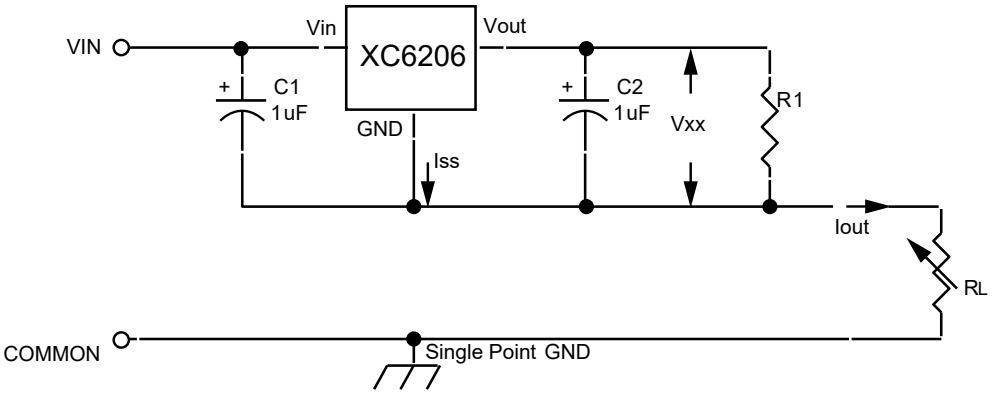
$V_{OUT}=Vxx(1+R2/R1)+I_{SS}R2$

3. Circuit for increasing output voltage (1)



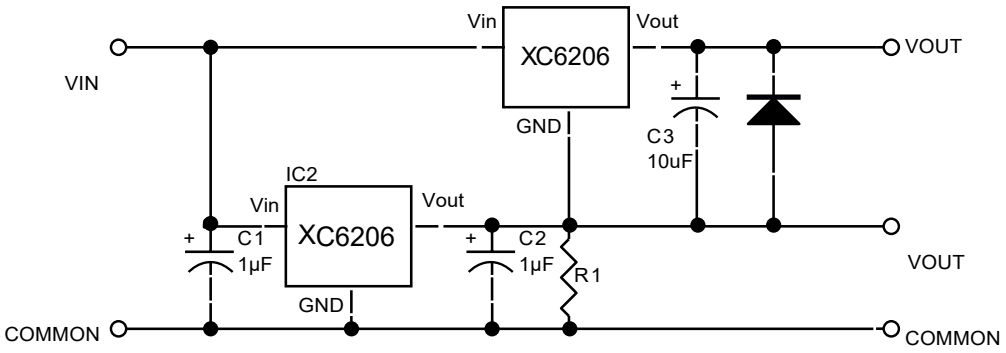
$V_{OUT}=Vxx+V_{D1}$

4. Circuit for increasing output voltage (2)



$I_{OUT}=Vxx/R_A+I_{SS}$

5. Constant current regulator



6. Double output

11.1 Typical Characteristic

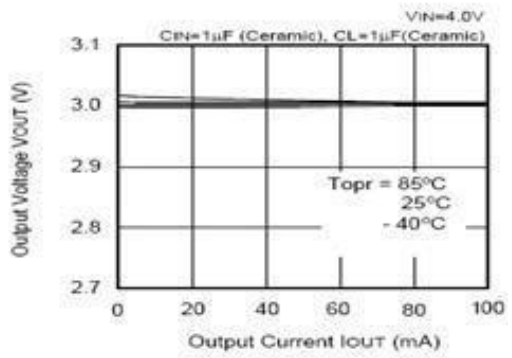


Figure 1: Output voltage-output current (when the load current increases)

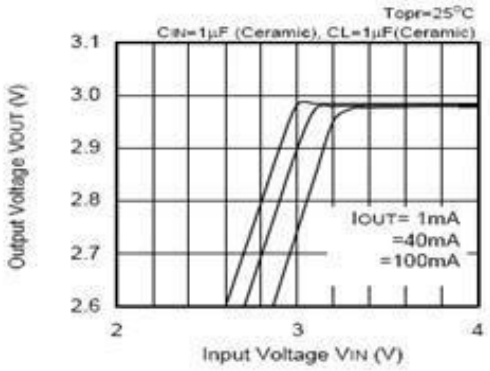


Figure 2: Output voltage and input voltage

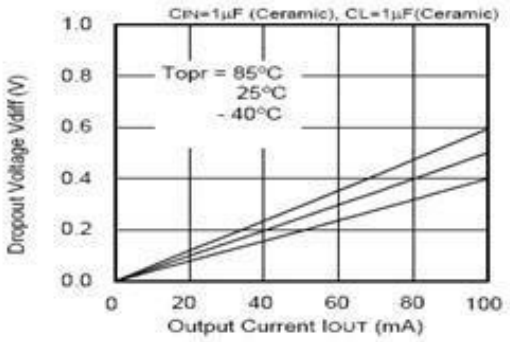


Figure 3: Dropout voltage and output current

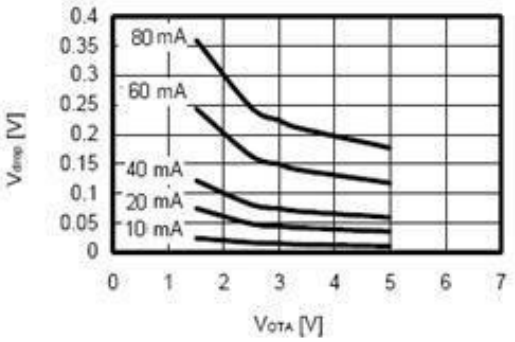


Figure 4: Dropout voltage and output voltage

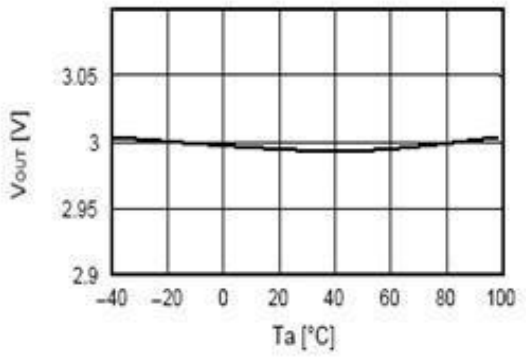


Figure 5: Output voltage and temperature

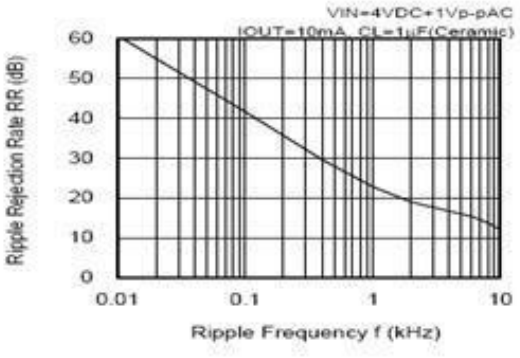


Figure 6: Ripple suppression

11.2 Typical Characteristic

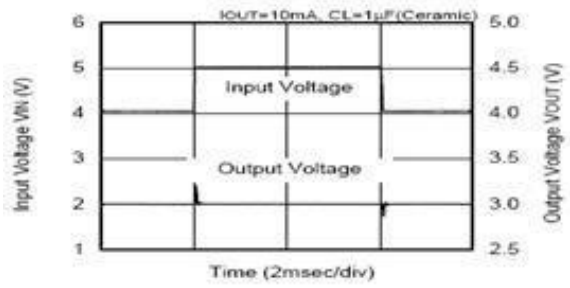


Figure 7: Transient response
Input transient response characteristics

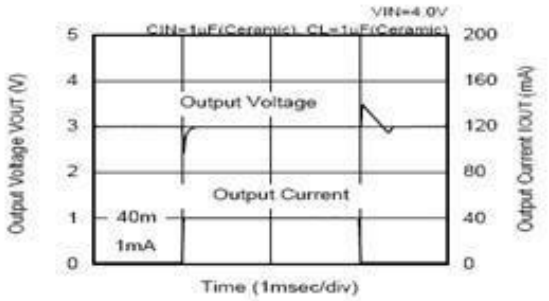
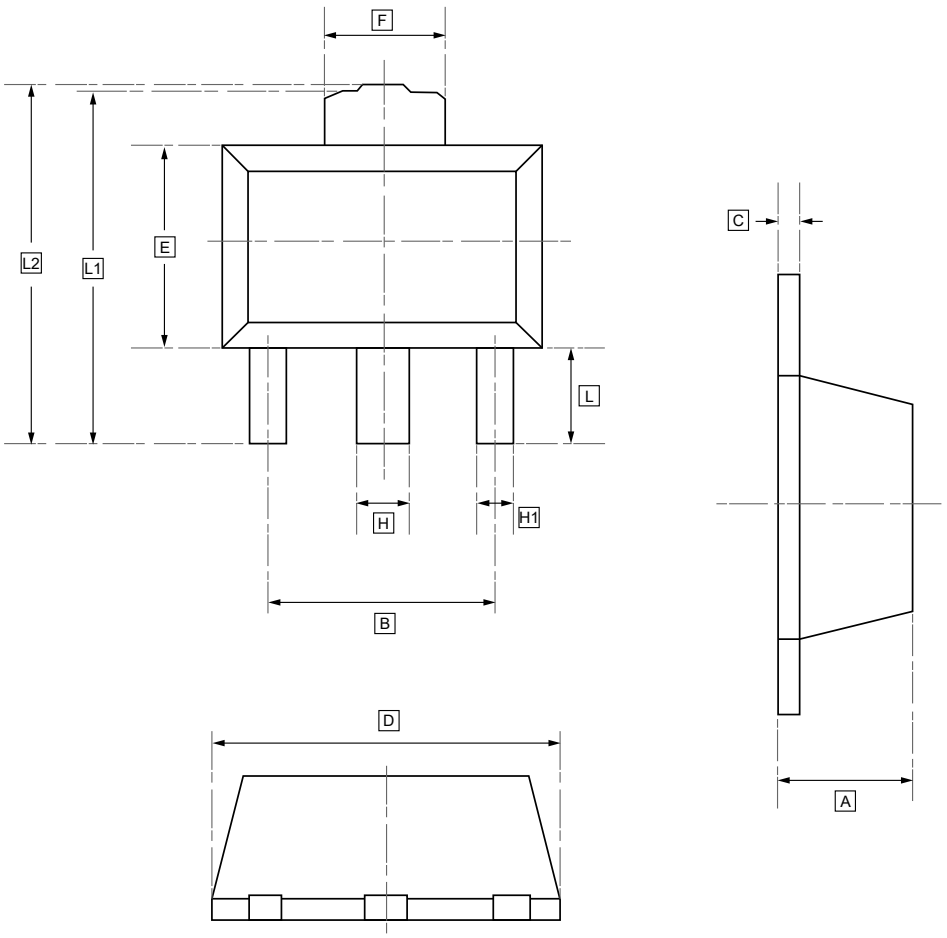


Figure 8: Load transient input response characteristics

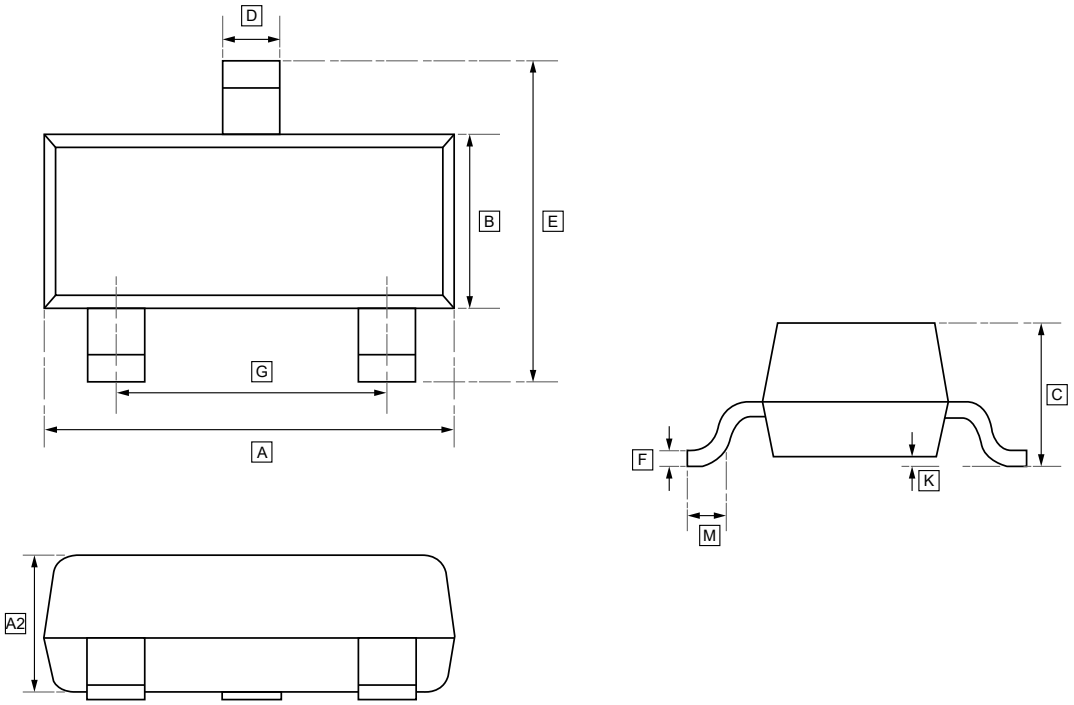
12.1 SOT-89 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	F	H	H1	L	L1	L2
Min	1.40	2.90	0.330	4.40	2.30	1.60	0.40	0.320	0.900	3.900	4.100
Max	1.60	3.10	0.430	4.60	2.60	1.80	0.580	0.520	1.200	4.300	4.350

12.2 SOT-23 Package Outline Dimensions

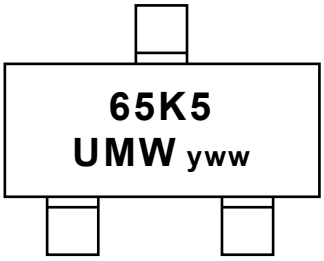


DIMENSIONS (mm are the original dimensions)

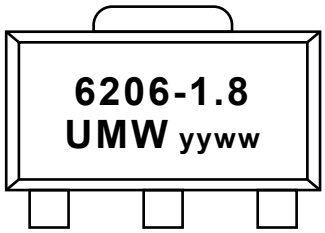
Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	2.55	2.00	0.10	-	1.05	0.115

13.Ordering Information

SOT-23



SOT-89



yy: Year Code
ww: Week Code

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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