

100mA Low Dropout Linear Regulator

FEATURES

- Low Dropout Voltage of 130mV at 30mA Output Current (5V Output Version).
- Guaranteed 100mA Output Current.
- Internal P-MOSFET Draws no Base Current.
- Low Ground Current.
- Output Voltage of 3.0V/ 3.3V/ 3.6V/ 4.4V/ 5.0V Available.
- Input Voltage Range up to 14V.
- Needs only 1 μ F for Stability.

APPLICATIONS

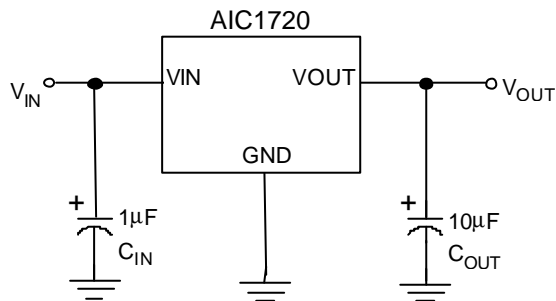
- Audio/Video System
- Wireless Communication Systems.
- Battery Powered Systems.
- Toys.

DESCRIPTION

The AIC1720 is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1720 include zero base current loss, and low dropout voltage. Typical ground current remains approximately 55 μ A, from no load to maximum loading conditions. Dropout voltage at 30mA output current is low: 130mV for the AIC1720-44 and AIC1720-50, 180mV for the AIC1720-30, AIC1720-33, and AIC1720-36.

The AIC1720 comes in the popular 3-pin SOT-89, TO-92 and SO8 packages.

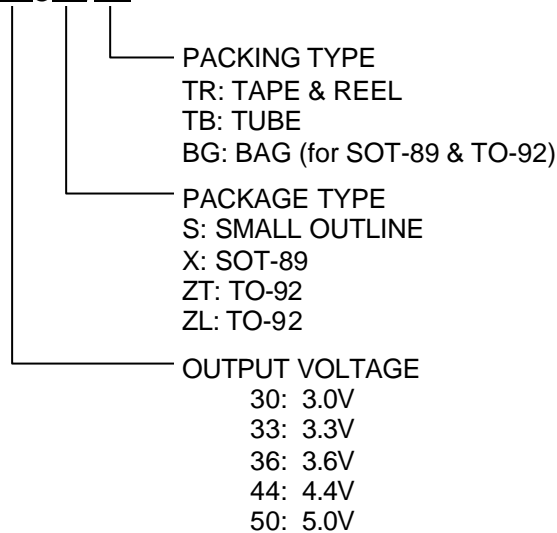
TYPICAL APPLICATION CIRCUIT



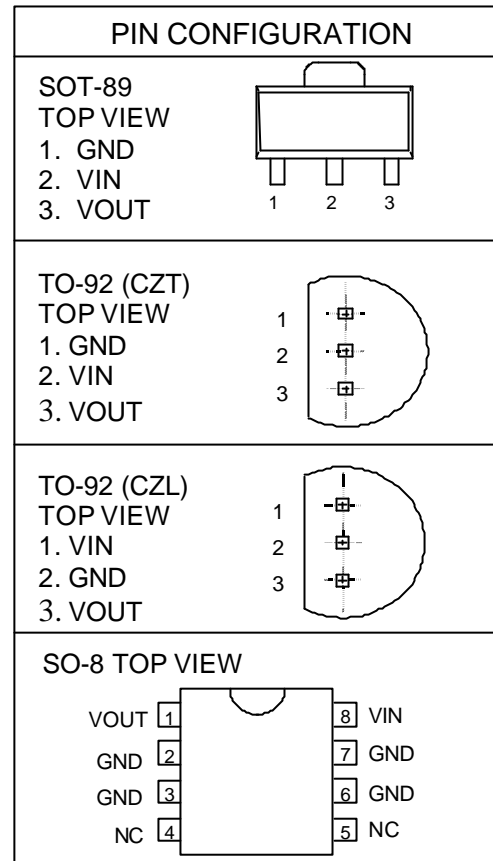
Low Dropout Linear Regulator

ORDERING INFORMATION

AIC1720-XXCXX XX



Example: AIC1720-30CSTR
 → 3.0V Version, in SO-8 Package &
 Tape & Reel Packing Type



ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage.....	-0.3~14V
Operating Junction Temperature Range	-40°C~ 125°C
Storage Temperature Range	-65°C~150°C
Power Dissipation	
SOT-89 Package	0.5W
TO-92 Package	0.5W
SO8 Package	0.625W

TEST CIRCUIT

Refer to the TYPICAL APPLICATION CIRCUIT

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, $C_{IN}=1\text{mF}$, $C_{OUT}=10\text{mF}$, unless otherwise specified.)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Output Voltage	No Load				V	
	AIC1720-50	$V_{IN}=5.5\sim 14\text{V}$	4.800	5.0		5.200
	AIC1720-44	$V_{IN}=5.5\sim 14\text{V}$	4.225	4.4		4.575
	AIC1720-36	$V_{IN}=4.0\sim 14\text{V}$	3.455	3.6		3.745
	AIC1720-33	$V_{IN}=4.0\sim 14\text{V}$	3.170	3.3		3.430
AIC1720-30	$V_{IN}=3.6\sim 14\text{V}$	2.880	3.0	3.120		
Output Voltage Temperature Coefficiency	(Note 1)		100	150	PPM/ $^\circ\text{C}$	
Line Regulation	$I_L=1\text{mA}$				mV	
	AIC1720-50	$V_{IN}=5.5\sim 14\text{V}$		5		10
	AIC1720-44	$V_{IN}=5.5\sim 14\text{V}$		5		10
	AIC1720-36	$V_{IN}=4.0\sim 14\text{V}$		5		10
	AIC1720-33	$V_{IN}=4.0\sim 14\text{V}$		5		10
AIC1720-30	$V_{IN}=3.6\sim 14\text{V}$		5	10		
Load Regulation (Note 2)	AIC1720-50	$V_{IN}=7\text{V}$, $I_{OUT}=0.1\sim 100\text{mA}$		10	25	mV
	AIC1720-44	$V_{IN}=7\text{V}$, $I_{OUT}=0.1\sim 100\text{mA}$		10	25	
	AIC1720-36	$V_{IN}=5\text{V}$, $I_{OUT}=0.1\sim 100\text{mA}$		10	25	
	AIC1720-33	$V_{IN}=5\text{V}$, $I_{OUT}=0.1\sim 100\text{mA}$		10	25	
	AIC1720-30	$V_{IN}=5\text{V}$, $I_{OUT}=0.1\sim 100\text{mA}$		10	25	
Dropout Voltage (Note 4)	AIC1720-50	$I_{OUT}=100\text{mA}$		400	500	mV
	AIC1720-44	$I_{OUT}=100\text{mA}$		400	500	
	AIC1720-36	$I_{OUT}=100\text{mA}$		540	640	
	AIC1720-33	$I_{OUT}=100\text{mA}$		540	640	
	AIC1720-30	$I_{OUT}=100\text{mA}$		540	640	
Ground Current	$I_O=0.1\text{mA}\sim I_{MAX}$				μA	
	AIC1720-50	$V_{IN}=5.5\sim 14\text{V}$		55		80
	AIC1720-44	$V_{IN}=5.5\sim 14\text{V}$		55		80
	AIC1720-36	$V_{IN}=4\sim 14\text{V}$		55		80
	AIC1720-33	$V_{IN}=4\sim 14\text{V}$		55		80
AIC1720-30	$V_{IN}=4\sim 14\text{V}$		55	80		

Note 1: Guaranteed by design.

Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.

Note 3: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV below the value measured with a 1V differential.

ELECTRICAL CHARACTERISTICS

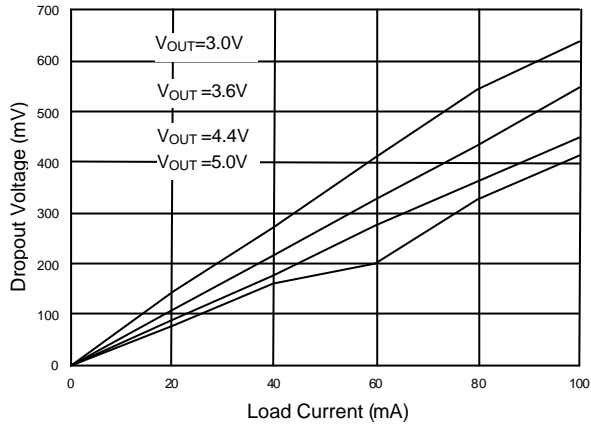
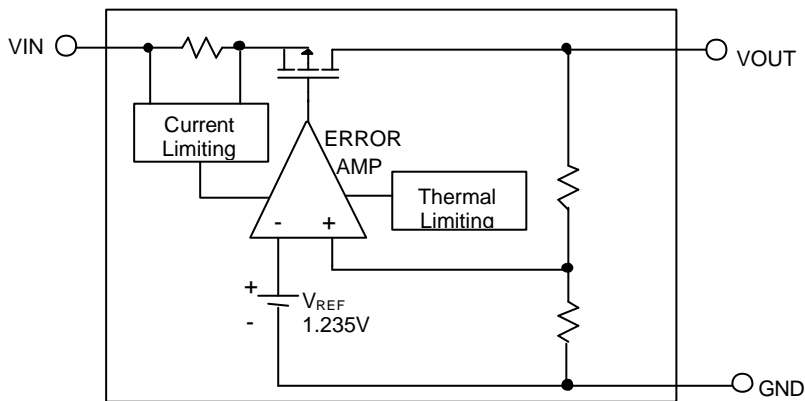


Fig. 1 Dropout Voltage vs. Load Current

BLOCK DIAGRAM



PIN DESCRIPTIONS

- VOUT PIN - Output pin.
- GND PIN - Power GND.
- VIN PIN - Power Supply Input.

APPLICATION INFORMATIONS

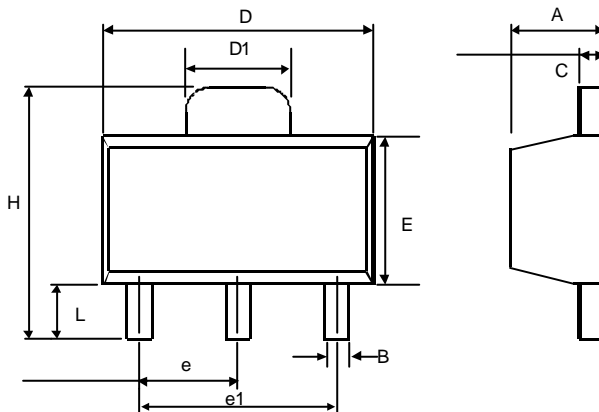
A 1 μ F (or greater) capacitor is required between the AIC1720 output and ground for stability. Without this capacitor the part will oscillate. Even though most types of capacitor may work, the equivalent series resistance (ESR) should be held to 5 Ω or less if Aluminum electrolytic type is used. Many Aluminum electrolytics have electrolytes that freeze at about -30°C, so solid tantalums are recommended for operation below -25°C. The

value of this capacitor may be increased without limit.

A 0.1 μ F capacitor (or greater) should be placed from the AIC1720 input to ground if the lead inductance between the input and power source exceeds 500nH (approximately 10 inches of trace).

PHYSICAL DIMENSIONS

SOT-89 (unit: mm)

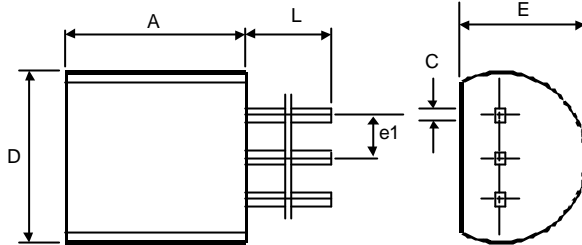


SYMBOL	MIN	MAX
A	1.40	1.60
B	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 (TYP.)	
e1	3.00 (TYP.)	
H	3.94	4.25
L	0.89	1.20

SOT-89 MARKING

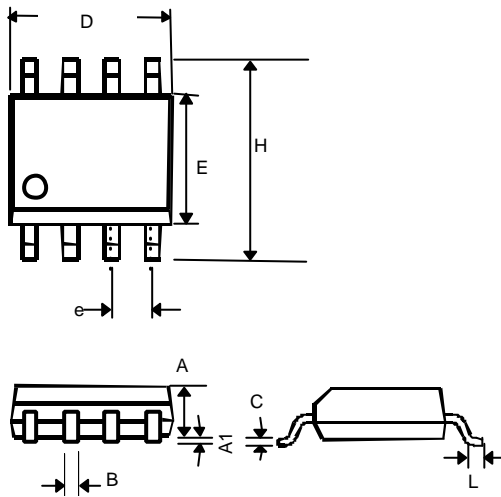
Part No.	Marking
AIC1720-30CX	AS30
AIC1720-33CX	AS33
AIC1720-36CX	AS36
AIC1720-44CX	AS44
AIC1720-50CX	AS50

- TO-92 (unit: mm)



SYMBOL	MIN	MAX
A	4.32	5.33
C	0.38 (TYP.)	
D	4.40	5.20
E	3.17	4.20
e1	1.27 (TYP.)	
L	12.7	-

- 8 LEAD PLASTIC SO (unit: mm)



SYMBOL	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27(TYP)	
H	5.80	6.20
L	0.40	1.27