GENERAL DESCRIPTION

XC6201P332PR-G series are a set of Low Dropout Linear Regulator ICs implemented in CMOS technology. They can withstand voltage 10V. And they are available with low voltage drop and low quiescent current, widely used in audio, video and communication appliances.

FEATURES

- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 12V
- Quiescent Current 2.0μA
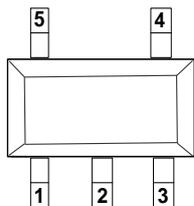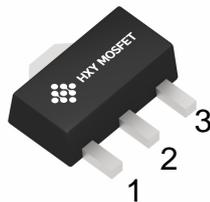- Output Voltage Accuracy: tolerance ±2%
- High output current: 300mA

TYPICAL APPLICATIONS

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments
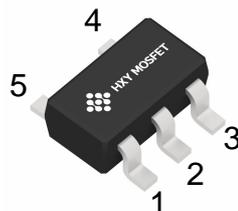- Smart Battery Packs
- Smoke Detectors
- CO_2 DETECTORS

PIN CONFIGURATION AND DESCRIPTION
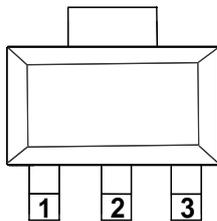
SOT-89

SOT-23-5L

PIN No.		Name	Functions Description
SOT23-5L	SOT-89		
2	2	GND	ground
1	3	V_{IN}	input
5	1	V_{OUT}	output
3		NC	No Connect
4		NC	No Connect

OUTPUT

XC6201P – XX X XX

Type of regulator 3-pin	Output Voltage	Output Voltage Accuracy	Package
	25 : 2.5V	e.g.2: ±2.0%	MR : SOT23-5
	30 : 3.0V		PR : SOT89
	33 : 3.3V		
	36 : 3.6V		
	50 : 5.0V		
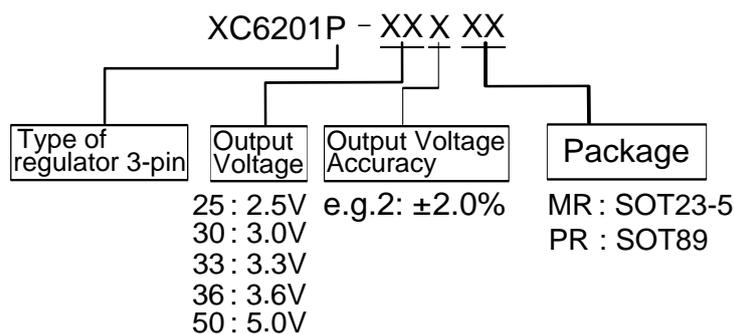
FUNCTIONAL BLOCK DIAGRAM
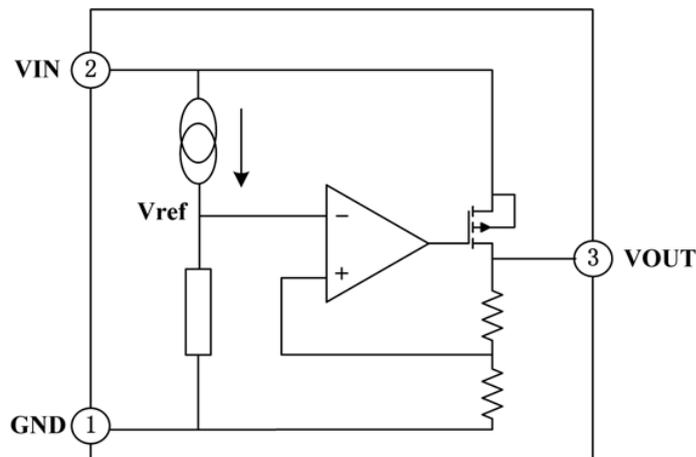
ABSOLUTE MAXIMUM RATINGS

Description	Symbol	Value range	Unit
Limit Power Voltage	V_{IN}	$-0.3 \sim +15$	V
Storage Temperature Range	T_{STG}	$-50 \sim +125$	℃
Operating Free-air Temperature Range	T_A	$-40 \sim +85$	℃

Note : Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

HEAT DISSIPATION

Description	Symbol	Package	Value range	Unit
Thermal resistance	θ_{JA}	SOT89	200	℃/W
		SOT23-5	500	℃/W
Power dissipation	P_W	SOT89	500	mW
		SOT23-5	200	mW

DC CHARACTERISTICS (unless otherwise noted $T_A = +25°C$)

($V_{IN}= V_{OUT}+2.0V$，$C_{IN=}C_L=10uF$，Ta=25°C, unless otherwise noted)

Series +2.5V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$， $I_{OUT}=10mA$	2.450	2.500	2.550	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	—	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	—	37	100	mV
Voltage Drop	V_{DIF}	$I_{OUT}=10mA$，$\triangle V_{OUT}=2\%$	—	35	55	mV
Quiescent Current	I_{SS}	—	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}/V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 12V$，$I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	12	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$，$-40°C \leq T_A \leq 85°C$	—	± 100	—	ppm/°C
Output Short Circuit Current	Ilim	$V_{OUT}=0V$	—	400	—	

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series +3.0V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$， $I_{OUT}=10mA$	2.94	3.0	3.06	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	—	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	—	37	100	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$，$\triangle V_{OUT}=2\%$	—	210	300	mV
Quiescent Current	I_{SS}	—	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}/V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 12V$，$I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	12	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$，$-40°C \leq T_A \leq 85°C$	—	± 100	—	ppm/°C
Output Short Circuit Current	Ilim	$V_{OUT}=0V$	—	400	—	mA

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series +3.3V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.23	3.3	3.36	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	—	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	—	37	100	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$, $\triangle V_{OUT}=2\%$	—	195	300	mV
Quiescent Current	I_{SS}	—	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 12V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	12	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_{A}*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40°C \leq T_{A} \leq 85°C$	—	±100	—	ppm/°C
Output Short Circuit Current	Ilim	$V_{OUT}=0V$	—	400	—	mA

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series +3.6V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	3.52	3.6	3.67	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	—	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	—	37	100	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$, $\triangle V_{OUT}=2\%$	—	180	300	mV
Quiescent Current	I_{SS}	—	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 12V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	12	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_{A}*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40°C \leq T_{A} \leq 85°C$	—	±100	—	ppm/°C
Output Short Circuit Current	Ilim	$V_{OUT}=0V$	—	400	—	

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series +5.0V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	4.9	5.0	5.1	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	—	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	—	37	100	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$, $\triangle V_{OUT}=2\%$	—	170	300	mV
Quiescent Current	I_{SS}	—	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 12V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	12	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40°C \leq T_A \leq 85°C$	—	± 100	—	ppm/°C
Output Short Circuit Current	Ilim	$V_{OUT}=0V$	—	400	—	mA

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

FUNCTIONAL DESCRIPTION

XC6201P332PR-G series are linear voltage regulator ICs withstanding 12V voltage. The series IC consists of a voltage reference, an error amplifier, a current limiter and a phase compensation circuit plus a driver transistor. The output stabilization capacitor is also compatible with low ESR ceramic capacitors.

The over current protection circuit and the over voltage protection circuit are built-in. The protection circuit will operate when the output current or input voltage reaches limit level.
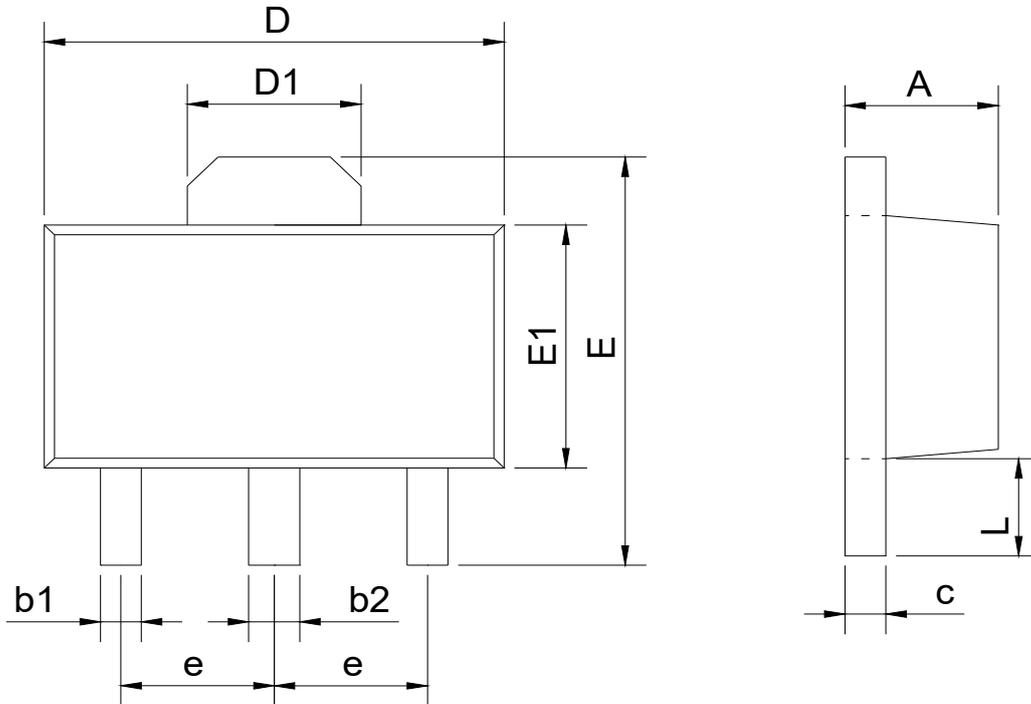
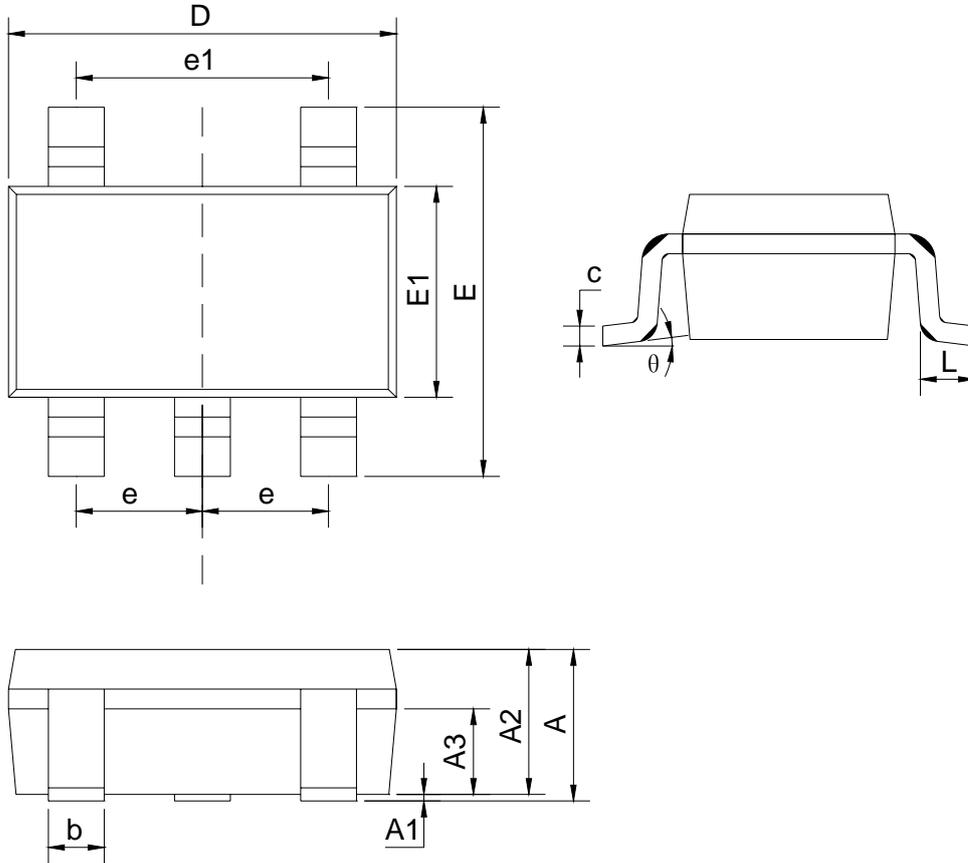## TYPICAL APPLICATION CIRCUIT

Basic Circuit
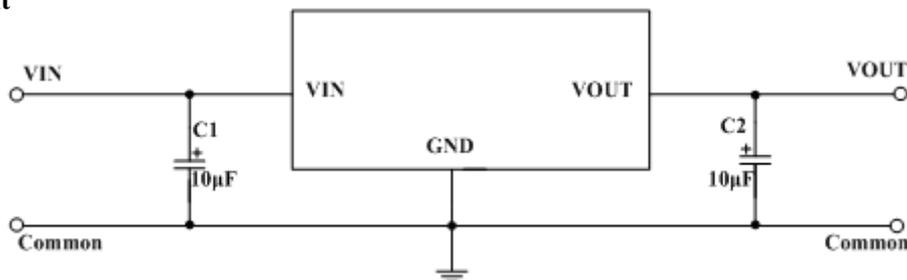
PACKAGE INFORMATION

SOT-89

SYMBOL	mm	
	min	max
A	1.40	1.60
b1	0.35	0.50
b2	0.45	0.60
c	0.36	0.46
D	4.30	4.70
D1	1.40	1.80
E	4.00	4.40
E1	2.30	2.70
e	1.50BSC	
L	0.80	1.20

SOT23-5L

SYMBOL	mm	
	min	max
A		1.35
A1	0.04	0.15
A2	1.00	1.20
A3	0.55	0.75
b	0.38	0.48
c	0.10	0.25
D	2.72	3.12
E	2.60	3.00
E1	1.40	1.80
e	0.95BSC	
e1	1.90BSC	
L	0.30	0.60
θ	0	8°

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