



AIC1085

3A LOW DROPOUT POSITIVE ADJUSTABLE REGULATOR

SPEC NO: DS-1085-01 FEB 02, 01

FEATURES

- Dropout Voltage 1.3V at 3A Output Current.
- Fast Transient Response.
- Extremely Tight Line and Load Regulation.
- Internal Thermal and Current Limiting.
- Adjustable Output Voltage or Fixed 1.5V, 1.8V, 3.3V.
- Standard 3-Pin Power Packages.

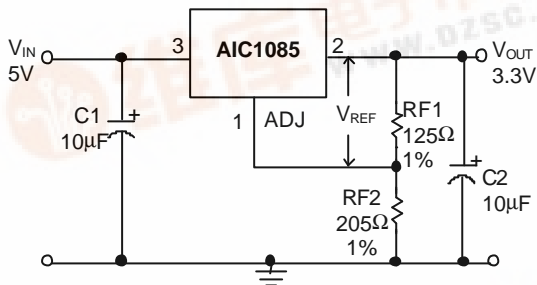
APPLICATIONS

- Mother Board I/O Power Supplies.
- Microprocessor Power Supplies.
- High Current Regulator.
- Post Regulator for Switching Supply.

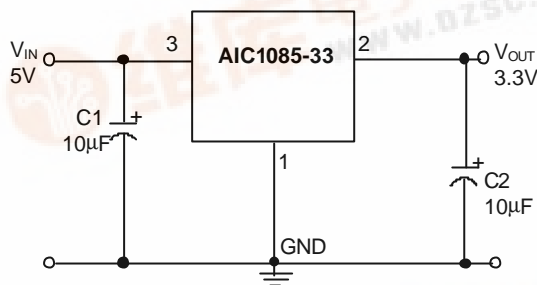
DESCRIPTION

The AIC1085 is a low dropout three terminal regulator with 3A output current capability. The output voltage is adjustable with the use of a resistor divider or fixed 1.5V, 1.8V, and 3.3V. Dropout is guaranteed at a maximum of 1.4V at maximum output current. Its low dropout voltage and fast transient response make it ideal for low voltage microprocessor applications. Internal current and thermal limiting provides protection against any overload condition that would create excessive junction temperatures.

TYPICAL APPLICATION CIRCUIT



Adjustable Voltage Regulator



Fixed Voltage Regulator

$$V_{REF} = V_{OUT} - V_{ADJ} = 1.25V \text{ (typ.)}$$

$$V_{OUT} = V_{REF} \times (1 + RF2/RF1) + I_{ADJ} \times RF2$$

$$I_{ADJ} = 55\mu A \text{ (typ.)}$$

- (1) C1 needed if device is far away from filter capacitors.
- (2) C2 required for stability.





ORDERING INFORMATION

AIC1085-XXXX

PACKAGING TYPE
 E: TO-252
 M: TO-263
 T: TO-220

TEMPERATURE RANGE
 C: 0°C~70°C

OUTPUT VOLTAGE
 DEFAULT: ADJ.
 15: 1.5V
 18: 1.8V
 33: 3.3V

ORDER NUMBER	PIN CONFIGURATION	
AIC1085CE (TO-252)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN	
AIC1085CM (TO-263)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN	
AIC1085CT (TO-220)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN	

ABSOLUTE MAXIMUM RATINGS

- Vin pin to ADJ/ GND pin 7V
- Operating Junction Temperature Range 0°C~ 125°C
- Storage Temperature Range - 65°C ~ 150°C
- Thermal Resistance Junction to Case TO-252 15°C/W
 TO-263, TO-220 6°C /W
- Thermal Resistance Junction to Ambient TO-252 100°C/W
 (Assume no ambient airflow, no heatsink) TO-263 60°C /W
 TO-220 50°C /W
- Lead Temperature (Soldering) 10 sec.260°C

TEST CIRCUIT

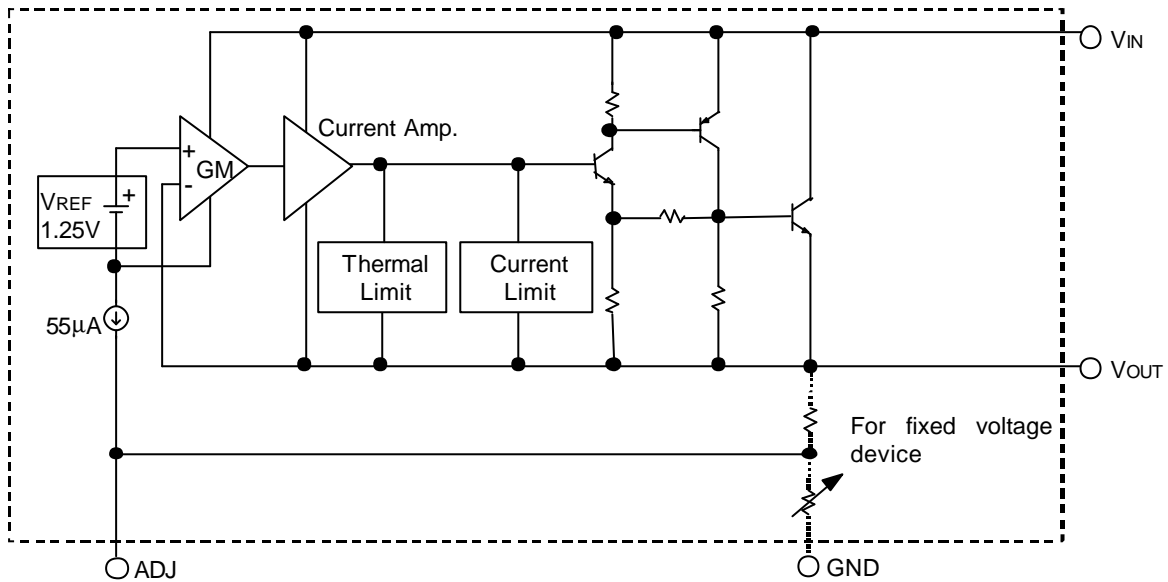
Refer to TYPICAL APPLICATION CIRCUIT.

**ELECTRICAL CHARACTERISTICS** ($V_{IN}=5V$, $T_A=25^\circ C$, $I_O=10mA$, Unless otherwise specified)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Reference Voltage ($V_{OUT}-V_{ADJ}$)	AIC1085 (Adj.) $T_A=25^\circ C$	1.238	1.25	1.262	V
Output Voltage	AIC1085-15 $V_{IN}=5V$ AIC1085-18 $V_{IN}=5V$ AIC1085-33 $V_{IN}=5V$	1.48 1.78 3.26	1.50 1.80 3.30	1.52 1.82 3.34	V
Line Regulation	Adj : $2.75V \leq V_{IN} \leq 5.25V$ Fix : $V_{OUT}+1V \leq V_{IN} \leq 7V$ $T_A=25^\circ C$		0.015	0.2	%
Load Regulation	$10mA < I_O < 3A$ $T_A=25^\circ C$			0.6	%
Dropout Voltage	$\Delta V_{OUT}, \Delta V_{REF}=1\%$ $10mA \leq I_O \leq 3A$ $0^\circ C \leq T_J \leq 125^\circ C$		1.3	1.4	V
Current Limit	$V_{IN} = 5V$ $0^\circ C \leq T_J \leq 125^\circ C$	3	4		A
Adjusted Pin Current (I_{ADJ})	$2.75V \leq V_{IN} \leq 7V$		55	120	μA
Adjusted Pin Current Change (ΔI_{ADJ})	$2.75V \leq V_{IN} \leq 7V$ $0^\circ C \leq T_J \leq 125^\circ C$		0.2	5	μA
Temperature Stability	$I_O=0.5A$ $0^\circ C \leq T_J \leq 125^\circ C$		0.5		%
Minimum Load Current	$0^\circ C \leq T_J \leq 125^\circ C$		5	10	mA
RMS Output Noise (% of V_{OUT})	$10Hz \leq f \leq 10KHz$		0.003		%
Ripple Rejection Ratio	120Hz input ripple $C_{OUT}=25\mu F$ $(V_{IN}-V_{OUT})=3V$	60	72		dB



■ BLOCK DIAGRAM



■ PIN DESCRIPTIONS

ADJ PIN - Providing $V_{REF}=1.25V$ (typ.) for adjustable V_{OUT} . $V_{REF}=V_{OUT}-V_{ADJ}$ and $I_{ADJ}=55\mu A$ (typ.)

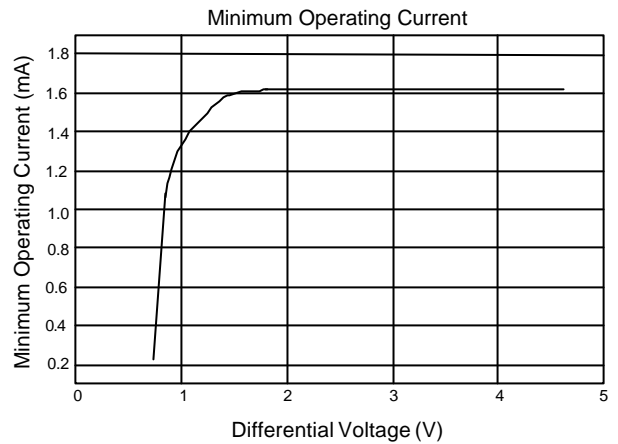
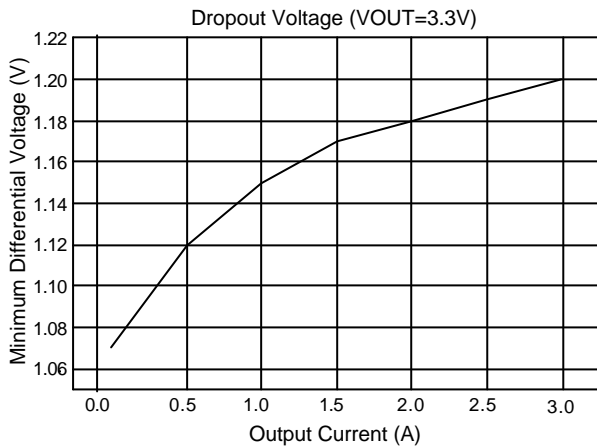
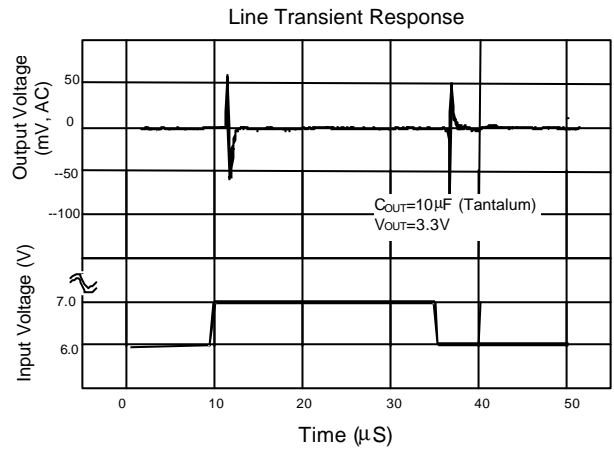
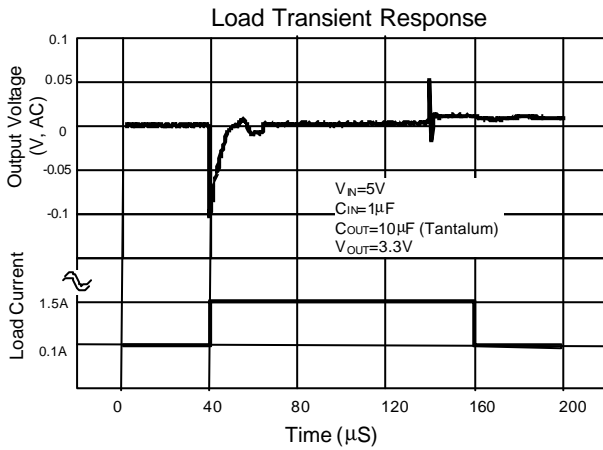
VOUT PIN - Adjustable output voltage.

VIN PIN - Power Input.

(GND PIN - Power Ground.)



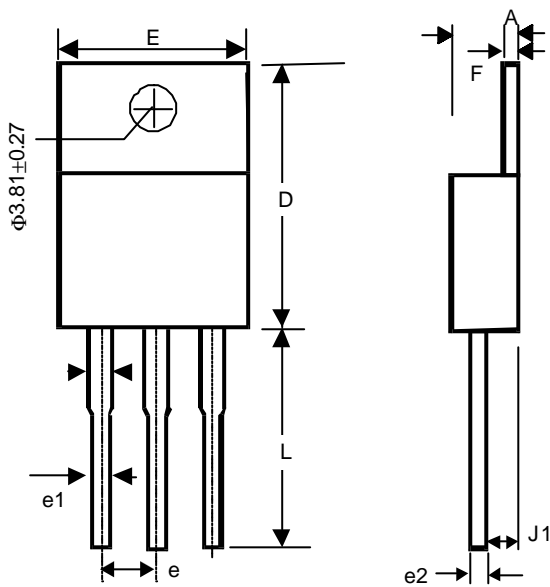
TYPICAL PERFORMANCE CHARACTERISTICS





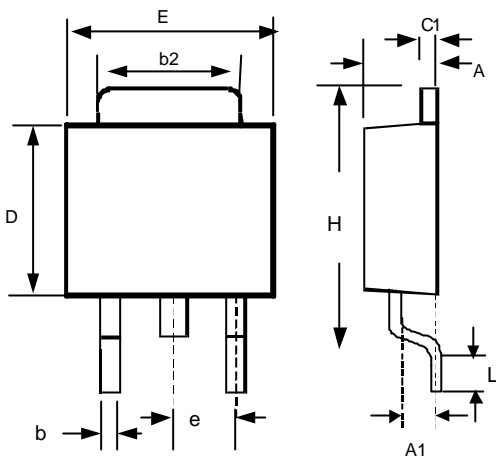
PHYSICAL DIMENSIONS

● TO-220 (unit: mm)



SYMBOL	MIN	MAX
A	3.56	4.82
D	14.23	16.51
E	9.66	10.66
e	2.29	2.79
e1	0.50	1.15
e2	-	1.10
F	0.51	1.39
J1	2.04	2.92
L	12.70	14.73

● 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	-

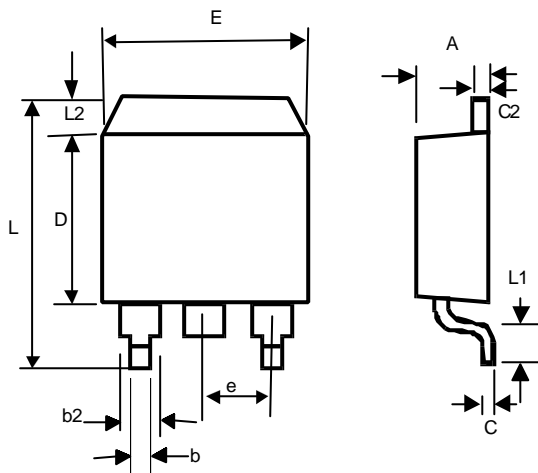


AIC1085

3A LOW DROPOUT POSITIVE ADJUSTABLE REGULATOR

SPEC NO: DS-1085-01 FEB 02, 01

- TO-263 (unit: mm)



SYMBOL	MIN	MAX
A	4.06	4.83
b	0.50	1.00
b2	1.14	1.40
C	-	0.7
c2	1.14	1.40
D	8.63	9.66
E	9.65	10.29
e	2.54 (TYP.)	
L	14.60	15.88
L1	2.28	2.80
L2	-	1.40

UNIT: mm