

Low Output Voltage, 300mA Low Dropout Linear Regulator

FEATURES

- Low Dropout Voltage of 180mV at 100mA Output Current (3.0V Output Version).
- Guaranteed 300mA Output Current.
- Low Ground Current at 55 μ A.
- Input Voltage Range up to 12V.
- Internal 1.3 Ω P-MOSFET Draws no Base Current.
- 2% Accuracy Output Voltage of 1.8V/ 2.0V/ 2.5V/ 2.7V/ 3.0V.
- Current Limiting and Thermal Protection.

APPLICATIONS

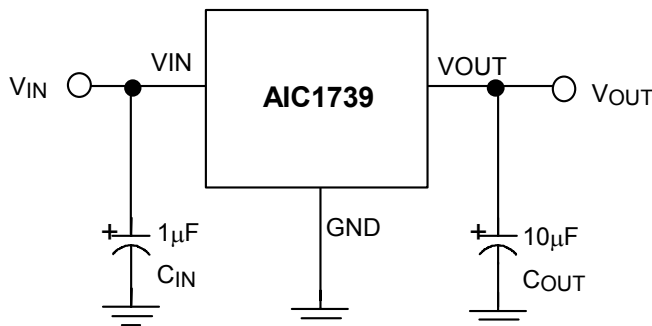
- CD-ROM Drivers.
- LAN Cards.
- Microprocessor.
- Wireless Communication Systems.
- Battery Powered Systems.

DESCRIPTION

The AIC1739 is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1739 include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 55 μ A, for loading ranging from zero to maximum. Dropout voltage is exceptionally low. Built-in output current limiting and thermal limiting provide maximal protection to the AIC1739 against fault conditions.

The AIC17397 is available in popular 3-pin SOT-89 and TO-92 packages.

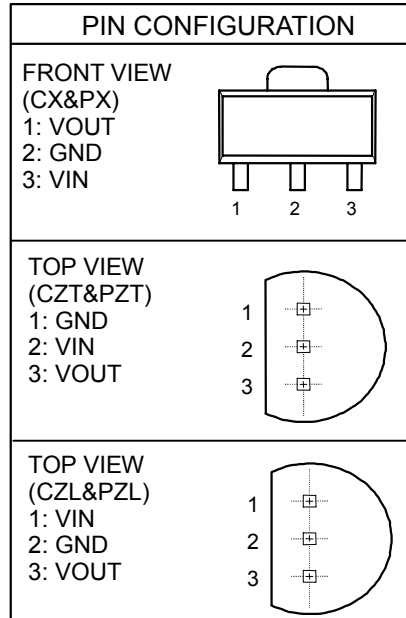
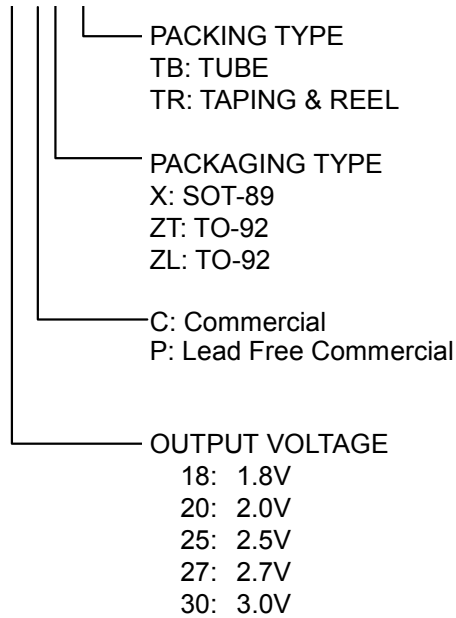
TYPICAL APPLICATION CIRCUIT



Low Dropout Linear Regulator

ORDERING INFORMATION

AIC1739-XXXXXX



Example: AIC1739-18CXTR

→ 1.8V version in SOT-89 Package & Taping & Reel Packing Type

AIC1739-18PXTR

→ 1.8V version in SOT-89 Lead Free Package & Taping & Reel Packing Type

● SOT-89 MARKING

Part No.	CX	PX
AIC1739-18	AY18	AY18P
AIC1739-20	AY20	AY20P
AIC1739-25	AY25	AY25P
AIC1739-27	AY27	AY27P
AIC1739-30	AY30	AY30P

■ ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage.....	-0.3~12V
Operating Temperature Range.....	-40°C~ 85°C
Maximum Junction Temperature.....	125°C
Storage Temperature Range.....	-65°C~150°C
Lead Temperature (Soldering) 10 sec.....	260°C
Power Dissipation	SOT-89 Package..... 0.5W
	TO-92 Package..... 0.5W

Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

■ TEST CIRCUIT

Refer to TYPICAL APPLICATION CIRCUIT.

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, C_{IN}=1μF, C_{OUT}=10μF, unless otherwise specified.)

PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Output Voltage	No Load					V
	AIC1739-30	V _{IN} =4.0~12V	2.940	3.000	3.060	
	AIC1739-27	V _{IN} =4.0~12V	2.646	2.700	2.754	
	AIC1739-25	V _{IN} =4.0~12V	2.550	2.500	2.550	
	AIC1739-20	V _{IN} =4.0~12V	1.960	2.000	2.040	
AIC1739-18	V _{IN} =4.0~12V	1.764	1.800	1.836		
Output Voltage Temperature Coefficiency	(Note 1)			50	150	PPM/°C
Line Regulation	I _L =1mA	V _{IN} =4.0~12V		3	10	mV
Load Regulation (Note 2)		V _{IN} =5V, I _L =0.1~300mA		7	25	mV
Current Limit (Note 3)		V _{IN} =5V, V _{OUT} =0V	320	440		mA
Dropout Voltage (Note 4)	AIC1739	I _L =0.1mA		0.2	10	mV
	AIC1739-30	I _L =300mA		540	640	
	AIC1739-27	I _L =300mA		570	670	
	AIC1739-25	I _L =300mA		610	710	
	AIC1739-20	I _L =300mA		820	970	
AIC1739-18	I _L =300mA		920	1070		
Ground Current	I _O =0.1mA~I _{MAX}	V _{IN} =4~12V		55	80	μA

- Note 1: Guaranteed by design.
- Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.
- Note 3: Current limit is measured by pulsing a short time.
- Note 4: 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.
- Note 5: Specifications over -40°C to 85°C operating temperature range are guaranteed by design with Statistical Quality Controls (SQC), not production test.

■ TYPICAL PERFORMANCE CHARACTERISTICS

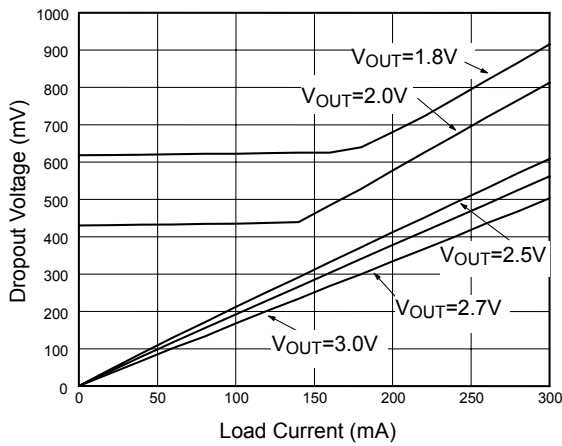


Fig. 1 Dropout Voltage vs. Load Current

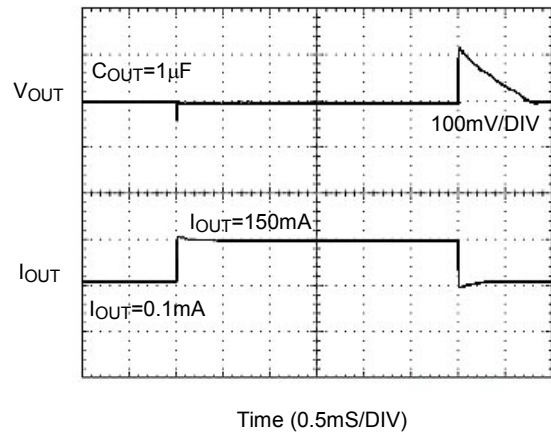


Fig. 2 Load Transient Response

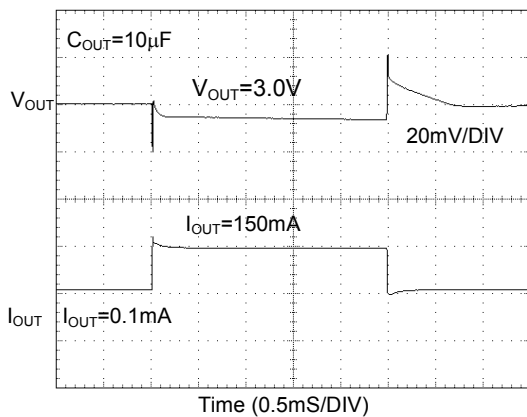


Fig. 3 Load Transient Response

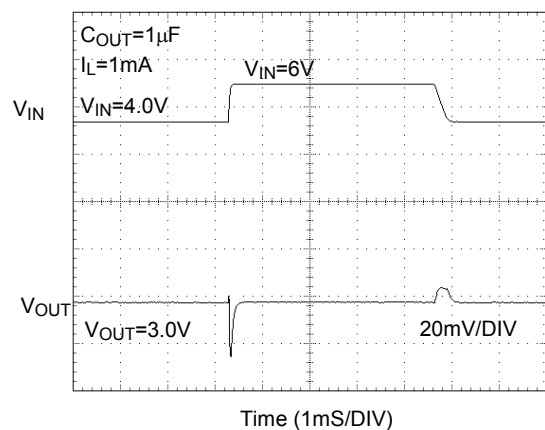


Fig. 4 Line Transient Response

TYPICAL PERFORMANCE CHARACTERISTICS(Continued)

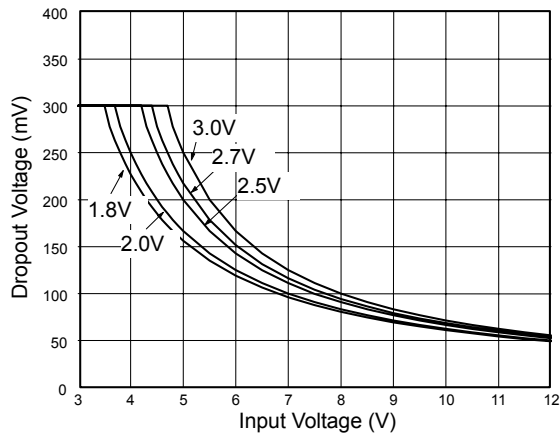
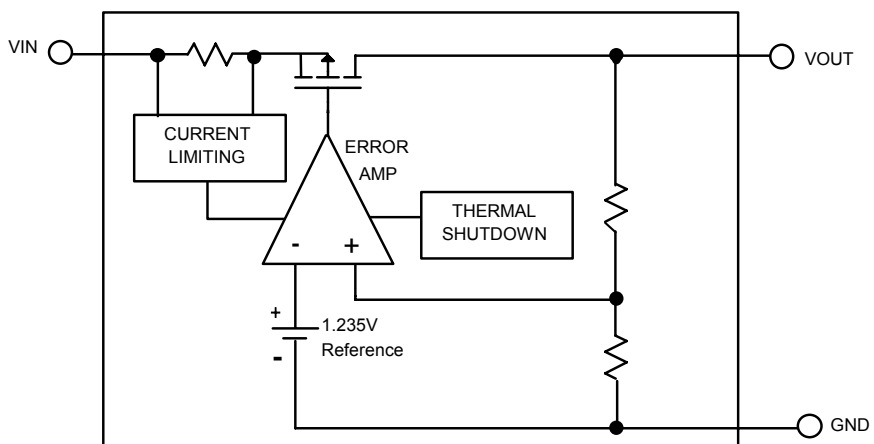


Fig. 5 Recommended max. Output Current vs. Input

BLOCK DIAGRAM



■ PIN DESCRIPTIONS

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

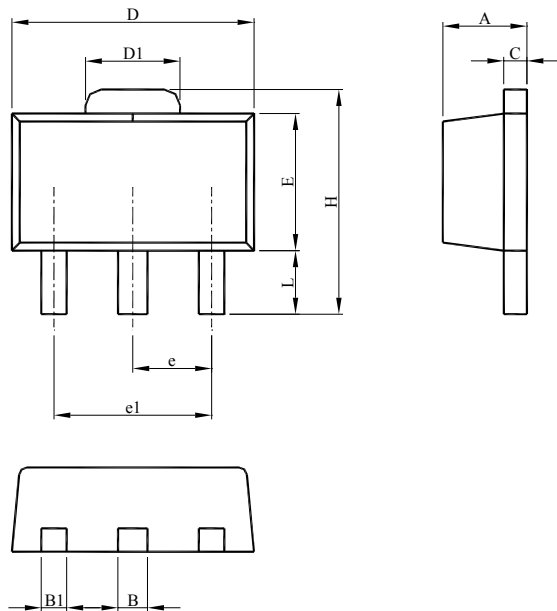
■ APPLICATION INFORMATION

An 10 μ F (or greater) capacitor is required between the AIC1739 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.

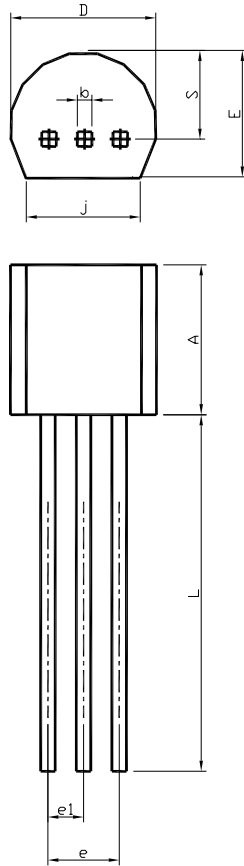
■ PHYSICAL DIMENSIONS (unit: mm)

- SOT-89



SYMBOL	SOT-89	
	MILLIMETERS	
	MIN.	MAX.
A	1.40	1.60
B	0.44	0.56
B1	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.50	1.83
E	2.29	2.60
e	1.50 BSC	
e1	3.00 BSC	
H	3.94	4.25
L	0.89	1.20

- TO-92



SYMBOL	TO-92	
	MILLIMETERS	
	MIN.	MAX.
A	4.32	5.33
b	0.36	0.47
D	4.45	5.20
E	3.18	4.19
e	2.42	2.66
e1	1.15	1.39
j	3.43	
L	12.70	
S	2.03	2.66

Note:

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Life Support Policy: AIC does not authorize any AIC product for use in life support devices and/or systems. Life support devices or systems are devices or systems which, (i) are intended for surgical implant into the body or (ii) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.