300mA Low Dropout Linear Regulator

FEATURES

- Low Dropout Voltage of 470mV at 300mA Output Current (3.0V Output Version).
- Guaranteed 300mA Output Current.
- Low Ground Current at 55μA.
- 2% Accuracy Output Voltage of 1.8V/ 2.0V /2.5V /2.7V/ 3.0V/ 3.3V/ 3.5V/ 3.7V/ 3.8V/ 5.0V/ 5.2V.
- Needs only 1μF for Stability.
- Current and Thermal Limiting.

APPLICATIONS

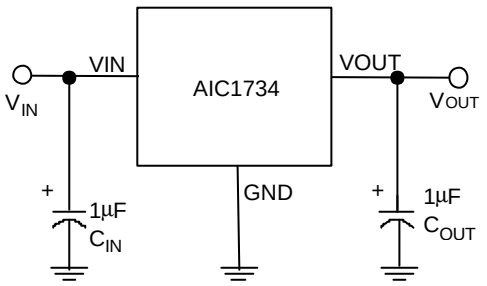
- Voltage Regulator for CD-ROM Drivers.
- Voltage Regulator for LAN Cards.
- Voltage Regulator for Microprocessor.
- Wireless Communication Systems.
- Battery Powered Systems.

DESCRIPTION

The AIC1734 is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1734 include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 55μA, from no load to maximum loading conditions. Dropout voltage at 300mA output current is exceptionally low. Output current limiting and thermal limiting are built in to provide maximal protection to the AIC1734 against fault conditions.

The AIC1734 comes in the popular 3-pin SOT-89 and TO-92 packages.

TYPICAL APPLICATION CIRCUIT



Low Dropout Linear Regulator

ORDERING INFORMATION

AIC1734-XXCXX XX

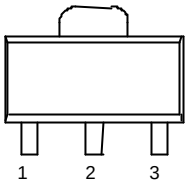
- PACKING TYPE
  - TR: TAPE & REEL
  - BG: BAG
- PACKAGE TYPE
  - XA: SOT-89
  - XT: SOT-89
  - ZT: TO-92
  - ZL: TO-92
- OUTPUT VOLTAGE
  - 18: 1.8V
  - 20: 2.0V
  - 25: 2.5V
  - 27: 2.7V
  - 30: 3.0V
  - 33: 3.3V
  - 35: 3.5V
  - 37: 3.7V
  - 38: 3.8V
  - 50: 5.0V
  - 52: 5.2V

Example: AIC1734-18CXATR

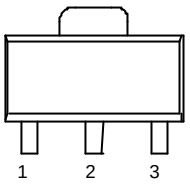
→ 1.8V Version, in SOT-89 Package & Tape & Reel Packing Type

PIN CONFIGURATION

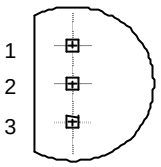
SOT-89 (CXA)
TOP VIEW
1: GND
2. VIN
3. VOUT



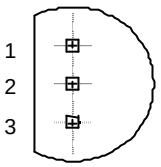
SOT-89 (CXT)
TOP VIEW
1: VOUT
2. GND
3. VIN



TO-92 (CZT)
TOP VIEW
1: GND
2. VIN
3. VOUT



TO-92 (CZL)
TOP VIEW
1: VIN
2. GND
3. VOUT



ABSOLUTE MAXIMUM RATINGS

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

Operating Junction Temperature Range ..... -45°C~ 85°C

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

Power Dissipation
- SOT-89 Package 0.5W
- TO-92 Package 0.5W

TEST CIRCUIT

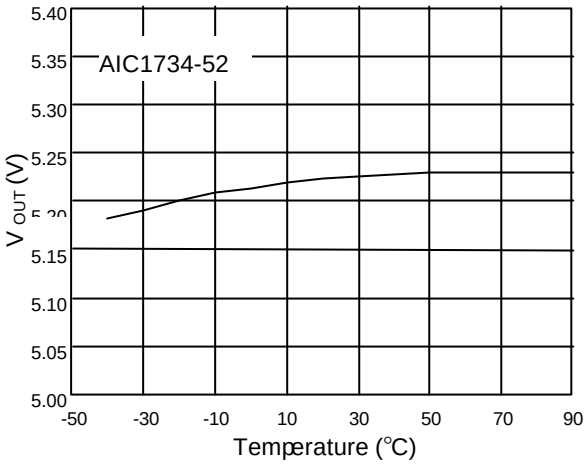
Refer to the TYPICAL APPLICATION CIRCUIT

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

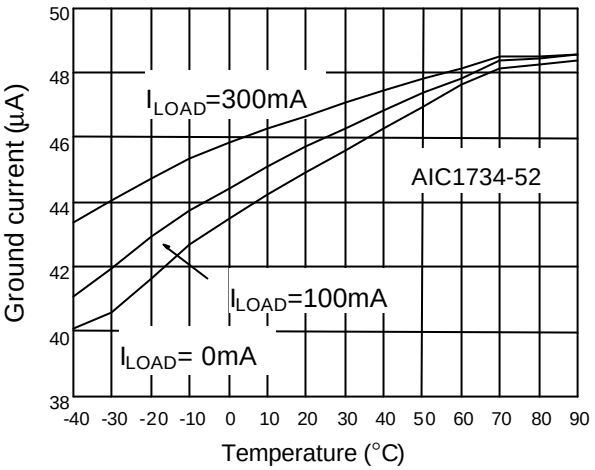
PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Output Voltage	No Load					V
	AIC1734-52	V_{IN}=5.5~12V	5.100	5.200	5.300	
	AIC1734-50	V_{IN}=5.5~12V	4.900	5.000	5.100	
	AIC1734-38	V_{IN}=4.1~12V	3.725	3.800	3.875	
	AIC1734-37	V_{IN}=4.0~12V	3.625	3.700	3.775	
	AIC1734-35	V_{IN}=4.0~12V	3.430	3.500	3.570	
	AIC1734-33	V_{IN}=4.0~12V	3.235	3.300	3.365	
	AIC1734-30	V_{IN}=4.0~12V	2.940	3.000	3.060	
	AIC1734-27	V_{IN}=4.0~12V	2.646	2.700	2.754	
	AIC1734-25	V_{IN}=4.0~12V	2.450	2.500	2.550	
	AIC1734-20	V_{IN}=4.0~12V	1.960	2.000	2.040	
	AIC1734-18	V_{IN}=4.0~12V	1.764	1.800	1.836	
Output Voltage Temperature Coefficiency	(Note 1)			50		PPM/°C
Line Regulation	I_L=1mA,					mV
	1.4V≤V_{OUT}≤3.2V	V_{IN}=4V~12V		3	10	
	3.3V≤V_{OUT}≤5.2V	V_{IN}=5.5V~12V		3	10	
Load Regulation (Note 2)	I_L=0.1~300mA					mV
	1.4V≤V_{OUT}≤3.9V	V_{IN}=5V		7	20	
	4.0V≤V_{OUT}≤5.2V	V_{IN}=7V		15	40	
Current Limit (Note 3)	V_{IN}=7V, V_{OUT}=0V		300			mA
Dropout Voltage (Note 4)	I_L=300mA	4.0V≤V_{OUT}≤5.2V		400		mV
		3.0V≤V_{OUT}≤3.9V		470		
		2.5V≤V_{OUT}≤2.9V		570		
		2.0V≤V_{OUT}≤2.4V		800		
		1.4V≤V_{OUT}≤1.9V		1260		
Ground Current	I_O=0.1mA~I_{MAX}					μA
	1.4V≤V_{OUT}≤3.9V	V_{IN}=5~12V		55	80	
	4.0V≤V_{OUT}≤5.2V	V_{IN}=7~12V		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.

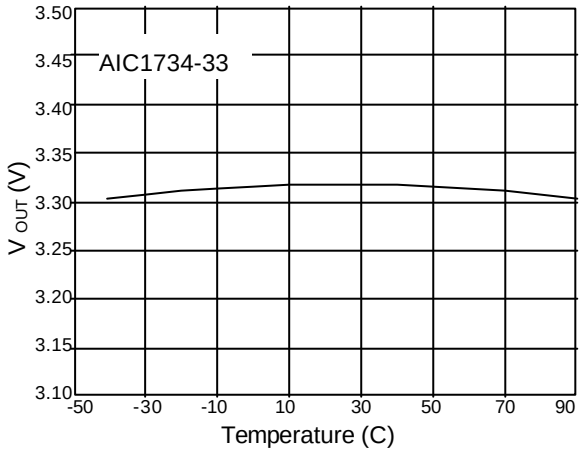
TYPICAL PERFORMANCE CHARACTERISTICS



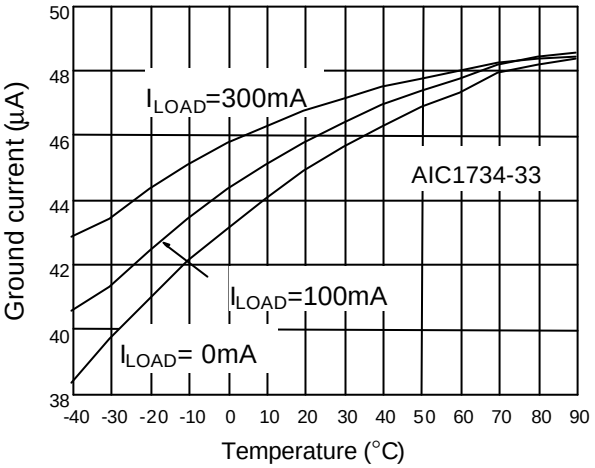
V_{OUT} vs. Temperature



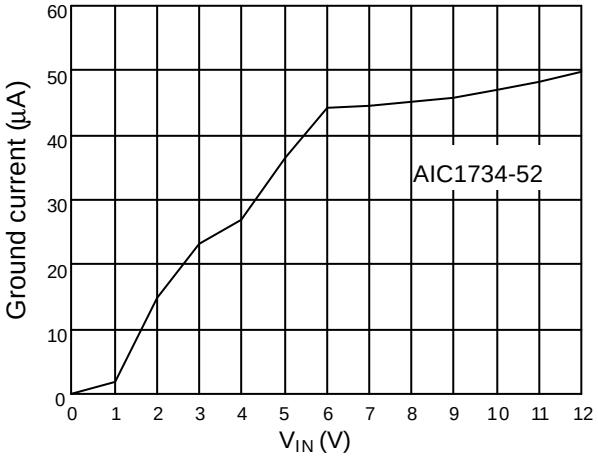
Ground Current vs. Temperature



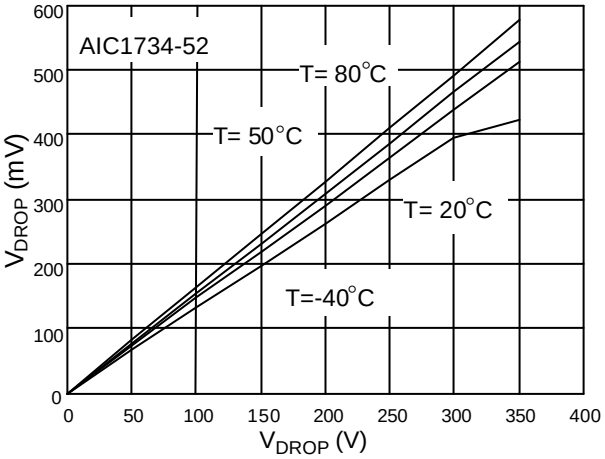
V_{OUT} vs. Temperature



Ground Current vs. Temperature

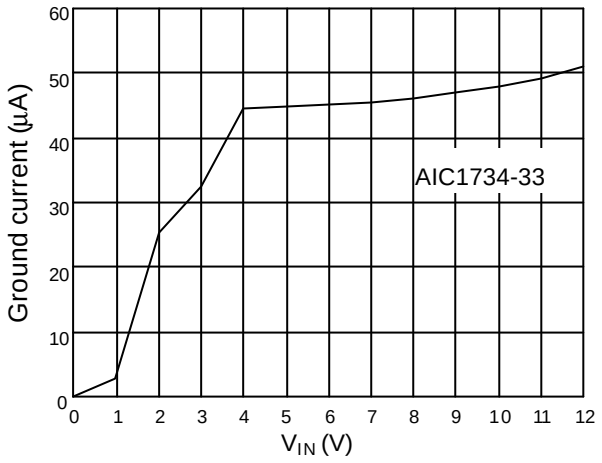


Ground Current vs. V_{IN}

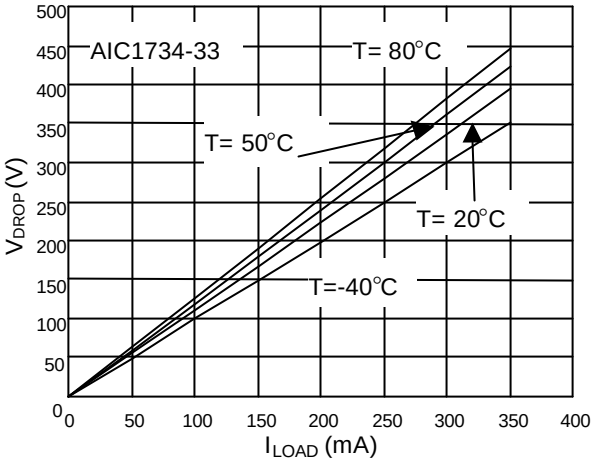


Ground Current vs. V_{IN}

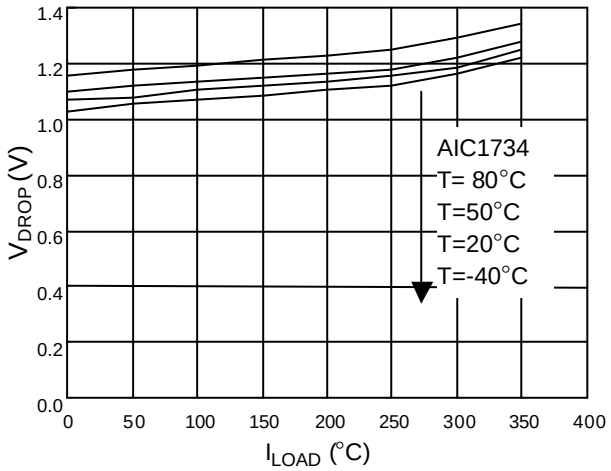
TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



Ground Current vs. V_{IN}

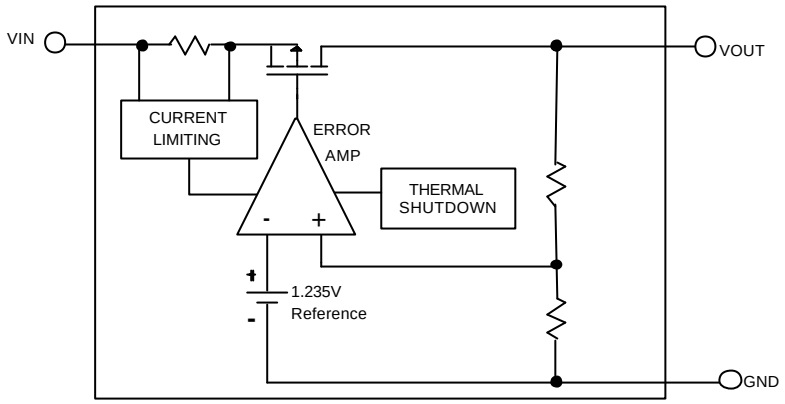


V_{OUT} vs. Temperature



V_{DROP} vs. I_{LOAD}

BLOCK DIAGRAM



PIN DESCRIPTION

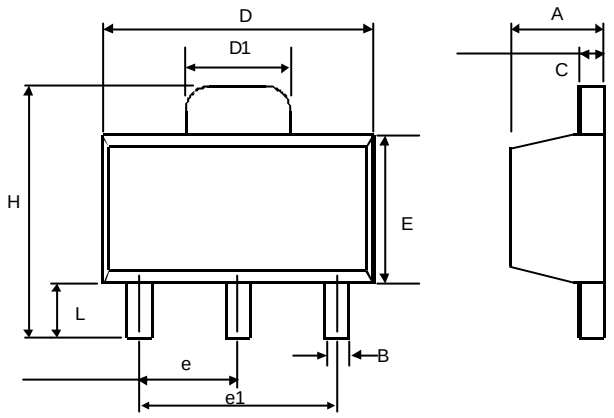
VOUT PIN - Output pin.

GND PIN - Power GND.

VIN PIN - Power Supply Input.

PHYSICAL DIMENSIONS

- **SOT-89 (unit: mm)**

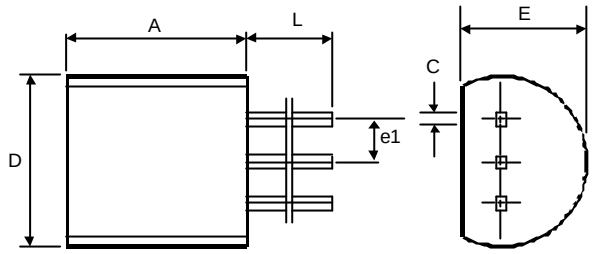


SYMBOL	MIN	MAX
A	1.40	1.60
B	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 (TYP.)	
e1	3.00 (TYP.)	
H	3.94	4.25
L	0.89	1.20

- **SOT-89 MARKING**

Part No.	Marking	Part No.	Marking
AIC1734-18CXA	CA18	AIC1734-18CXT	CB18
AIC1734-20CXA	CA20	AIC1734-20CXT	CB20
AIC1734-25CXA	CA25	AIC1734-25CXT	CB25
AIC1734-27CXA	CA27	AIC1734-27CXT	CB27
AIC1734-30CXA	CA30	AIC1734-30CXT	CB30
AIC1734-33CXA	CA33	AIC1734-33CXT	CB33
AIC1734-35CXA	CA35	AIC1734-35CXT	CB35
AIC1734-37CXA	CA37	AIC1734-37CXT	CB37
AIC1734-38CXA	CA38	AIC1734-38CXT	CB38
AIC1734-50CXA	CA50	AIC1734-50CXT	CB50
AIC1734-52CXA	CA52	AIC1734-52CXT	CB52

- **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	-