Product introduction

The 71XX series is a low-power high-voltage regulator manufactured by CMOS process. The maximum input voltage is 30V and the output voltage range is 1.5v-12.0v.It has the characteristics of high precision output voltage, very low power supply current and very low drop voltage.

Product features

- Low power consumption: ≤ 3μA
- Low drop voltage: typical value 0.1V
- Low temperature bleaching: typical 50 ppm / ℃
- High input voltage: up to 30V
- High precision output voltage: tolerance of + 3%
- Package form: TO-92, sot89-3, sot-23-3

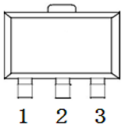
Product use

- Battery power supply equipment
- Audio / video equipment
- Various communication equipment
- Security monitoring equipment

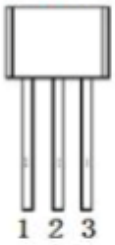
Package form and pin function definition

Pin number			Pin define	Functional specifications
TO-92	SOT89-3	SOT23-3		
1	1	1	GND	Chip ground terminal
2	2	2	VIN	Start input
3	3	3	VOUT	Chip output terminal

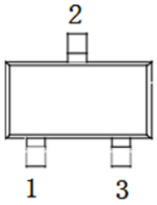
SOT-89



TO-92



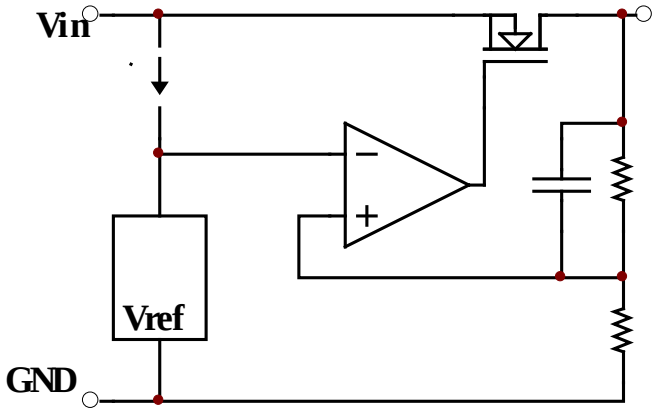
SOT-23



Model selection

name	model	Maximum input voltage (V)	Output voltage (V)	tolerance	Packaging form
71XX	7130	30	3.0	±3%	TO-92 SOT89-3 SOT-23-3
	7133	30	3.3	+3%	
	7136	30	3.6	±3%	
	7140	30	4.0	+3%	
	7144	30	4.4	+3%	
	7150	30	5.0	+3%	

Principle block diagram



Limit parameter

project	Symbol	parameter	Limit value	Company
Voltage	VIN	Maximum input voltage	30	V
power waste	PD	power waste	400	mW
temperature	Tw	working temperature	-25～70	℃
	Tc	Storage temperature	-50～125	℃
	Th	welding temperature	260	℃,10s

Electrical properties

7130 ($T_{OPT=}$25℃)

Symbol	parameter	Test conditions	Min	Typical value	Max	Company
V_{OUT}	Output voltage	V_{IN}=5V， I_{OUT}=10mA	2.91	3	3.09	V
I_{OUT}	Output current	V_{IN}=5V	60	100		mA
△V_{OUT}	Load regulation	V_{IN}=5V， 1mA≤I_{OUT}≤20mA	—	100	150	mV
V_{DIF}	Voltage sag	I_{OUT}=1mA	—	100	—	mV
I_{ss}	Quiescent current	Vin = 5V, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	Line Regulation	4V≤V_{IN}≤30V， I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	input voltage	—	—	—	30	V
ΔV_{OUT} / Δ Ta	temperature coefficient	V_{IN}=5V， I_{OUT}=10mA 0℃≤Ta≤70℃	—	±0.45	—	mV/℃

7133 ($T_{OPT=}$25℃)

Symbol	Parameter	Test conditions	Min	Typical value	Max	Company
V_{OUT}	Output voltage	V_{IN}=5.5V, I_{OUT}=10mA	3.201	3.3	3.399	V
I_{OUT}	Output current	V_{IN}=5.5V	60	100	—	mA
$\triangle V_{OUT}$	Load regulation	V_{IN}=5.5V, 1mA≤I_{OUT}≤30mA	—	100	150	mV
V_{DIF}	Voltage sag	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Quiescent current	Vin = 5.5V, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	Line Regulation	4.5V≤V_{IN}≤30V, I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input voltage	—	—	—	30	V
$\Delta V_{OUT}/\Delta Ta$	Temperature coefficient	V_{IN}=5.5V, I_{OUT}=10mA, 0℃≤Ta≤70℃	—	±0.5	—	mV/℃

7136 ($T_{OPT=}$25℃)

Symbol	Parameter	Test conditions	Min	Typical value	Max	Company
V_{OUT}	Output voltage	V_{IN}=5.6V, I_{OUT}=10mA	3.492	3.6	3.708	V
I_{OUT}	Output current	V_{IN}=5.6V	60	100	—	mA
$\triangle V_{OUT}$	Load regulation	V_{IN}=5.6V, 1mA≤I_{OUT}≤30mA	—	100	150	mV
V_{DIF}	Voltage sag	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Quiescent current	Vin = 5.6v, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	Line Regulation	4.6V≤V_{IN}≤30V, I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input voltage					
$\Delta V_{OUT}/\Delta Ta$	Temperature coefficient	V_{IN}=5.6V, I_{OUT}=10mA, 0℃≤Ta≤70℃	—	±0.6	—	mV/℃

7140 ($T_{OPT=}$25℃)

Symbol	parameter	Test conditions	minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=6.0V, I_{OUT}=10mA	3.88	4.0	4.12	V
I_{OUT}	Output current	V_{IN}=6.0V	60	100	—	mA
$\triangle V_{OUT}$	Load regulation	V_{IN}=6.0V, 1mA≤I_{OUT}≤30mA	—	100	150	mV
V_{DIF}	Drop voltage	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Quiescent current	Vin = 6.0v, no load	—	2	3	μA
$\Delta V_{IN}/(\Delta V_{IN}* V_{IN})$	Line Regulation	5.0V≤V_{IN}≤30V, I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	input voltage	—	—	—	30	V
ΔV_{OUT} / Δ Ta	temperature coefficient	V_{IN}=6.0V, I_{IN}=10mA, 0℃≤Ta≤70℃	—	±0.7	—	mV/℃

7144 ($T_{OPT=}$25℃)

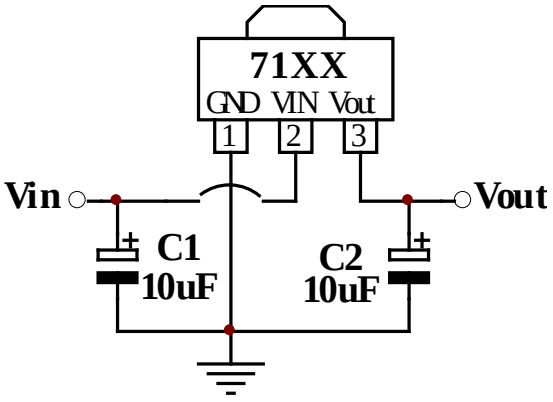
Symbol	Parameter	Test conditions	Min	Typical value	Max	Company
V_{OUT}	Output voltage					
I_{OUT}	Output current					
$\triangle V_{OUT}$	Load regulation					
V_{DIF}	Voltage sag					
I_{SS}	Quiescent current					
$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	Line Regulation					
V_{IN}	Input voltage					
$\Delta V_{OUT}/\Delta Ta$	Temperature coefficient					

7150 ($T_{OPT=}$25℃)

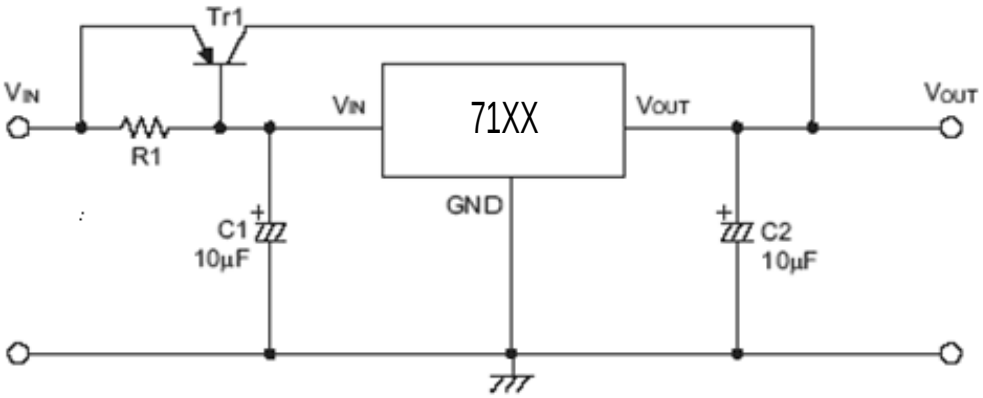
Symbol	Parameter	Test conditions	Min	Typical value	Max	Company
V_{OUT}	Output voltage	V_{IN}=7V, I_{OUT}=10mA	4.85	5	5.15	V
I_{OUT}	Output current	V_{IN}=7V	60	100	—	mA
$\triangle V_{OUT}$	Load regulation	V_{IN}=7V, 1mA≤I_{OUT}≤30mA	—	100		mV
V_{DIF}	Voltage sag	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Quiescent current	Vin = 7V, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	Line Regulation	6V≤V_{IN}≤30V, I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input voltage	—	—	—	30	V
$\Delta V_{OUT}/\Delta Ta$	Temperature coefficient	V_{IN}=7V, I_{OUT}=10mA, 0℃≤Ta≤70℃	—	±0.75	—	mV/℃

■ Application circuit

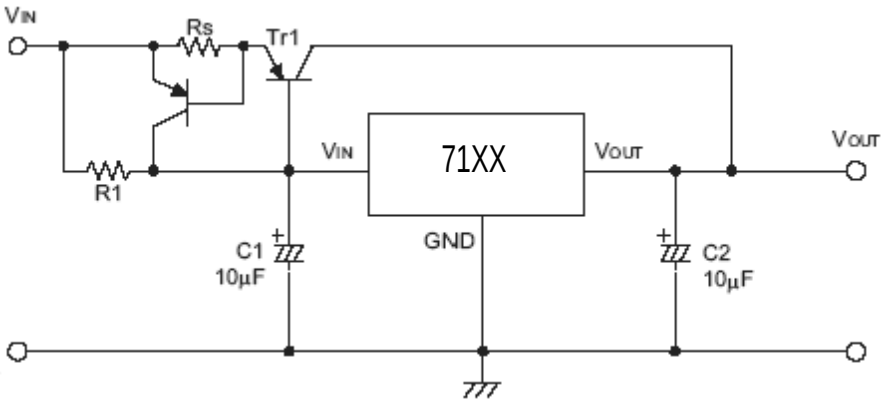
1. Basic circuit



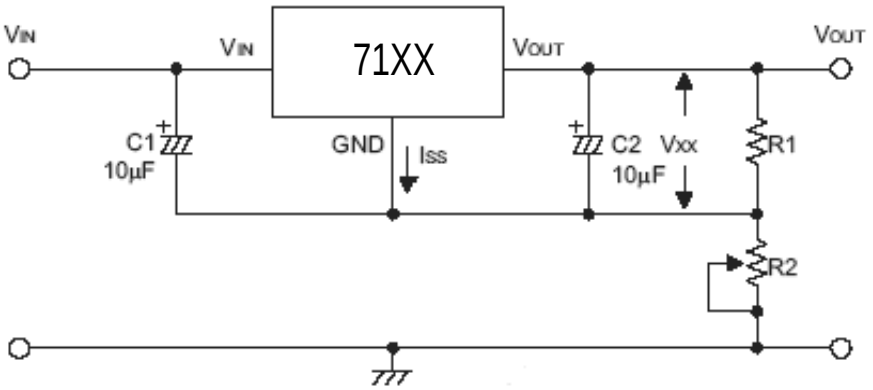
2. High output current regulator



3. Short circuit protection circuit



4. Circuit for increasing output voltage (1)



V_{OUT}＝Vxx（1＋R2/R1）＋Iss*R2

5. Circuit for increasing output voltage (2)

71XX

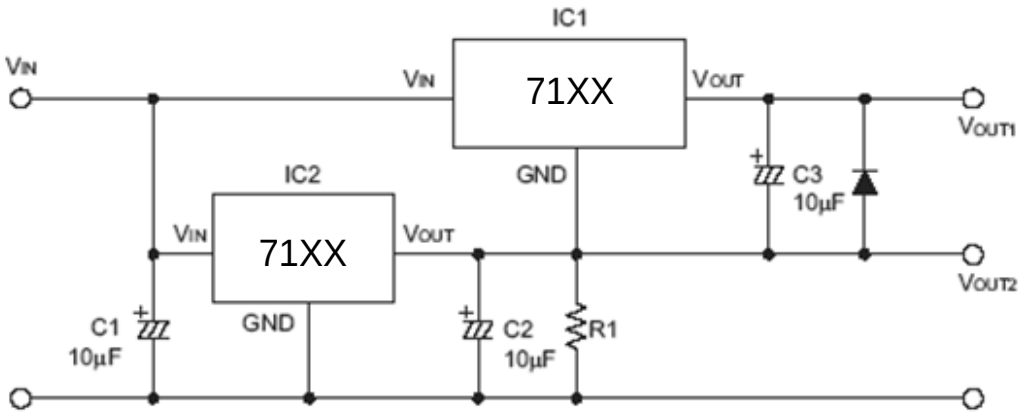
V_{OUT}=Vxx+VD1

6. Current regulating circuit

71XX

IOUT = VXX/RX + ISS

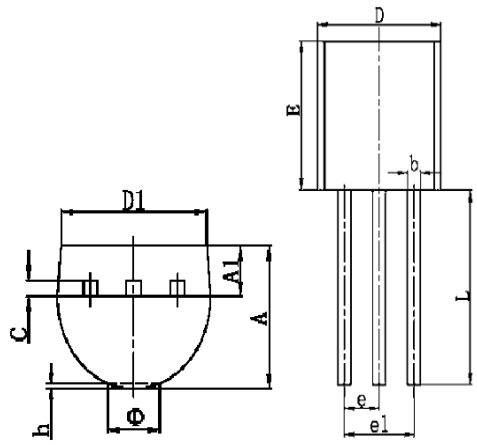
7. Dual output circuit



Note:“××”Represents the output voltage

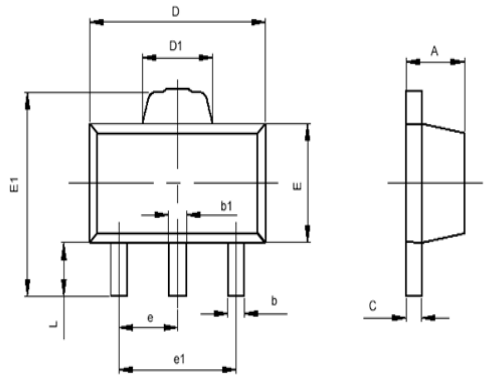
■ Encapsulation information

TO-92



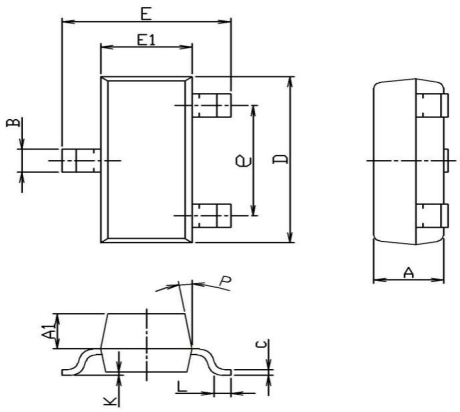
符号	最小值（mm）	最大值（mm）
A	3.300	3.700
A1	1.100	1.400
b	0.380	0.550
c	0.360	0.510
D	4.400	4.700
D1	3.430	
E	4.300	4.700
e	1.270 TYP	
e1	2.440	2.640
L	14.100	14.500
Φ		1.600
h	0.000	0.380

SOT-89-3

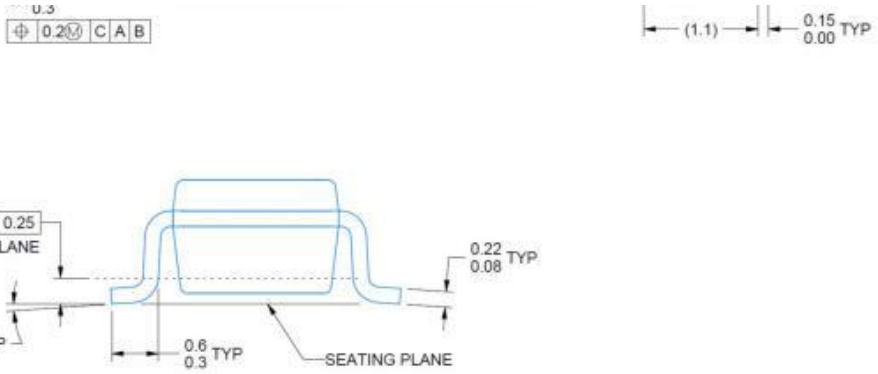


符号	最小值（mm）	最大值（mm）
A	1.400	1.600
b	0.320	0.520
b1	0.360	0.560
c	0.350	0.440
D	4.400	4.600
D1	1.400	1.800
E	2.300	2.600
E1	3.940	4.250
e	1.500TYP	
e1	2.900	3.100
L	0.900	1.100

SOT-23



SOT-23-3		Unit： mm	
Symbol	Min	TYP	Max
A	0.90	1.00	1.20
A1	0.55	0.60	0.70
B	0.35	0.40	0.55
C	0.06	0.10	0.15
D	2.70	2.90	3.10
E	2.20	2.40	2.60
E1	1.20	1.30	1.50
e	1.80	1.90	2.00
K	0	0.08	0.18
L	0.25		
p	5°	7°	9°



Package	Reel	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
TO -92	2000pcs	13inch	2000pcs	336×336×48	20,000pcs	445×355×365

Package	Reel	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
SOT -89	1000pcs	7inch	10,000pcs	203×203×195	40,000pcs	438×438×220

Package	Reel	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
SOT-23	3000pcs	7inch	45,000pcs	203×203×195	180,000pcs	438×438×220