Precise Low Dropout Voltage Regulator

Features

- Output Voltage selectable in 100mV steps (1.2V to 5.0V)
- Highly Accurate
- Low Dropout Voltage
- .Low Power Consumption
- Internal current limiting and short protecting
- Small packages

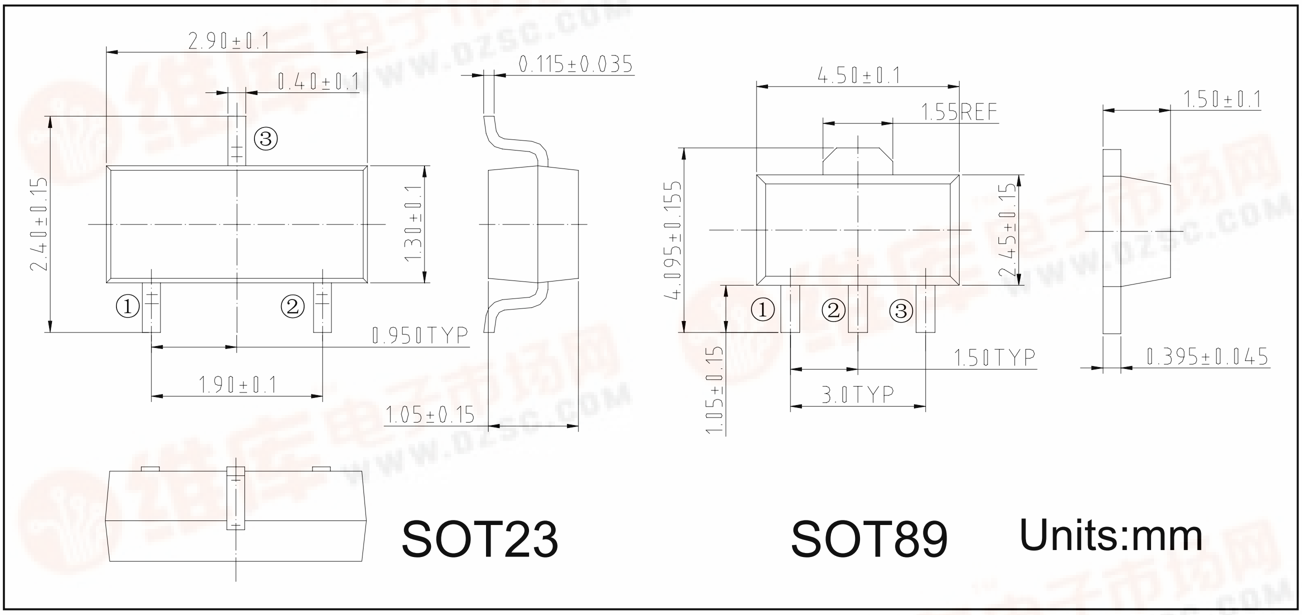
General Description

The ZYG6206 series are precise, low power consumption, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The ZYG6206 consists of a current limit 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. SOT89 and SOT23 packages are available.

Applications

- Battery powered equipment
- Reference voltage sources
- Cameras, Video cameras
- Mobile phones
- Communication tools

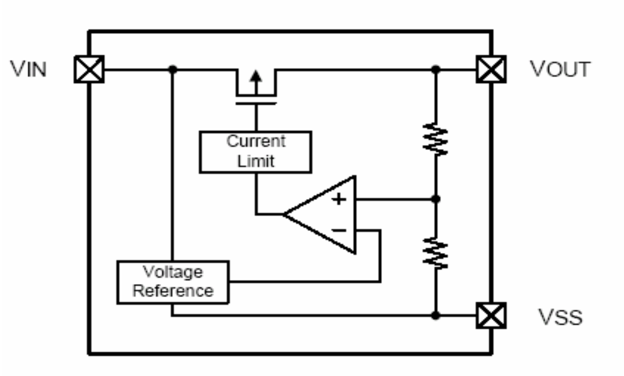
Package Information



Pin Configurations

Pin Port	SOT23	SOT89(G-Type)	SOT89(N-Type)
①	VSS	VOUT	VSS
②	VOUT	VSS	VIN
③	VIN	VIN	VOUT

Functional Block Diagram



Ordering Information

ZYG6206 □ □ – □ □ □

- Output Voltage: …1.2V,1.5V ,2.5V,2.8V,3.0V,3.3V …
- Package Type: S3 : SOT89-3L; S6 : SOT23-3L
- Pin Type: G: G-Type; N: N-Type
- Indicate The Product Number

Absolute Maximum Ratings

Operating temperature range applies unless otherwise specified.

Parameter	Symbol		Ratings	Unit
Input Voltage	V_{IN}		-0.3 to 6	V
Output Current	V_{OUT}		V_{SS}-0.3 to V_{IN}+0.3	
Power Dissipation (T_A = 25℃)	P_D	SOT23	150	mW
		SOT89	500	
Operating Temperature Range	T_{OPR}		-40 to +125	℃
Storage Temperature Range	T_{STG}		-65 to +150	℃

Electrical Characteristics

T_A = +25℃， unless otherwise specified

Parameter	Symbol	Test Conditions	Test Circuit	Min	Typ	Max	Unit
Input Voltage	V_{IN}	--	--	1.8	--	6	V

Supply Current	I_{SS}	$V_{IN} = V_{OUT} + 1.0$ V		2	--	2	--	μA
Output Voltage	V_{OUT}	$V_{IN} = V_{OUT} + 1.0$ V, $I_{OUT} = 40$ mA		1	$V_{OUT}(T)\times 0.98$	$V_{OUT}(T)$	$V_{OUT}(T)\times 1.02$	V
Output Current	I_{OUT}	$V_{IN} \geq V_{OUT} + 1.0$ V		1	300	--	--	mA
Dropout Voltage	V_{DROP}	I_{OUT}= 100mA	$1.5\text{ V} \leq V_{OUT} \leq 2.5\text{ V}$		--	0.20	0.28	V
			$2.6\text{ V} \leq V_{OUT} \leq 3.3\text{ V}$		--	0.16	0.24	
			$3.4\text{ V} \leq V_{OUT} \leq 5.0\text{ V}$		--	0.12	0.20	
Line Regulations	$\frac{\triangle V_{OUT}}{\triangle V_{IN}\cdot V_{OUT}}$	$V_{OUT} + 0.5\text{ V} \leq V_{IN} \leq 5.5$ V $I_{OUT} = 80$ mA			--	0.05	0.3	%/V
Load Regulations	$\triangle V_{OUT}$	$V_{IN} = V_{OUT}+1.0$ V $1.0\text{ mA} \leq I_{OUT} \leq 80$ mA		1	--	20	40	mV
Output Voltage Temperature Characteristics	$\frac{\triangle V_{OUT}}{\triangle T_A\cdot V_{OUT}}$	$V_{IN} = V_{OUT} + 1.0$ V, $I_{OUT} = 10$ mA $-40°C \leq T_A \leq 85°C$			--	±100	--	ppm/℃
Ripple Rejection	|RR|	$V_{IN} = V_{OUT} +1.0$ V, F = 1.0 kHz $V_{RIP} = 0.5\ V_{RMS}$, $I_{OUT} = 80$ mA		1	--	40	--	dB
Short current	I_{SHORT}	$V_{IN} = V_{OUT} +1.5$ V		1	--	30	--	mA
Maximum Output Current	I_{OUT}	$V_{IN} = V_{OUT}+1$V		1	380	--	--	mA

Note 1. V_{OUT} (T) = Specified output Voltage

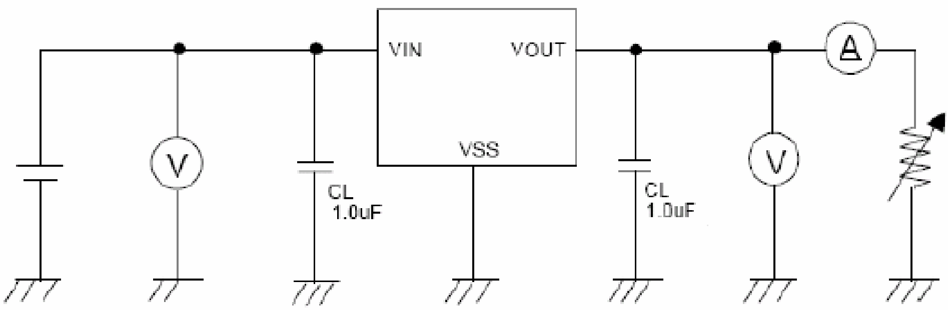
Note 2. V_{OUT}(E) = Effective output Voltage (i.e. the output voltage when "V_{OUT}(T)+1.0V" is provided at the VIN pin while maintaining a certain I_{OUT} value)

Note 3. V_{DROP} = { V_{IN1} (note5) - V_{OUT1} (note4) }

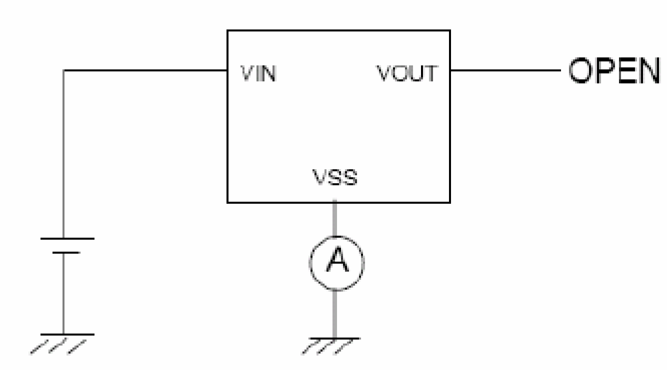
Note 4. V_{OUT1} = A voltage equal to 98% of the output voltage whenever an amply stabilized I_{OUT} (V_{OUT} (T) +1.0V) is input.

Note 5. V_{IN1} = The input voltage when V_{OUT}= V_{OUT1}

Test Circuits

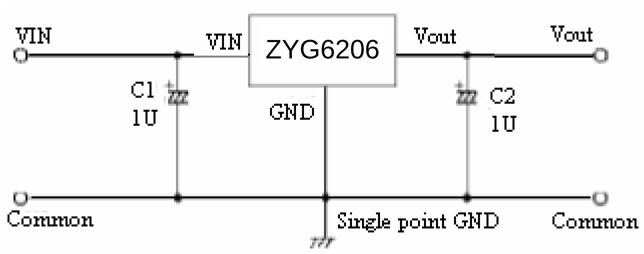


Test Circuit 1



Test Circuit 2

- **Typical Application Circuit**



- **Typical Performance Characteristics**

3.0V Out unless otherwise specified

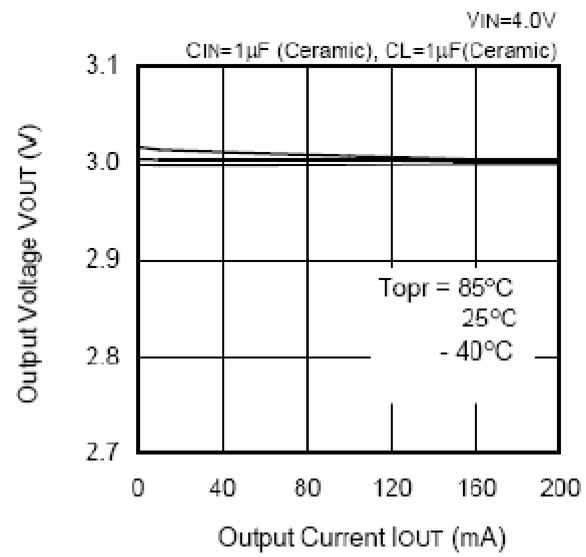


Figure1. Output Voltage vs. Output Current

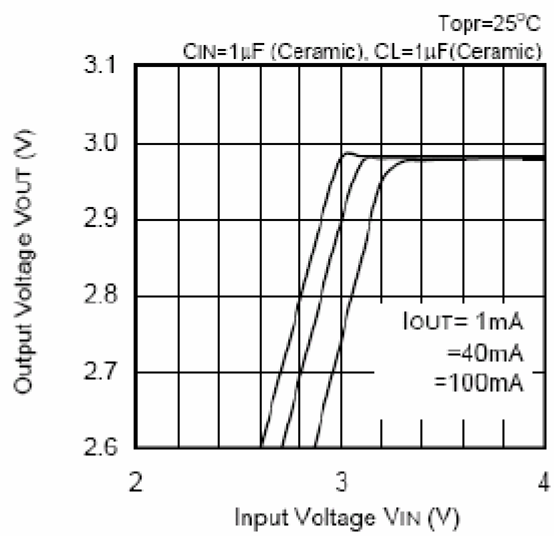


Figure 2. Output Voltage vs. Input Voltage

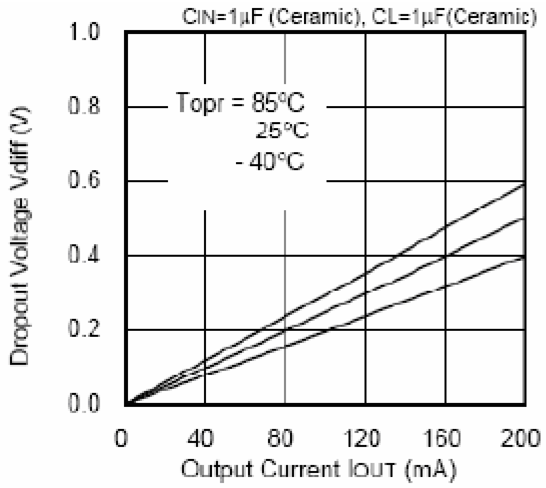


Figure 3. Dropout Voltage vs. Output Current

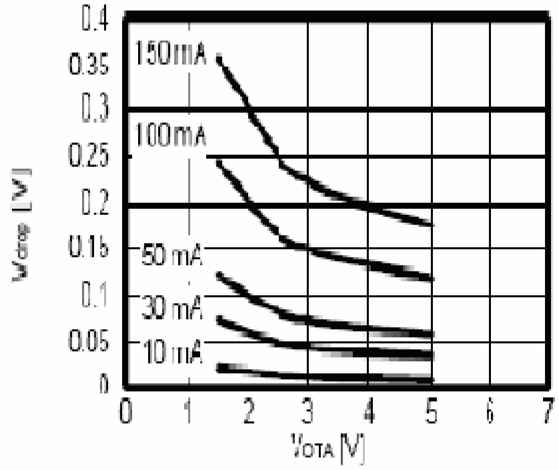


Figure 4. Dropout Voltage vs. Output Voltage

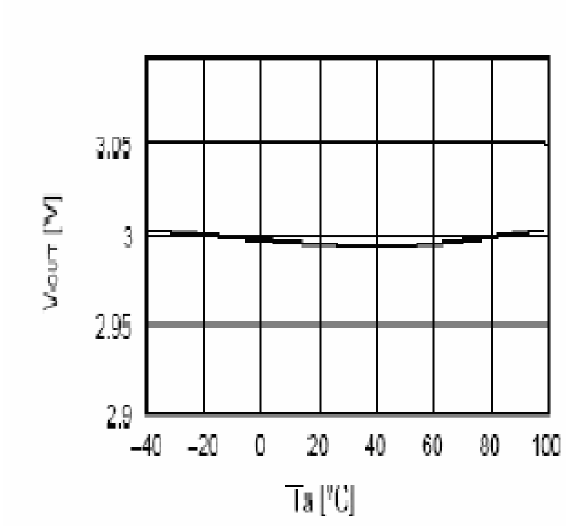


Figure 5. Output Voltage vs.Temperature

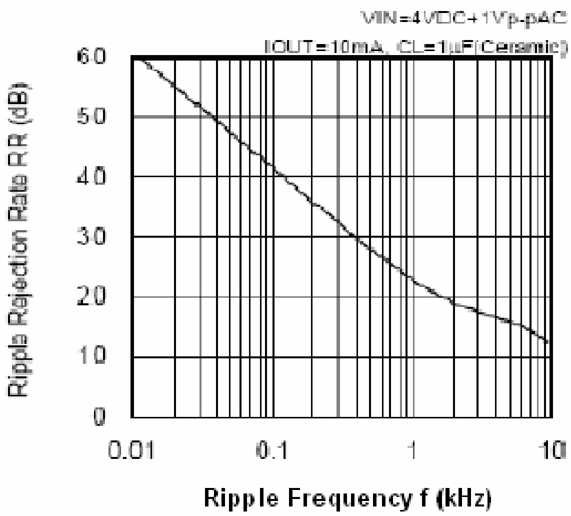


Figure 6. Ripple Rejection Rate

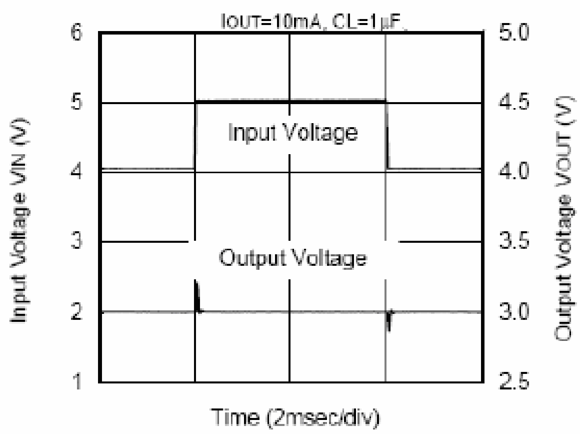


Figure7. Input Transient Response

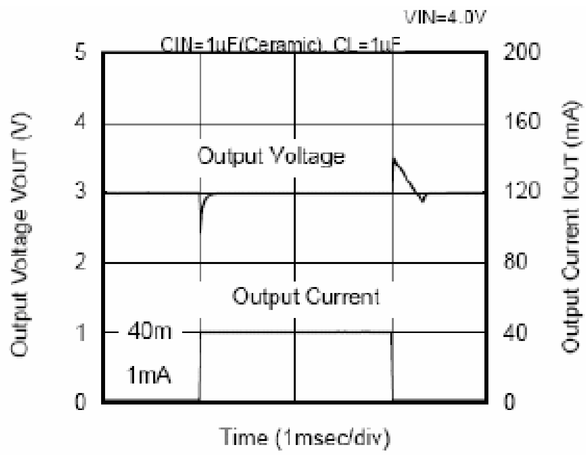


Figure 8. Load Transient Response

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