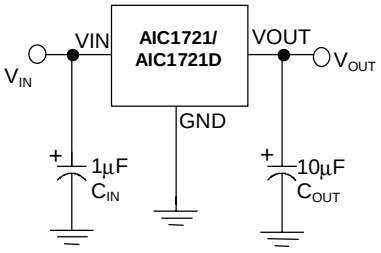
FEATURES

- Low Dropout Voltage of 130mV at 100mA Output Current (5V Output Version).
- Guaranteed 150mA/300mA Output Current.
- Internal 1.3Ω P-MOSFET Draws no Base Current.
- Low Ground Current at 55μA.
- 1% Accuracy Output Voltage of 3V/3.3V/5V.
- Input Voltage Range up to 12V (5V Output Version).
- Extremely Tight Load and Line Regulation.
- Fast Transient Response.
- Needs only 1μF for Stability.
- Current and Thermal Limiting.

APPLICATIONS

- Voltage Regulator for LAN Cards.
- Wireless Communication Systems.
- Battery Powered Systems.

TYPICAL APPLICATION CIRCUIT



DESCRIPTION

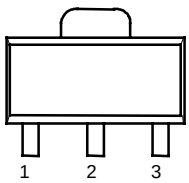
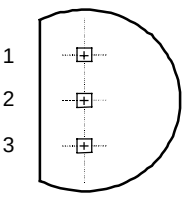
The AIC1721/1721D is the enhanced CMOS version of the LP2950. The superior characteristics of the AIC1721/1721D include zero base current loss, very low dropout voltage, and 1% accuracy output voltage. Typical ground current remains approximately 55μA, from no load to maximum loading conditions. Dropout voltage at 100mA output current is significantly lower than its bipolar counterpart: 130mV for the AIC1721-5/1721D-5, 180mV for the AIC1721/ 1721D, and 200mV for the AIC1721-3/ 1721D-3. Output current limiting and thermal limiting are built in to provide maximal protection to the AIC1721/ 1721D against fault conditions.

While pin-to-pin compatible with the LP2950 and the industry industry standard 78XX series of voltage regulators, the AIC1721/1721D comes in the popular3-pin SOT-89 or TO-92 packages.

ORDERING INFORMATION

AIC1721X-XXX

- PACKAGING TYPE
  X: SOT-89
  Z: TO-92
- TEMPERATURE RANGE
  C: 0°C~+70°C
- OUTPUT VOLTAGE
  DEFAULT : 3.3V
  3: 3V
  5: 5V
- OUTPUT CURRENT
  DEFAULT : 150mA
  D: 300mA

ORDER NUMBER	PIN CONFIGURATION
AIC1721CX AIC1721-3CX AIC1721-5CX AIC1721DCX AIC1721D-3CX AIC1721D-5CX (SOT-89)	FRONT VIEW 1: VOUT 2: GND 3: VIN 
AIC1721CZ AIC1721-3CZ AIC1721-5CZ AIC1721DCZ AIC1721D-3CZ AIC1721D-5CZ (TO-92)	TOP VIEW 1: VOUT 2: GND 3: VIN 

ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage ..... -0.3~12V

Operating Junction Temperature Range ..... -40°C~ 125°C

Storage Temperature Range ..... -65°C~150°C

Power Dissipation SOT-89 Package 0. 80W

TO-92 Package 0.78W

TEST CIRCUIT

Refer to the TYPICAL APPLICATION CIRCUIT

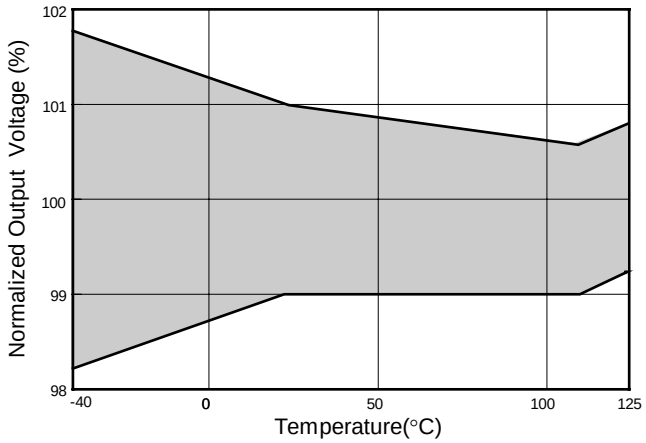
ELECTRICAL CHARACTERISTICS (Ta=25°C, C_{IN}=1μF, C_{OUT}=10μF, unless otherwise specified.)

PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Output Voltage	No Load					V
	AIC1721/1721D-5	V_{IN}=5.5~12V	4.950	5.0	5.050	
	AIC1721/1721D	V_{IN}=3.6~12V	3.267	3.3	3.333	
	AIC1721/1721D -3	V_{IN}=3.3~12V	2.970	3.0	3.030	
Output Voltage Temperature Coefficiency	(Note 1)			50	150	PPM/°C
Line Regulation	I_L=1mA					mV
	AIC1721/1721D-5	V_{IN}=5.5~12V		3	10	
	AIC1721/1721D	V_{IN}=3.6~12V		3	10	
	AIC1721/1721D-3	V_{IN}=3.3~12V		3	10	
Load Regulation (Note 2)	AIC1721-5	V_{IN}=7V, I_L=0.1~150mA		7	15	mV
	AIC1721D-5	V_{IN}=7V, I_L=0.1~300mA		7	25	
	AIC1721/-3	V_{IN}=5V, I_L=0.1~150mA		7	15	
	AIC1721D/-3	V_{IN}=5V, I_L=0.1~300mA		7	25	
Current Limit (Note 3)	AIC1721-5	V_{IN}=7V, V_{OUT}=0V		220	320	mA
	AIC1721/-3	V_{IN}=5V, V_{OUT}=0V		220	320	
	AIC1721D-5	V_{IN}=7V, V_{OUT}=0V		440	550	
	AIC1721D/ -3	V_{IN}=5V, V_{OUT}=0V		440	550	
Dropout Voltage (Note 4)	AIC1721/1721D	I_L=0.1mA		0.2	10	mV
	AIC1721-5	I_L=150mA		200	300	
	AIC1721	I_L=150mA		270	370	
	AIC1721-3	I_L=150mA		300	400	
	AIC1721D-5	I_L=300mA		400	500	
	AIC1721D	I_L=300mA		540	640	
	AIC1721D-3	I_L=300mA		600	700	
Ground Current	I_O=0.1mA~I_{MAX}					μA
	AIC1721/1721D-5	V_{IN}=5.5~12V		55	80	
	AIC1721/1721D	V_{IN}=4~12V		55	80	
	AIC1721/1721D-3	V_{IN}=4~12V		55	80	

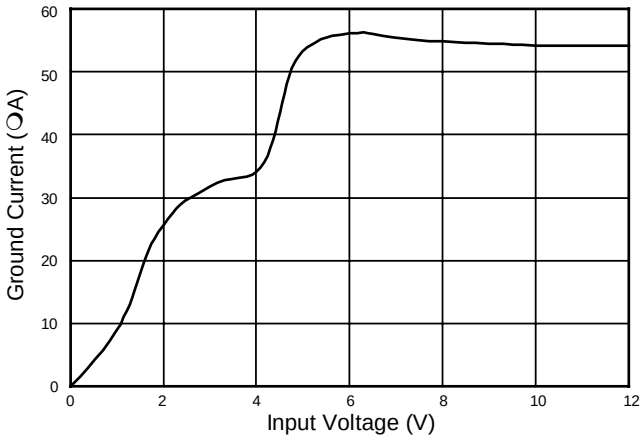
Note 1: Guaranteed by design.
Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.
Note 3: Current limit is measured by pulsing a short time.
Note 4: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV below the value measured with a 1V differential.

TYPICAL PERFORMANCE CHARACTERISTICS (Ta=25°C)

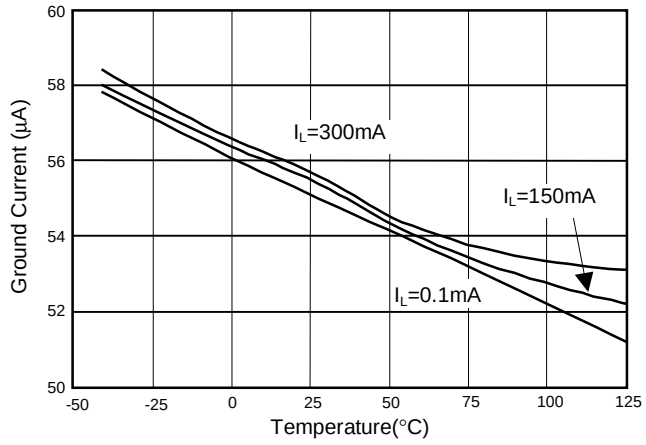
Output Voltage vs. Temperature



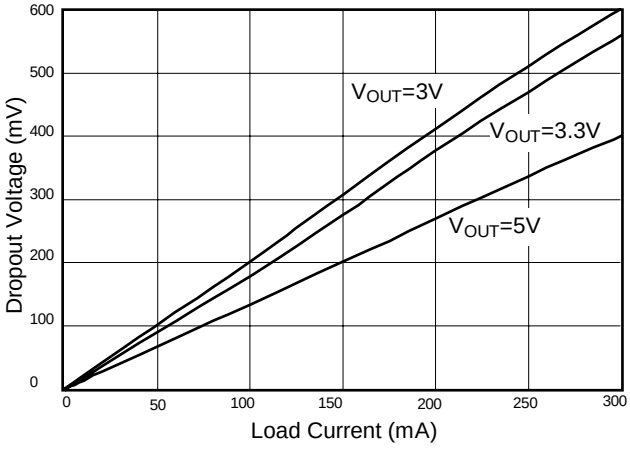
Ground Current vs. Input Voltage



Ground Current vs. Temperature

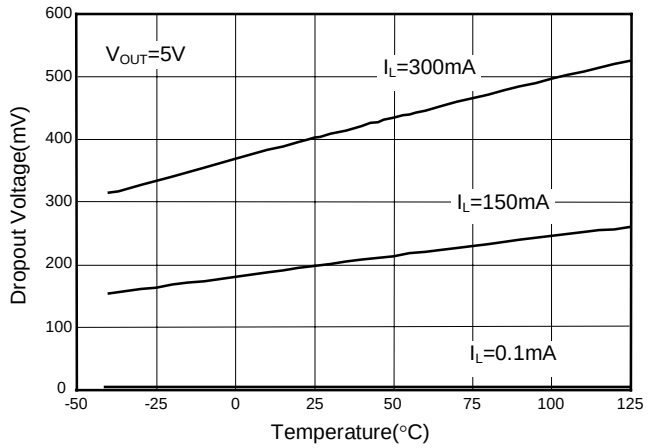


Dropout Voltage vs Load Current

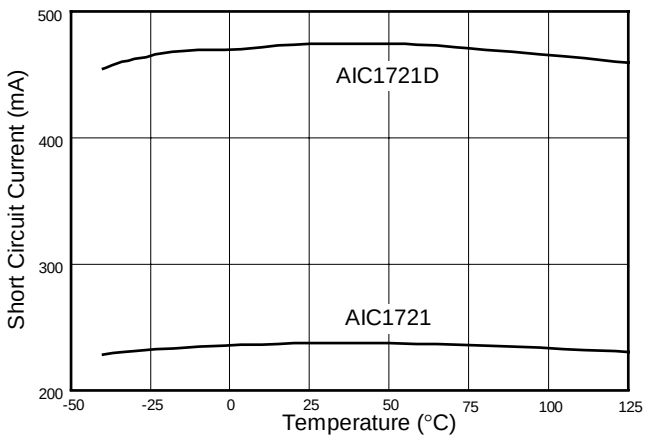


TYPICAL PERFORMANCE CHARACTERISTICS (CONTINUED)

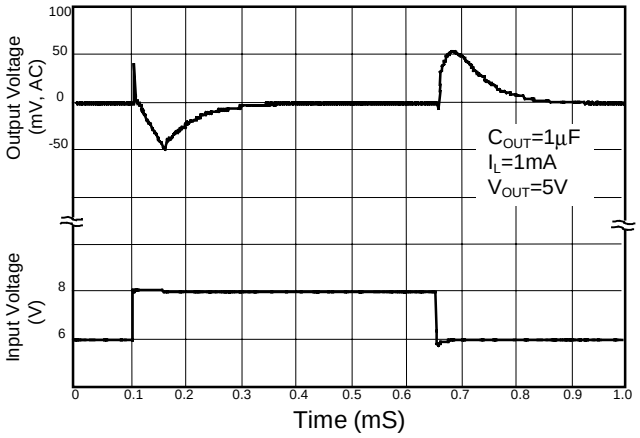
Dropout Voltage vs Temperature



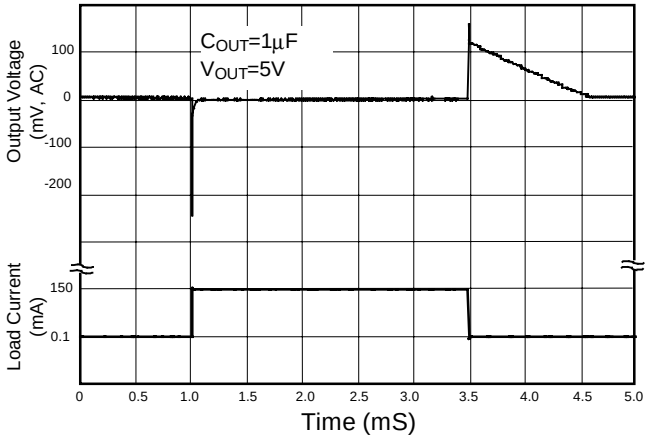
Short Circuit Current vs. Temperature



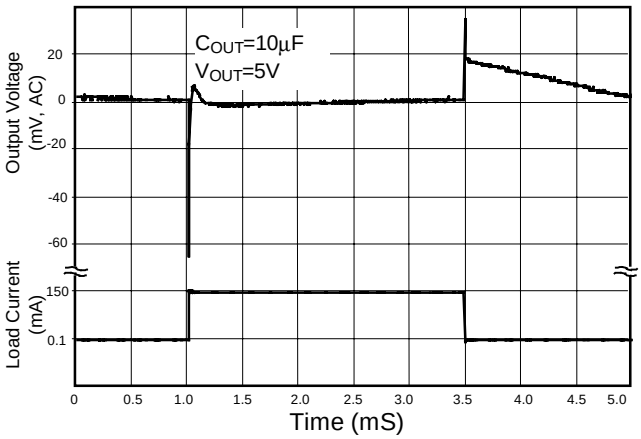
Line Transient Response



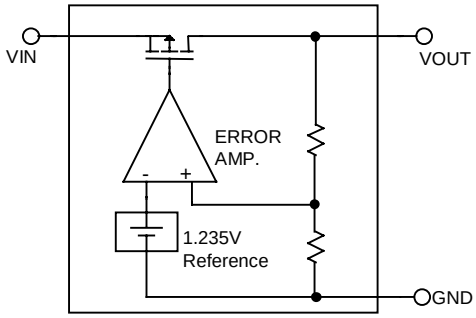
Load Transient Response



Load Transient Response



BLOCK DIAGRAM



PIN DESCRIPTION

PIN 1: VOUT - Output pin.

PIN 2: GND - Power GND.

PIN 3: VIN - Power Supply Input.

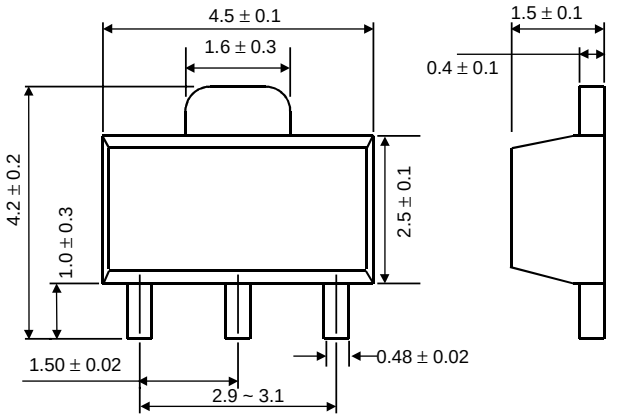
APPLICATION INFORMATION

A 1μF (or greater) capacitor is required between the AIC1721/AIC1721D output and ground for stability. Without this capacitor the part will oscillate. Even though most types of capacitor may work, if Aluminum electrolytic type is used, the equivalent series resistance (ESR) should be held to 5Ω or less. Many Aluminum electrolytic 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.

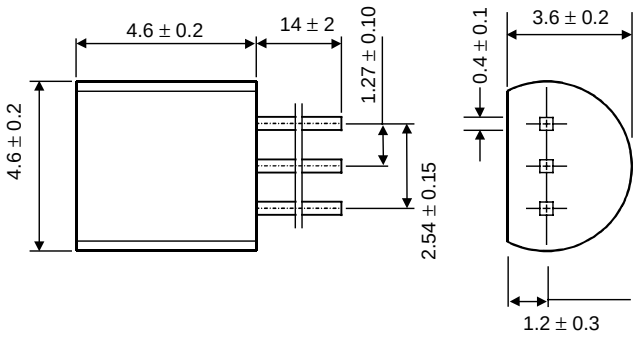
A 0.1μF capacitor (or greater) should be placed from the AIC1721/1721D input to ground if the lead inductance between the input and power source exceeds 500nH (approximately 10 inches of trace).

PHYSICAL DIMENSIONS

- **SOT-89**



- **TO-92**



UNIT: mm

- **SOT89 Marking**

Part No.	Marking
AIC1721	AF33
AIC1721-3	AF30
AIC1721-5	AF50
AIC1721D	AG33
AIC1721D-3	AG30
AIC1721D-5	AG50