



## 300mA Low Dropout Linear Regulator

### FEATURES

- Low Dropout Voltage of 470mV at 300mA Output Current (3.0V Output Version).
- Guaranteed 300mA Output Current.
- Maximum Input Voltage is 8V
- Low Ground Current at 55 $\mu$ A.
- 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 1 $\mu$ F for Stability.
- Current and Thermal Limiting.

### APPLICATIONS

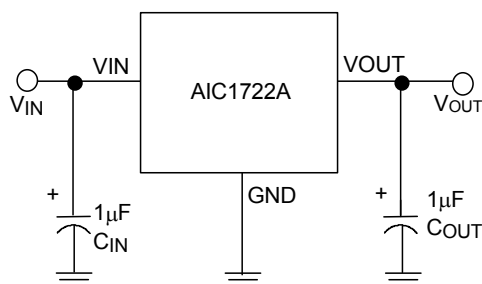
- Voltage Regulator for CD-ROM Drivers.
- Voltage Regulator for LAN Cards.
- Voltage Regulator for Microprocessor.
- Wireless Communication Systems.
- Battery Powered Systems.

### DESCRIPTION

The AIC1722A is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1722A include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 55 $\mu$ A, 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 AIC1722A against fault conditions.

The AIC1722A comes in the popular 3-pin SOT-89, TO-92 and SOT-23 packages.

### TYPICAL APPLICATION CIRCUIT



**Low Dropout Linear Regulator**  
( $C_{IN}$  and  $C_{OUT}$  are electrolytic capacitor)



## ORDERING INFORMATION

AIC1722A-XXXXX XX

PACKING TYPE  
 TR: TAPE & REEL  
 BG: BAG

PACKAGE TYPE  
 U: SOT-23  
 XA: SOT-89  
 XT: SOT-89  
 ZT: TO-92  
 ZL: TO-92

C: Commercial  
 P: Lead Free Commercial

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: AIC1722A-18CXATR  
 → 1.8V Version, in SOT-89 Package & Tape & Reel Packing Type  
 AIC1722A-18PXATR  
 → 1.8V Version, in SOT-89 Lead Free Package & Tape & Reel Packing Type

PIN CONFIGURATION	
SOT-23 (CU & PU) TOP VIEW 1: GND 2: VOUT 3: VIN	
SOT-89 (CXA & PXA) TOP VIEW 1: GND 2: VIN 3: VOUT	
SOT-89 (CXT & PXT) TOP VIEW 1: VOUT 2: GND 3: VIN	
TO-92 (CZT & PZT) TOP VIEW 1: GND 2: VIN 3: VOUT	
TO-92 (CZL & PZL) TOP VIEW 1: VIN 2: GND 3: VOUT	

## SOT-23 MARKING

Part No.	CU	PU	Part No.	CU	PU
AIC1722A-18XU	BN18	BN18P	AIC1722A-35XU	BN35	BN35P
AIC1722A-20XU	BN20	BN20P	AIC1722A-37XU	BN37	BN37P
AIC1722A-25XU	BN25	BN25P	AIC1722A-38XU	BN38	BN38P
AIC1722A-27XU	BN27	BN27P	AIC1722A-50XU	BN50	BN50P
AIC1722A-30XU	BN30	BN30P	AIC1722A-52XU	BN52	BN52P
AIC1722A-33XU	BN33	BN33P			



## ● SOT-89 MARKING

Part No.	CXA	PXA	Part No.	CXT	PXT
AIC1722A-18XXA	AL18	AL18P	AIC1722A-18XXT	BA18	BA18P
AIC1722A-20XXA	AL20	AL20P	AIC1722A-20XXT	BA20	BA20P
AIC1722A-25XXA	AL25	AL25P	AIC1722A-25XXT	BA25	BA25P
AIC1722A-27XXA	AL27	AL27P	AIC1722A-27XXT	BA27	BA27P
AIC1722A-30XXA	AL30	AL30P	AIC1722A-30XXT	BA30	BA30P
AIC1722A-33XXA	AL33	AL33P	AIC1722A-33XXT	BA33	BA33P
AIC1722A-35XXA	AL35	AL35P	AIC1722A-35XXT	BA35	BA35P
AIC1722A-37XXA	AL37	AL37P	AIC1722A-37XXT	BA37	BA37P
AIC1722A-38XXA	AL38	AL38P	AIC1722A-38XXT	BA38	BA38P
AIC1722A-50XXA	AL50	AL50P	AIC1722A-50XXT	BA50	BA50P
AIC1722A-52XXA	AL52	AL52P	AIC1722A-52XXT	BA52	BA52P

## ■ ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage .....	-0.3~8V	
Operating Temperature Range .....	-40°C~ 85°C	
Junction Temperature .....	125°C	
Storage Temperature Range .....	-65°C~150°C	
Lead Temperature (Soldering, 10sec) .....	260°C	
Power Dissipation	SOT-89 Package .....	0.5W
	TO-92 Package .....	0.5W
	SOT-23 Package.....	0.5W

*Absolute Maximum Rating are those value beyond which the life of a device may be impaired.*

## ■ TEST CIRCUIT

Refer to the TYPICAL APPLICATION CIRCUIT



**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ ,  $C_{IN}=1\mu\text{F}$ ,  $C_{OUT}=1\mu\text{F}$ , unless otherwise specified.) (Note 1)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	No Load AIC1722A-52 AIC1722A-50 AIC1722A-38 AIC1722A-37 AIC1722A-35 AIC1722A-33 AIC1722A-30 AIC1722A-27 AIC1722A-25 AIC1722A-20 AIC1722A-18  $V_{IN}=8\text{V}$	-2		+2	%
Line Regulation	$I_L=1\text{mA}$ , $1.4\text{V}\leq V_{OUT}\leq 3.2\text{V}$ $V_{IN}=4\text{V}\sim 8\text{V}$ $3.3\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $V_{IN}=5.5\text{V}\sim 8\text{V}$		3 3	10 15	mV
Load Regulation (Note 2)	$I_L=0.1\sim 300\text{mA}$ $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$ $V_{IN}=5\text{V}$ $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $V_{IN}=7\text{V}$		7 15	20 40	mV
Current Limit (Note 3)	$V_{IN}=7\text{V}$ , $V_{OUT}=0\text{V}$	300			mA
Dropout Voltage (Note 4)	$I_L=300\text{mA}$ $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $3.0\text{V}\leq V_{OUT}\leq 3.9\text{V}$ $2.5\text{V}\leq V_{OUT}\leq 2.9\text{V}$ $2.0\text{V}\leq V_{OUT}\leq 2.4\text{V}$ $1.4\text{V}\leq V_{OUT}\leq 1.9\text{V}$		400 470 570 800 1260		mV
Ground Current	$I_O=0.1\text{mA}\sim I_{MAX}$ $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$ $V_{IN}=5\sim 8\text{V}$ $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $V_{IN}=7\sim 8\text{V}$		55 55	80 80	$\mu\text{A}$

Note 1: Specifications are production tested at  $T_A=25^\circ\text{C}$ . Specifications over the  $-40^\circ\text{C}$  to  $85^\circ\text{C}$  operating temperature range are assured by design, characterization and correlation with Statistical Quality Controls (SQC).

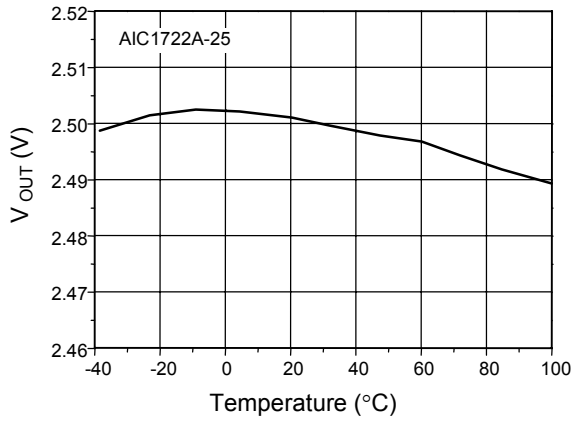
Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.

Note 3: Current limit is measured by pulsing a short time.

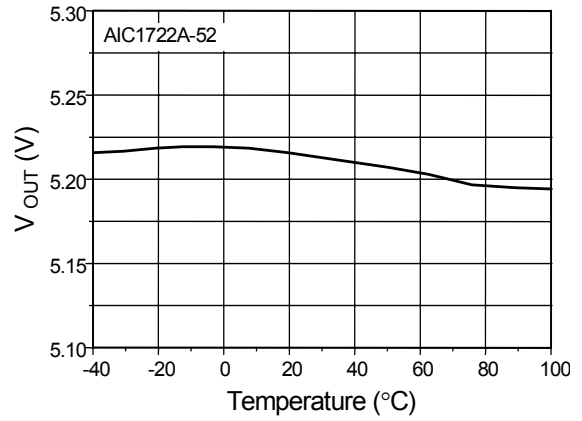
Note 4: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV below the value measured with a 1V differential.



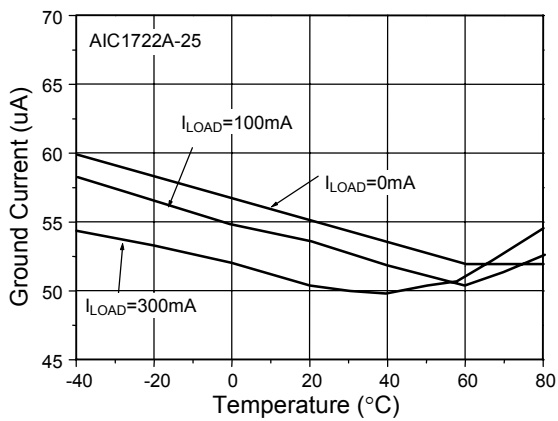
### TYPICAL PERFORMANCE CHARACTERISTICS



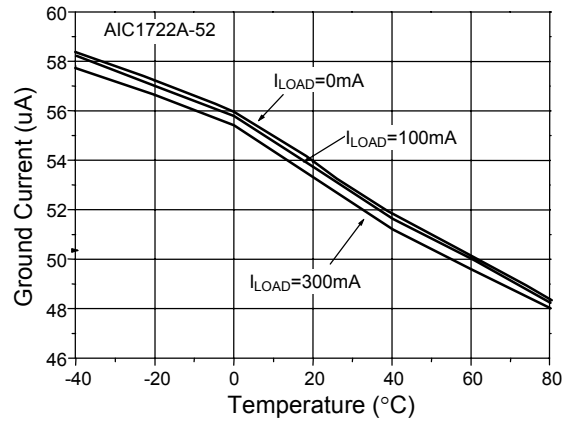
$V_{OUT}$  vs. Temperature



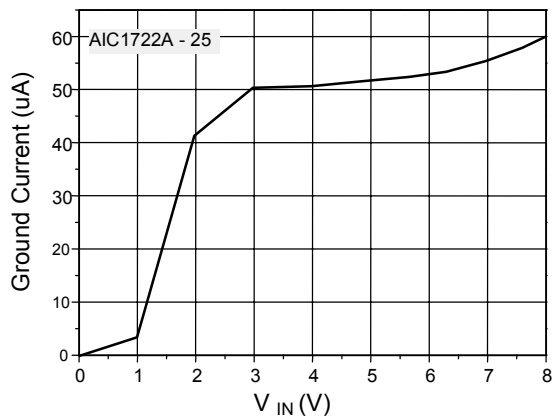
$V_{OUT}$  vs. Temperature



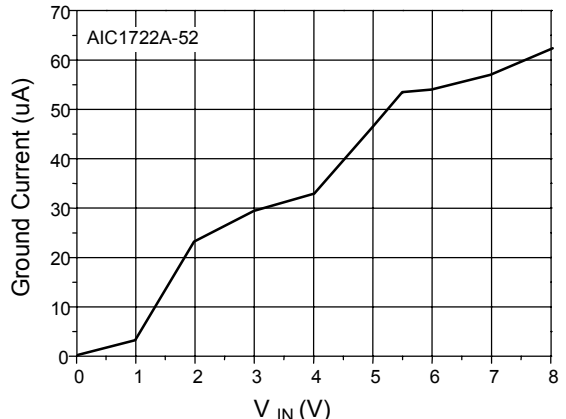
Ground Current vs. Temperature



Ground Current vs. Temperature



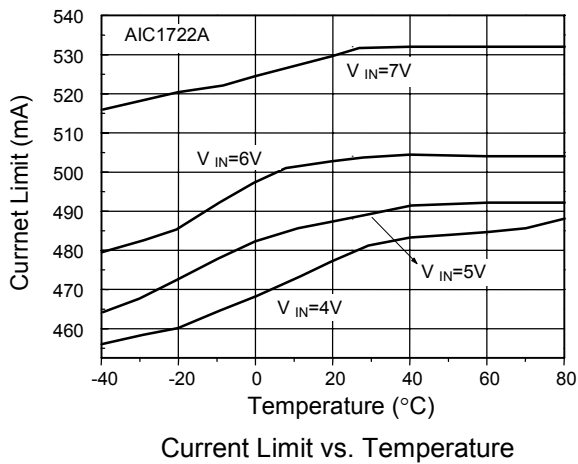
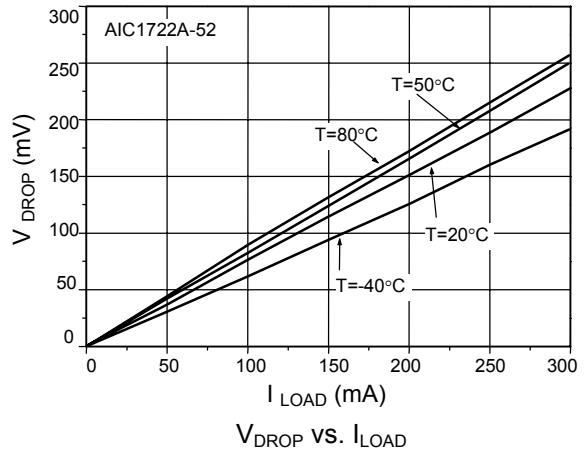
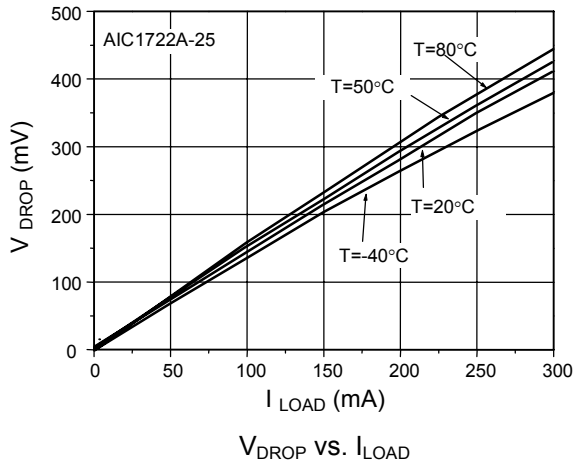
Ground Current vs.  $V_{IN}$



Ground Current vs.  $V_{IN}$

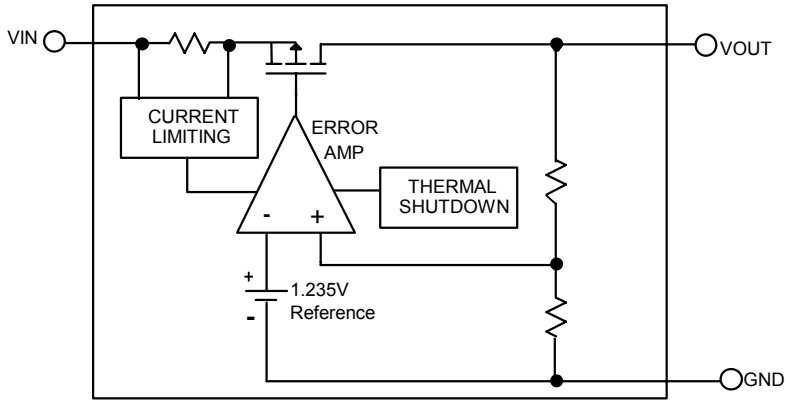


■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)





### ■ BLOCK DIAGRAM



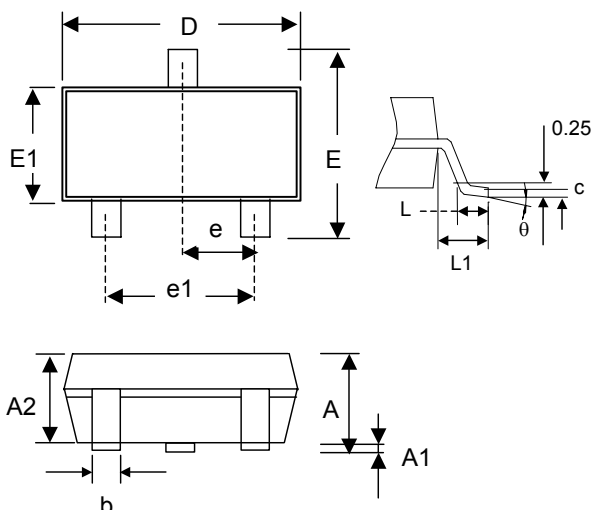
### ■ PIN DESCRIPTIONS

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



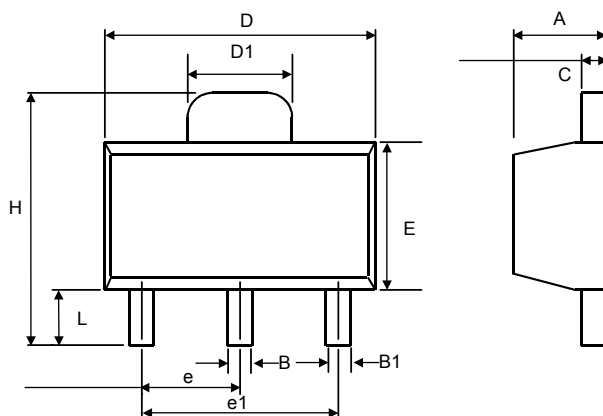
■ PHYSICAL DIMENSIONS (unit: mm)

● SOT-23 (CU) (PU)



SYMBOL	MIN	MAX
A	0.95	1.45
A1	0.05	0.15
A2	0.90	1.30
b	0.30	0.50
c	0.08	0.22
D	2.80	3.00
E	2.60	3.00
E1	1.50	1.70
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60
L1	0.60 REF	
$\theta$	0°	8°

● SOT-89 (CXX) (PXX)

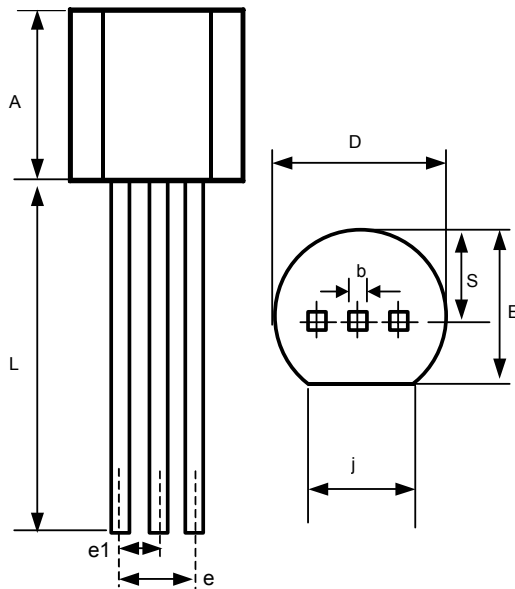


SYMBOL	MIN	MAX
A	1.40	1.60
B	0.44	0.56
B1	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.50	1.83
E	2.29	2.60
e	1.50 BSC	
e1	3.00 BSC	
H	3.94	4.25
L	0.89	1.20





● TO-92 (CZ)(PZ)



SYMBOL	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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