1.Description

The 72XX series is a positive voltage regulator circuit developed using CMOS technology, offering low dropout voltage, high-precision output voltage, and ultra-low current consumption. Due to its built-in low on-resistance transistor, it achieves a low output voltage dropout while also offering high input voltage tolerance, with a maximum operating voltage of 12V, making it suitable for applications requiring high voltage resistance.

2.Features

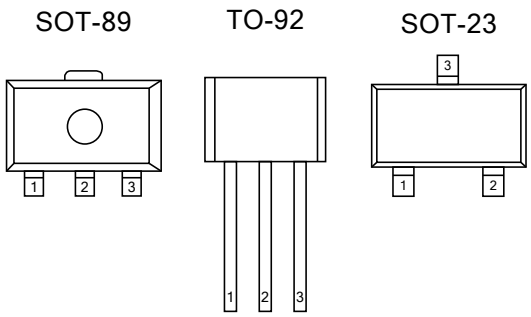
- High Output Voltage Accuracy: ±3%
- Ultra-low power consumption: 3uA typical
- Low output voltage temperature drift: 50ppm typical
- High input voltage: up to 12V to maintain output voltage regulation
- Package: TO-92, SOT89-3, SOT23-3

3.Applications

- Regulated Power Supply for Battery-Powered Equipment Communication Equipment
- Regulated Power Supply for Home Appliances and Toys Phones
- Regulated Power Supply for Portable Medical Instruments
- Regulated Power Supply for
- Regulated Power Supply for Mobile

4.Pinning Information

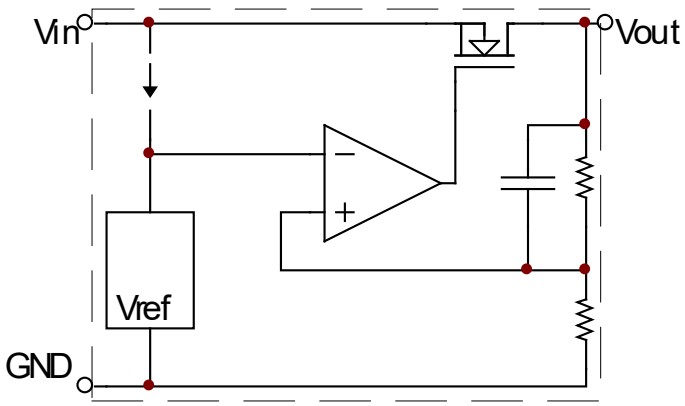
Pin number		Symbol	Description
TO-92/SOT-89	SOT-23		
1	1	GND	Chip Ground
2	3	VIN	Start Input
3	2	VOUT	Chip Output



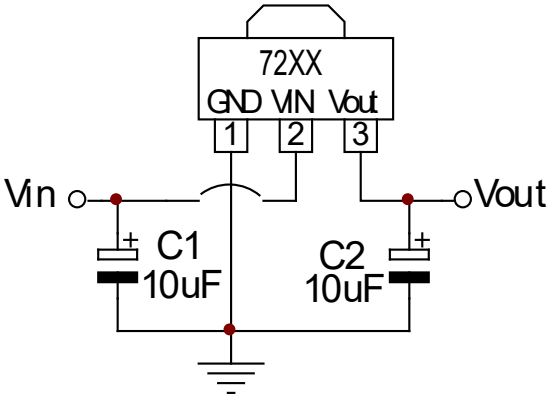
5.Model Selection

Name	Model	Maximum input voltage (V)	Output voltage (V)	Tolerance	Package
72XX	7218	12	1.8	±3%	TO92 SOT89-3 SOT23-3
	7225	12	2.5	±3%	
	7227	12	2.7	±3%	
	7230	12	3	±3%	
	7233	12	3.3	±3%	
	7236	12	3.6	±3%	
	7250	12	5	±3%	

6.Block Diagram



7.Application Circuit



8.Absolute Maximum Ratings

Project	Symbol	Description	Limit Value	Unit
Voltage	V_{IN}	Maximum Input Voltage	15	V
Power Consumption	P_D	Power Consumption	400	mW
Temperature	T_w	Operating Temperature	-25 to 70	°C
	T_c	Storage Temperature	-50 to 125	°C
	T_h	Soldering Temperature	260	°C,10s

9.1 Electrical Characteristics (7218, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=2.8V, I_{OUT}=40mA	1.746	1.8	1.854	V
Output Current	I_{OUT}	V_{IN}=2.8V, V_{OUT}≥1.62V	150			mA
Load Regulation	ΔV_{OUT}	V_{IN}=2.8V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		170		mV
Quiescent Current	I_{SS}	V_{IN}=2.8V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	2.8V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=2.8V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

9.2 Electrical Characteristics (7225, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=3.5V, I_{OUT}=40mA	2.425	2.5	2.575	V
Output Current	I_{OUT}	V_{IN}=3.5V, V_{OUT}≥2.25V	180			mA
Load Regulation	ΔV_{OUT}	V_{IN}=3.5V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		110		mV
Quiescent Current	I_{SS}	V_{IN}=3.5V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	3.5V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=3.5V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

9.3 Electrical Characteristics (7227, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=3.7V, I_{OUT}=40mA	2.619	2.7	2.781	V
Output Current	I_{OUT}	V_{IN}=3.7V, V_{OUT}≥2.43V	200			mA
Load Regulation	ΔV_{OUT}	V_{IN}=3.7V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		100		mV
Quiescent Current	I_{SS}	V_{IN}=3.7V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	3.7V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=3.7V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

9.4 Electrical Characteristics (7230, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=4V, I_{OUT}=40mA	2.91	3	3.09	V
Output Current	I_{OUT}	V_{IN}=4V, V_{OUT}≥2.7V	250			mA
Load Regulation	ΔV_{OUT}	V_{IN}=4V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		95		mV
Quiescent Current	I_{SS}	V_{IN}=4V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	4V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=4V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

9.5 Electrical Characteristics (7233, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=4.3V, I_{OUT}=40mA	3.201	3.3	3.399	V
Output Current	I_{OUT}	V_{IN}=4.3V, V_{OUT}≥2.97V	250			mA
Load Regulation	ΔV_{OUT}	V_{IN}=4.3V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		90		mV
Quiescent Current	I_{SS}	V_{IN}=4.3V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	4.3V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=4.3V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

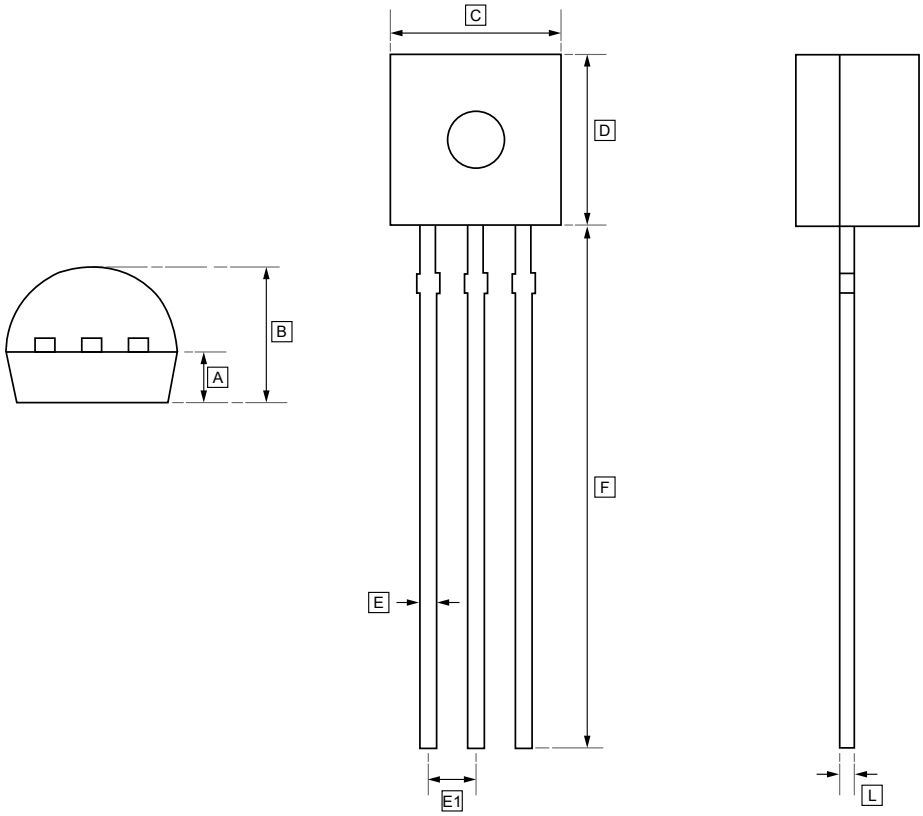
9.6 Electrical Characteristics (7236, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=4.5V, I_{OUT}=40mA	3.492	3.6	3.708	V
Output Current	I_{OUT}	V_{IN}=4.5V, V_{OUT}≥3.15V	250			mA
Load Regulation	ΔV_{OUT}	V_{IN}=4.5V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		80		mV
Quiescent Current	I_{SS}	V_{IN}=4.5V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	4.5V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=4.5V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

9.7 Electrical Characteristics (7250, T_{OPT}=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}	V_{IN}=6V, I_{OUT}=40mA	4.85	5	5.15	V
Output Current	I_{OUT}	V_{IN}=6V, V_{OUT}≥4.5V	250			mA
Load Regulation	ΔV_{OUT}	V_{IN}=6V, 1mA≤I_{OUT}≤60mA		45	90	mV
Dropout Voltage	V_{DIF}	I_{OUT}=40mA		60		mV
Quiescent Current	I_{SS}	V_{IN}=6V, no load		2	3	μA
Line Regulation	$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	6V≤V_{IN}≤12V, I_{OUT}=40mA		0.2	0.3	%/V
Input Voltage	V_{IN}				12	V
Temperature Coefficient	$\Delta V_{OUT}/T_A$	V_{IN}=6V, I_{OUT}=40mA, 0°C≤T_A≤85°C		±0.7		mV/°C

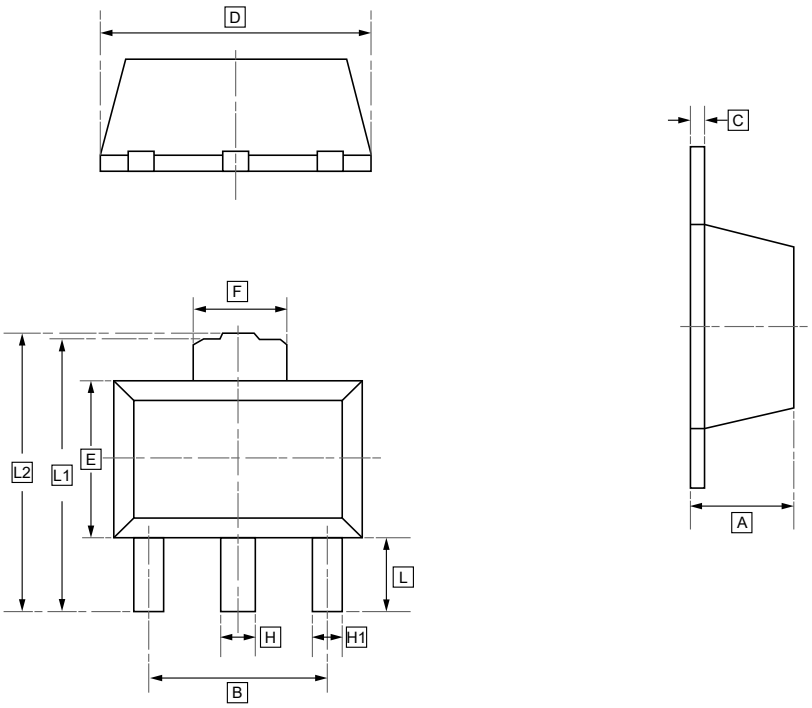
10.1 TO-92 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	E1	F	L
Min	1.10	3.50	4.50	4.40	0.35	1.27	13.50	0.35
Max	1.30	3.90	4.90	4.90	0.45	TYP	14.50	0.40

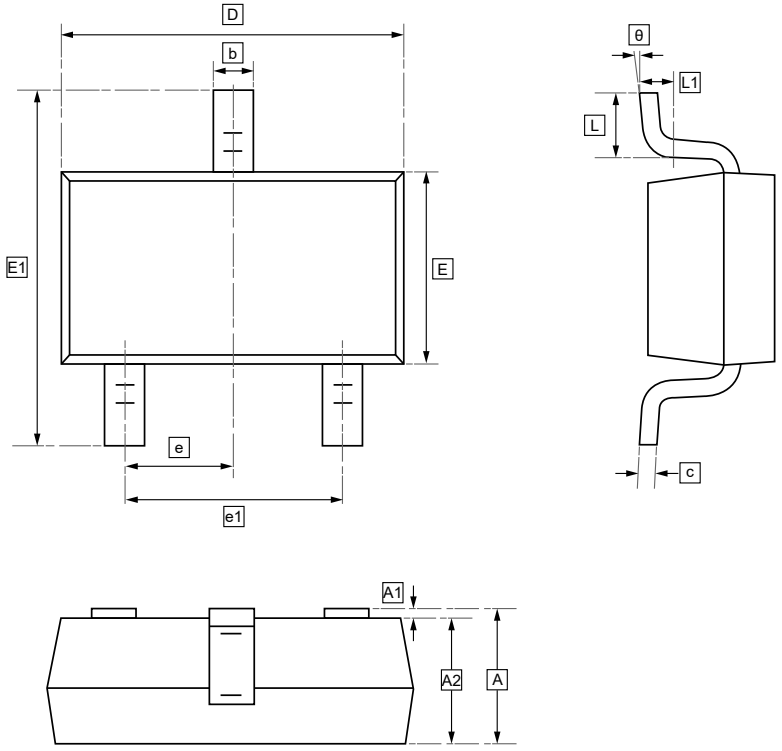
10.2 SOT-89 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	F	H	H1	L	L1	L2
Min	1.450	2.950	0.330	4.500	2.450	1.650	0.450	0.370	0.900	4.100	4.100
Max	1.550	3.050	0.430	4.700	2.550	1.750	0.580	0.480	1.000	4.300	4.350

10.3 SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	e1	L	L1
Min	1.050	0.000	1.050	0.300	0.100	2.820	1.500	2.650	0.950	1.800	0.300	0.200
Max	1.250	0.100	1.150	0.500	0.200	3.020	1.700	2.950	BSC	2.000	0.600	

Symbol	θ
Min	0°
Max	8°

11.Ordering Information

Order Code	Package	Base QTY	Delivery Mode
UMW HT7233-1	SOT-89	1000	Tape and reel

12.Disclaimer

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