# Low Consumption Current Regulators

GENERAL DESCRIPTION:

The XC6206 series are highly 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 XC6206 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 currrent 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
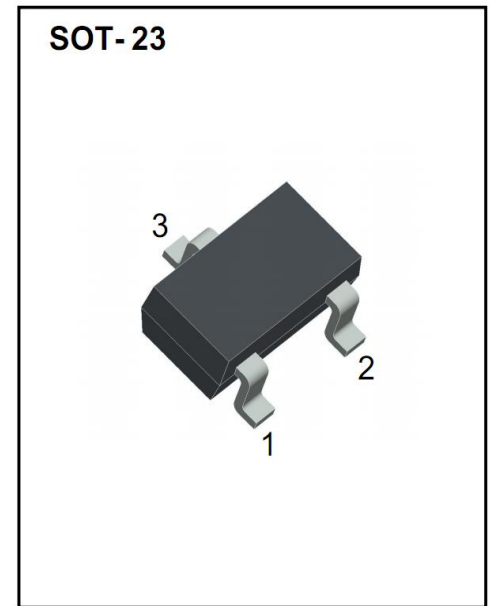
◆CMOS Low Power Consumption
◆Dropout Voltage : 160mV @ 100mA
　　　　　　　　 : 400mV @ 200mA
◆Output Current : More Than 250mA (5.0V type)
◆Highly Accurate : +2%
◆Output Voltage Range : 1.2V ~ 5.0V
◆Low ESR Capacitor Compatible

APPLICATIONS:

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

FEATURES:

Maximum Output Current： 250mA (5.0V type)

Dropout Voltage：160mV @ IOUT=100mA (5.0V type)

Maximum Operating Voltage：6.0V

Output Voltage Range：1.2V ~ 5.0V （100mV steps）

Highly Accurate： ± 2%

　　　　　　 (± 30mV@VOUT<1.5V)
　　　　　　 (± 1% @VOUT>2.0V)

Low Power Consumption：1.0μA (TYP.)

Operational Temperature Range：-40OC ~ 85 OC
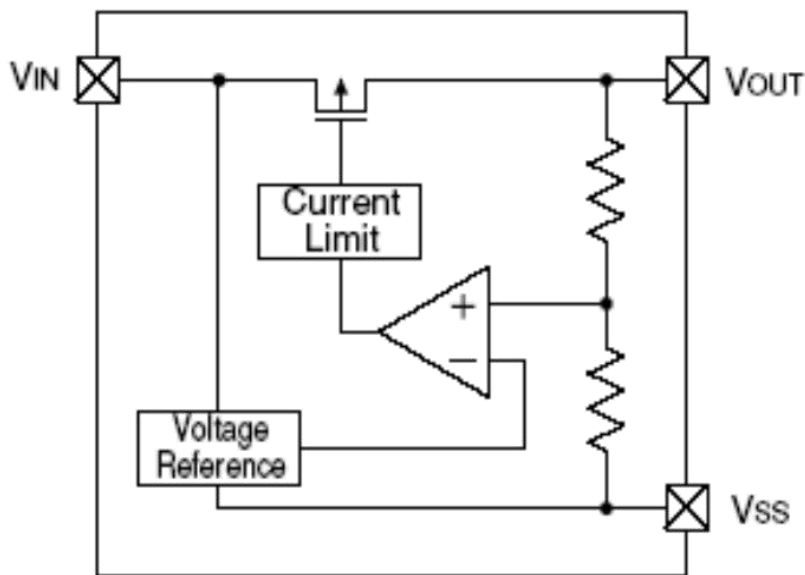
Low ESR Capacitor：Ceramic capacitor compatible

TYPICAL PERFORMANCE CHARACTERISTICS：
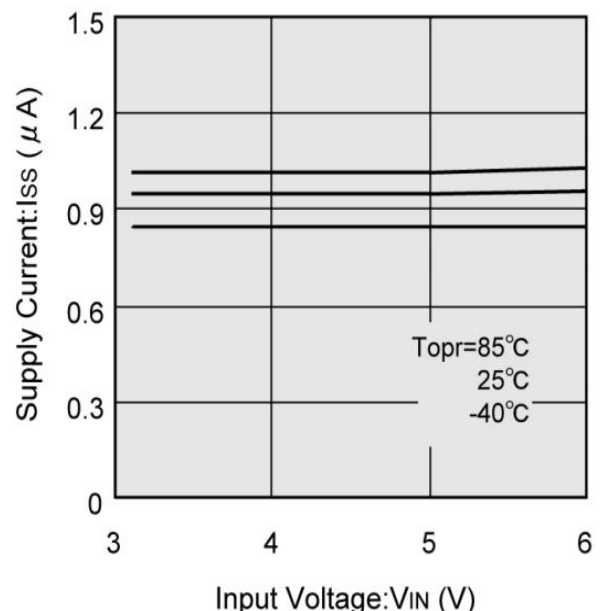
TYPICAL APPLICATION CIRCUIT：
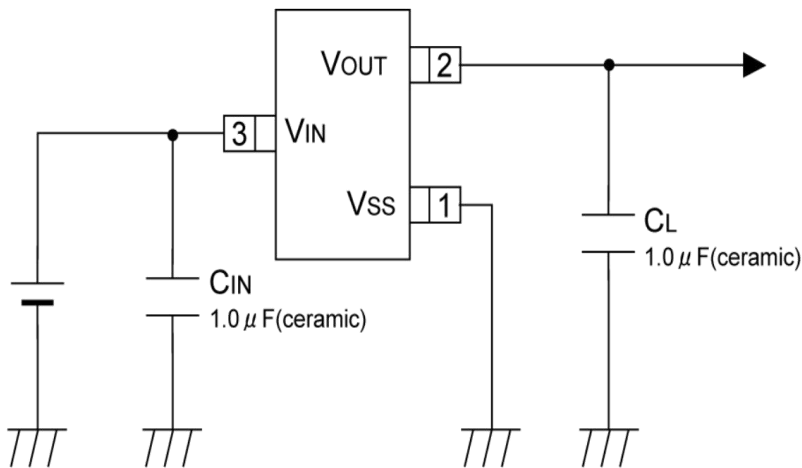
BLOCK DIAGRAM：

ABSOLUTE MAXIMUM RATINGS

Ta=25℃

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	VIN	6.5	V
Output Current	Iout	250 *	mA
Output Voltage	Vout	Vss-0.3 ~ Vout+0.3	V
Power Dissipation	Pd	250	mW
Operating Temperature Range	TOpr	-40~ +85	℃
Storage Temperature Range	Tstg	-40~ +125	℃

* IOUT=Pd / (VIN-VOUT)

ELECTRICAL CHARACTERISTICS：

TSD6206 series

Ta=25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Output Voltage (*7)	VOUT(E) (Note 2)	IOUT=10mA, VIN=Vout+1V	X 0.98	VOUT(T)	X 1.02	V
				E-1		
Input Voltage	VIN		1.8		6	V
Maximum Output Current	IOUT (max)	VIN=Vout+1V	E-2			mA
Load Regulation	ΔVOUT	Vout>1.8V, 1mA≤IOUT≤100mA			E-3	mV
		Vout<1.8V, 1mA≤IOUT≤50mA				
Dropout Voltage	Vdif1	IOUT =30mA		E-4		mV
	Vdif2	Vout>1.8V,IOUT =100mA Vout<1.8V,IOUT =60mA		E-5		mV
Supply Current	IDD	VIN=VCE		7	9	μA
Line Regulation	$\frac{\Delta VOUT}{\Delta VIN \cdot VOUT}$	VOUT(T)<4.5V:VOUT(T)+1.0V≦VIN≦6.0V VOUT(T)>4.5V:5.5V≦VIN≦6.0V IOUT=30mA		0.05	0.25	%/V
Output Voltage Temperature Characteristics	$\frac{\Delta VOUT}{\Delta Vopr \cdot VOUT}$	IOUT=30mA -40 ℃≦Topr≦85 ℃		±100		ppm/℃
Short Circuit Current	Ishort	Vin=Vout(T)+1.5V Vout=Vss		E-6		mA

NOTE:

* 1 : VOUT(T) = Specified output voltage
* 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.)
* 3 : Vdif = {VIN 1(*5) + VOUT 1(*4) }
* 4 : VOUT1 = A voltage equal to 98% of the output voltage whenever an amply stabilized IOUT {VOUT(T) + 1.0V} is input.
* 5 : VIN 1 = The input voltage when VOUT1 appears as input voltage is gradually decreased.
* 6 : Unless otherwise stated, VIN = VOUT(T) + 1.0V
* 7 : When VOUT(T)>1.5V, accuracy is +2%.
    When VOUT(T)<1.5V, accuracy is MIN.:VOUT(T) -30mV / MAX.:VOUT(T) +30mV
    +1% accuracy (MIN.: VOUT(T) x 0.99 / MAX.:VOUT(T) x 1.01) is set at VOUT(T)>2.0V

Electrical Characteristics Chart：

| PARAMETER / SETTING VOLTAGE	E-1 OUTPUT VOLTAGE				E-2 MAX. OUTPUT CURRENT	E-3 LOAD REGULATION	E-4 DROPOUT VOLTAGE 1		E-5 DROPOUT VOLTAGE 2		E-6 SHORT CURRENT
	2% ACCURACY		1% ACCURACY								
	$V_{OUT(E)}$ (V)		$V_{OUT(E)}$ (V)		I_{OUTMAX} (mA)	$\triangle V_{OUT}$	V_{dif1}		V_{dif2}		I_{short}
$V_{OUT(T)}$	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	TYP.
1.2	1.170	1.230			60	40	460	760	700	960	180
1.3	1.270	1.330					400	650			
1.4	1.370	1.430					350	590	580	860	
1.5	1.470	1.530					300	510			
1.6	1.568	1.632			80	45	250	450	450	810	155
1.7	1.666	1.734					200	410			
1.8	1.764	1.836					150	390			
1.9	1.862	1.938								780	130
2.0	1.960	2.040	1.980	2.020							
2.1	2.058	2.042	2.079	2.121	120	50					
2.2	2.156	2.244	2.178	2.222							
2.3	2.254	2.346	2.277	2.323							
2.4	2.352	2.448	2.376	2.424			100	370	350		
2.5	2.450	2.550	2.475	2.525	150					710	
2.6	2.548	2.652	2.574	2.626							
2.7	2.646	2.754	2.673	2.727		55					
2.8	2.744	2.856	2.772	2.828							
2.9	2.842	2.958	2.871	2.929							
3.0	2.940	3.060	2.970	3.030	200						
3.1	3.038	3.162	3.069	3.131							
3.2	3.136	3.264	3.168	3.232		60					
3.3	3.234	3.366	3.267	3.333							
3.4	3.332	3.468	3.366	3.434			75	350	250	680	
3.5	3.430	3.570	3.465	3.535							
3.6	3.528	3.672	3.564	3.636							
3.7	3.626	3.774	3.663	3.737		65					100
3.8	3.724	3.876	3.762	3.838							
3.9	3.822	3.978	3.861	3.939							
4.0	3.920	4.080	3.960	4.040	250						
4.1	4.018	4.182	4.059	4.141							
4.2	4.116	4.284	4.158	4.242		70					
4.3	4.214	4.386	4.257	4.343							
4.4	4.312	4.488	4.356	4.444			60	320	200	630	
4.5	4.410	4.590	4.455	4.545							
4.6	4.508	4.692	4.554	4.646							
4.7	4.606	4.794	4.653	4.747		75					
4.8	4.704	4.896	4.752	4.848							
4.9	4.802	4.998	4.851	4.949							
5.0	4.900	5.100	4.950	5.050		80	50	290	175	600	

PIN CONFIGURATION：
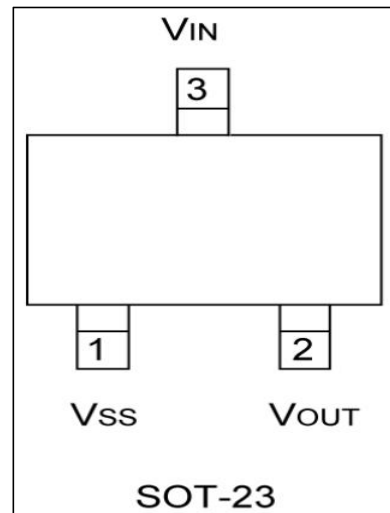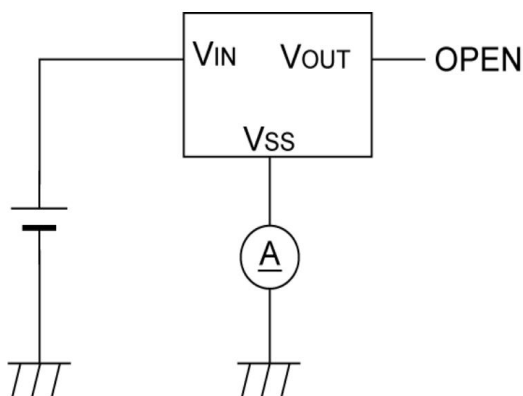

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PIN ASSIGNMENT：

PIN NUMBER	PIN NAME	FUNCTIONS
1	VSS	Ground
2	VOUT	Output
3	VIN	Power Input

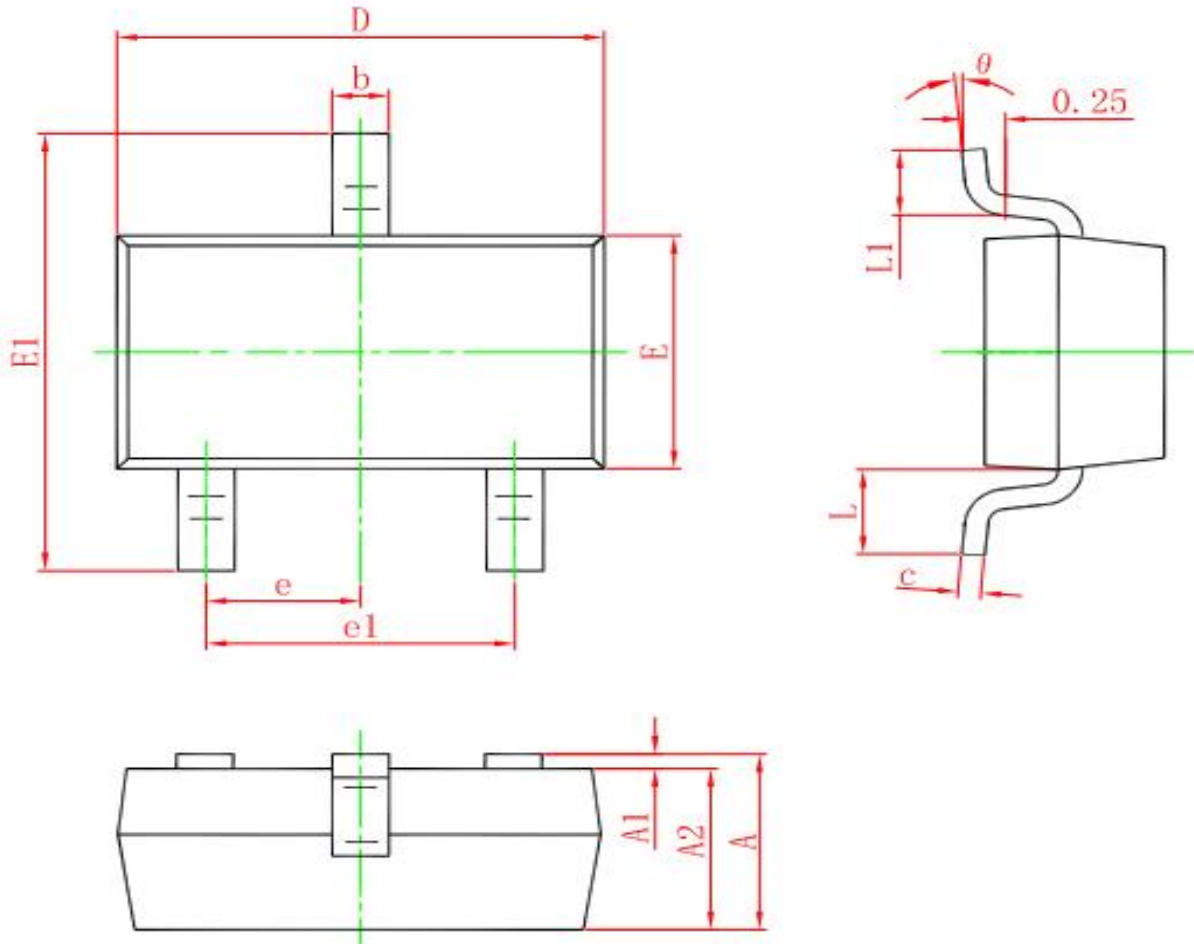## TEST CIRCUITS:

Circuit Chart ①:
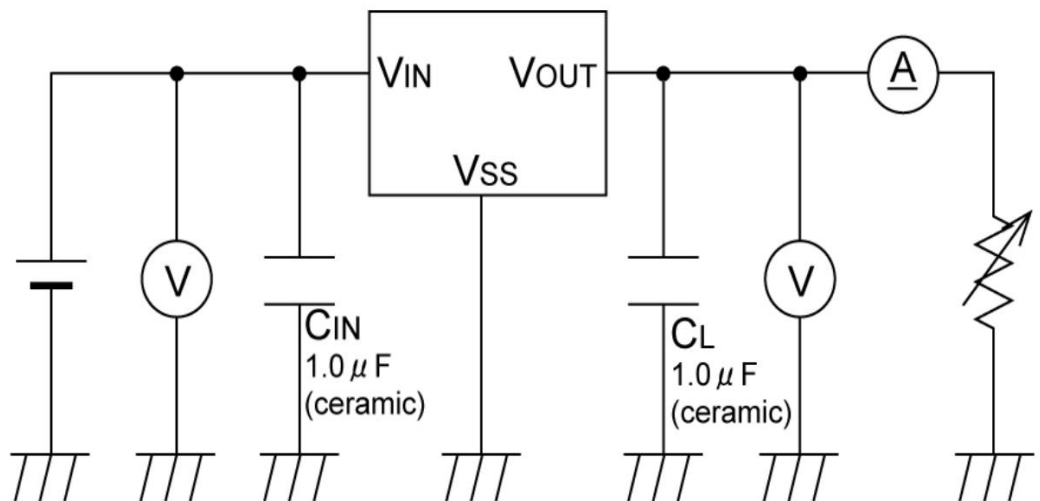
Circuit Chart ②:

Package Dimensions:

SOT-23 PACKAGE 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°