500mA Low Dropout Linear Regulator

FEATURES

- Low Dropout Voltage of 650mV at 500mA Output Current (3V Output Version).
- Guaranteed 500mA Output Current.
- Low Ground Current at 65μA.
- 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 4.7μF for Stability.
- Current and Thermal Limiting.

APPLICATIONS

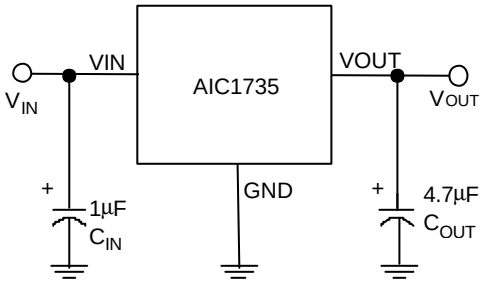
- Voltage Regulator for CD-ROM Drivers.
- Voltage Regulator for LAN Cards.
- Voltage Regulator for Microprocessor.
- Voltage Regulator for RAM Module.
- Wireless Communication Systems.
- Battery Powered Systems.

DESCRIPTION

The AIC1735 is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1735 include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 65 μ A, from no load to maximum loading conditions. Dropout voltage at 100mA output current is exceptionally low. Output current limiting and thermal limiting are built in to provide maximal protection to the AIC1735 against fault conditions.

The AIC1735 comes with the popular SOT-223 and TO-252 packages.

TYPICAL APPLICATION CIRCUIT



Low Dropout Linear Regulator

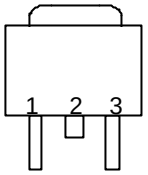
ORDERING INFORMATION

AIC1735-XXCX XX

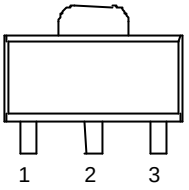
- PACKING TYPE
  - TR: TAPE & REEL
  - TB: TUBE
- PACKAGE TYPE
  - E: TO-252
  - Y: SOT-223
- OUTPUT VOLTAGE
  - 18: 1.8V
  - 20: 2.0V
  - 25: 2.5V
  - 27: 2.7V
  - 30: 3.0V
  - 33: 3.3V
  - 35: 3.5V
  - 37: 3.7V
  - 38: 3.8V
  - 50: 5.0V
  - 52: 5.2V

PIN CONFIGURATION

TO-252 (CE)
TOP VIEW
1: VOUT
2. GND
3. VIN



SOT-223 (CY)
TOP VIEW
1: VOUT
2. GND
3. VIN



Example: AIC1735-18CETR
→ 1.8V Version, in TO-252 Package &
Tape & Reel Packing Type

ABSOLUTE MAXIMUM RATINGS

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

Operating Junction Temperature Range ..... -40°C~ 85°C

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

Thermal Resistance θ_{JC} TO-252 Package ..... 12.5°C/W

SOT-223 Package ..... 15°C/W

TEST CIRCUIT

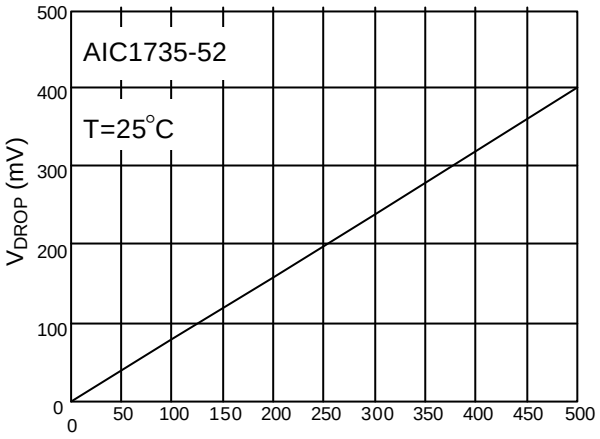
Refer to the TYPICAL APPLICATION CIRCUIT

ELECTRICAL CHARACTERISTICS (T_A=25°C, C_{IN}=1μF, C_{OUT}=4.7μF, unless otherwise specified.)

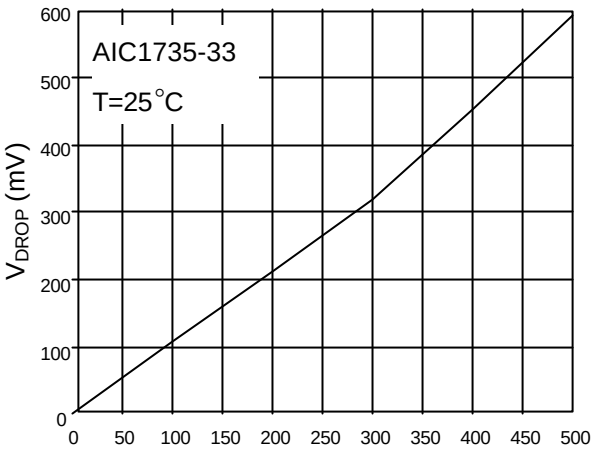
PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Output Voltage	No Load					V
	AIC1735-52	V_{IN}=5.5~12V	5.100	5.200	5.300	
	AIC1735-50	V_{IN}=5.5~12V	4.900	5.000	5.100	
	AIC1735-38	V_{IN}=4.7~12V	3.725	3.800	3.875	
	AIC1735-37	V_{IN}=4.7~12V	3.625	3.700	3.775	
	AIC1735-35	V_{IN}=4.7~12V	3.430	3.500	3.570	
	AIC1735-33	V_{IN}=4.7~12V	3.235	3.300	3.365	
	AIC1735-30	V_{IN}=4.0~12V	2.940	3.000	3.060	
	AIC1735-27	V_{IN}=4.0~12V	2.646	2.700	2.754	
	AIC1735-25	V_{IN}=4.0~12V	2.450	2.500	2.550	
	AIC1735-20	V_{IN}=4.0~12V	1.960	2.000	2.040	
	AIC1735-18	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=0.1~500mA					mV
	1.4V≤V_{OUT}≤3.9V	V_{IN}=5V		10	30	
	4.0V≤V_{OUT}≤5.2V	V_{IN}=7V		20	50	
Current Limit (Note 3)	V_{IN}=7V, V_{OUT}=0V		500			mA
Dropout Voltage (Note 4)	I_L=500mA	4.0V≤V_{OUT}≤5.2V		510		mV
		3.0V≤V_{OUT}≤3.9V		650		
		2.5V≤V_{OUT}≤2.9V		780		
		2.0V≤V_{OUT}≤2.4V		1100		
		1.4V≤V_{OUT}≤1.9V		1400		
Ground Current	I_O=0.1mA~I_{MAX}					μA
	1.4V≤V_{OUT}≤3.9V	V_{IN}=5~12V		65	90	
	4.0V≤V_{OUT}≤5.2V	V_{IN}=7~12V		65	90	

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.

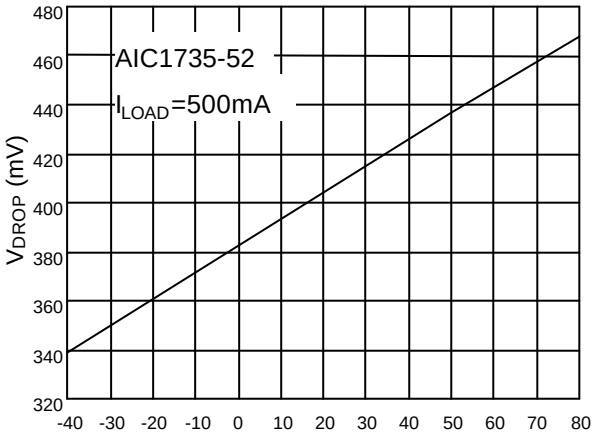
TYPICAL PERFORMANCE CHARACTERISTICS



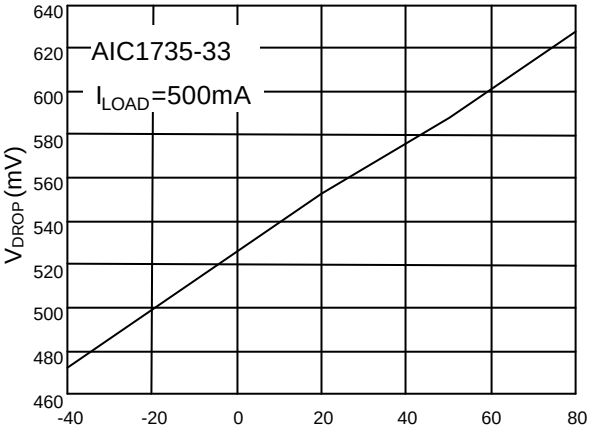
V_{DROP} vs. I_{LOAD}



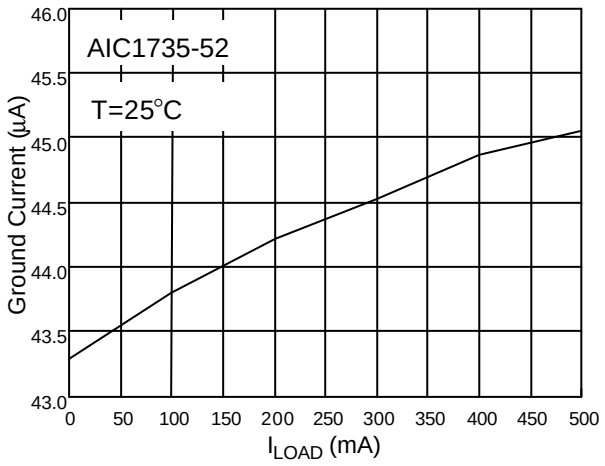
V_{DROP} vs. I_{LOAD}



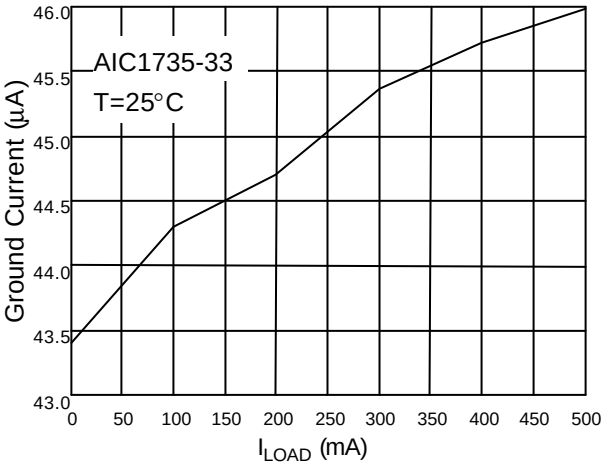
V_{DROP} vs. Temperature



V_{DROP} vs. Temperature

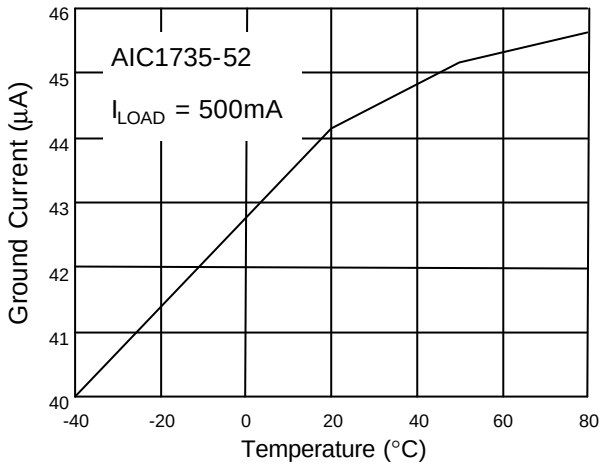


Ground Current vs. I_{LOAD}

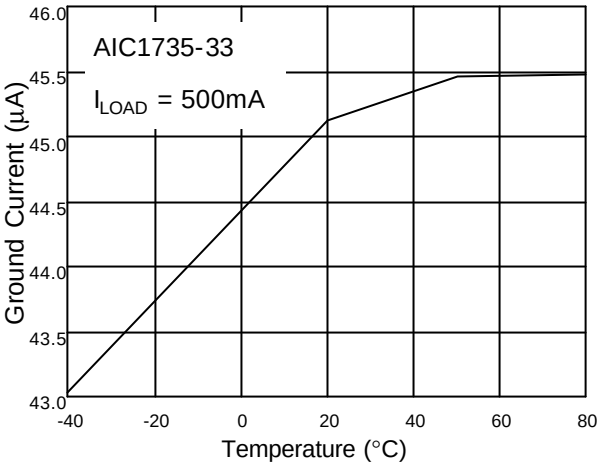


Ground Current vs. I_{LOAD}

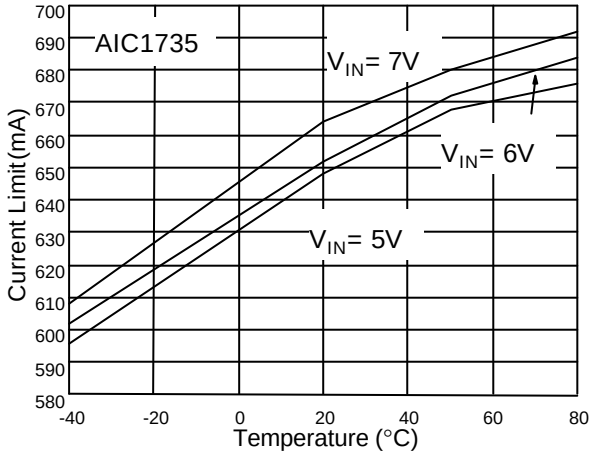
TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



Ground Current vs. Temperature

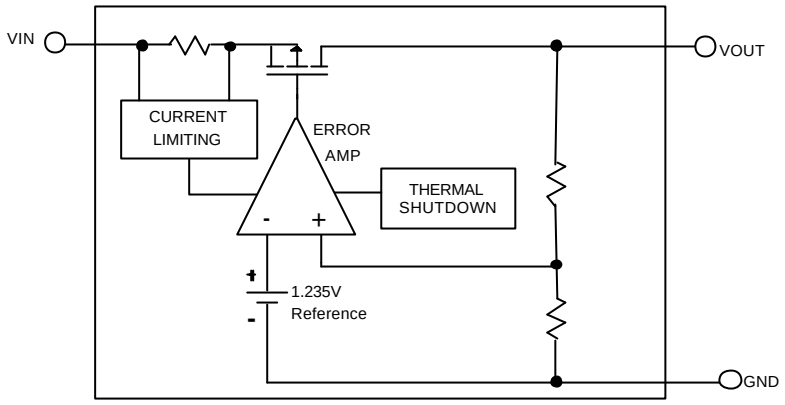


Ground Current vs. Temperature



Current Limit vs. Temperature

BLOCK DIAGRAM



PIN DESCRIPTION

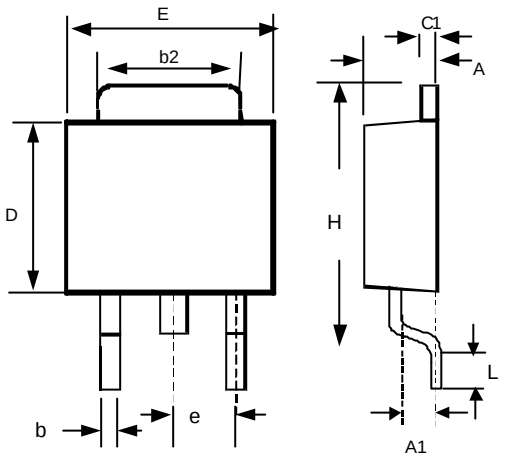
VOUT PIN - Output pin.

GND PIN - Power GND.

VIN PIN - Power Supply Input.

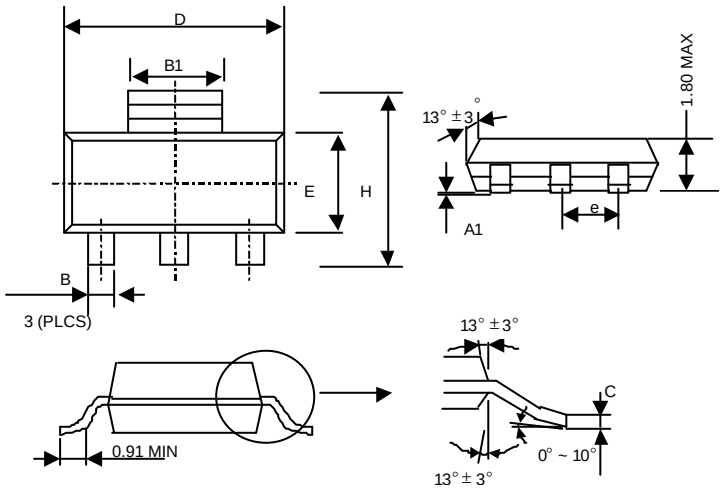
PHYSICAL DIMENSIONS

- **TO-252 (unit: mm)**



SYMBOL	MIN	MAX
A	2.19	2.38
A1	1.02	1.27
b	0.64	0.88
b2	5.21	5.46
C1	0.46	0.58
D	5.33	5.59
E	6.35	6.73
e	2.28 (TYP.)	
H	9.40	10.42
L	0.51	-

- **SOT-223 (unit: mm)**



SYMBOL	MIN	MAX
A1	0.02	0.12
B	0.60	0.80
B1	2.90	3.15
C	0.24	0.35
D	6.30	6.80
E	3.30	3.70
e	2.30 (TYP.)	
H	6.70	7.30

- **SOT-223 MARKING**

Part No.	Marking	Part No.	Marking
AIC1735-18CY	CC18	AIC1735-35CY	CC35
AIC1735-20CY	CC20	AIC1735-37CY	CC37
AIC1735-25CY	CC25	AIC1735-38CY	CC38
AIC1735-27CY	CC27	AIC1735-50CY	CC50
AIC1735-30CY	CC30	AIC1735-52CY	CC52
AIC1735-33CY	CC33		