3A Low Dropout Positive Regulator

FEATURES

- Dropout Voltage 1.3V at 3A Output Current.
- Fast Transient Response.
- Extremely Tight Line and Load Regulation.
- Current Limiting and Thermal Protection.
- Adjustable Output Voltage or Fixed 1.5V, 1.8V, 2.5V and 3.3V.
- Standard 3-Pin Power Packages.

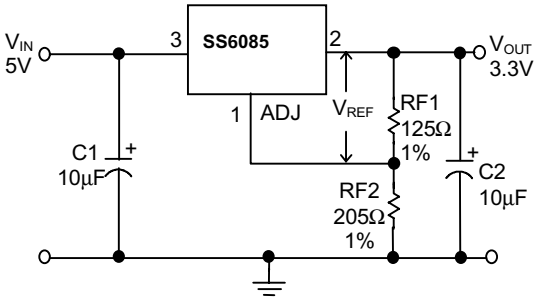
APPLICATIONS

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

DESCRIPTION

The SS6085 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, 2.5V and 3.3V. Dropout voltage is guaranteed to be at a maximum of 1.4V with the maximum output current. Its low dropout voltage and fast transient response make it ideal for low voltage microprocessor applications. Current limiting and thermal protection provides protection against any overload condition that would create excessive junction temperatures.

TYPICAL APPLICATION CIRCUIT



Adjustable Voltage Regulator

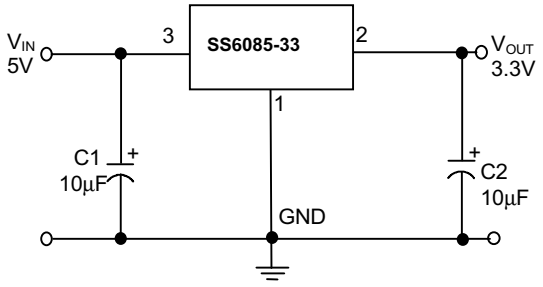
$$V_{REF} = V_{OUT} - V_{ADJ} = 1.25V \text{ (typ.)}$$

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

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

(1) C1 needed if device is far away from filter capacitors.

(2) C2 required for stability.



Fixed Voltage Regulator

ORDERING INFORMATION

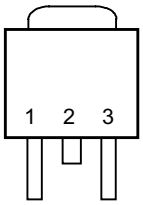
SS6085-XXCXXX

- PACKING TYPE
  TR: TAPE & REEL
  TB: TUBE
- PACKAGING TYPE
  E: TO-252
  M: TO-263
  T: TO-220
- OUTPUT VOLTAGE
  DEFAULT: ADJUSTABLE
  15: 1.5V
  18: 1.8V
  25: 2.5V
  33: 3.3V

Example: **SS6085-15CETR**
→ 1.5V version in TO-252 Package
& Taping & Reel Packing Type

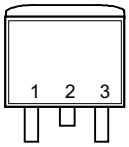
PIN CONFIGURATION

TO-252
TOP VIEW



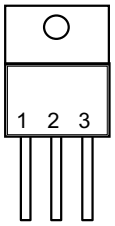
1: ADJ (GND)
2: VOUT (TAB)
3: VIN

TO-263
TOP VIEW



1: ADJ (GND)
2: VOUT (TAB)
3: VIN

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	12.5°C/W
	TO-263, TO-220	3°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

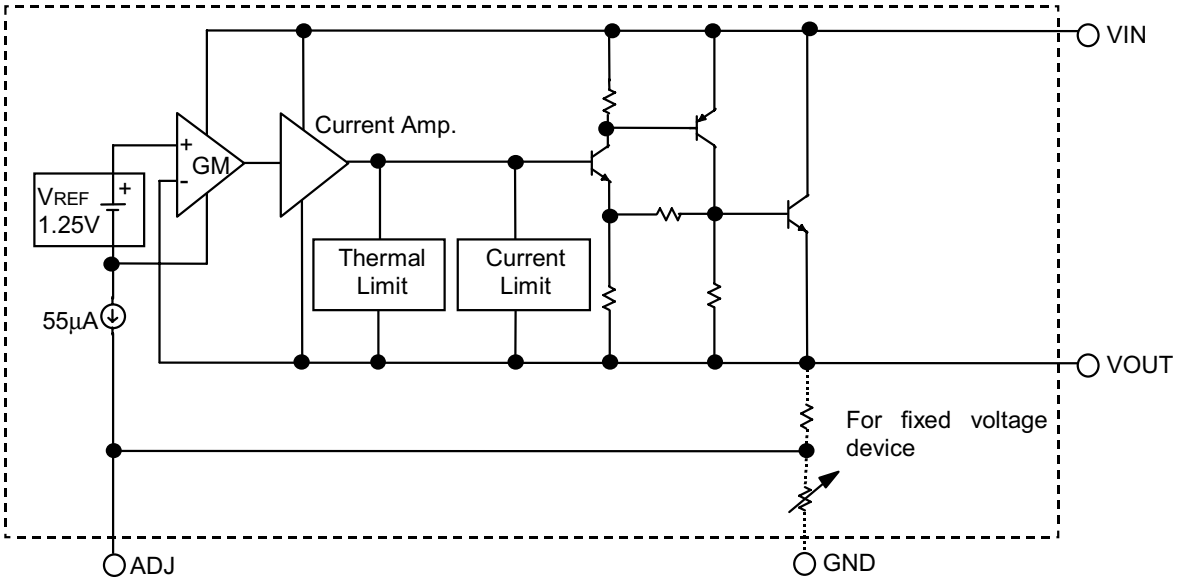
TEST CIRCUIT

Refer to TYPICAL APPLICATION CIRCUIT.

ELECTRICAL CHARACTERISTICS (V_{IN}=5V, T_J=25°C, I_O=10mA, Unless otherwise specified)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Reference Voltage (V_{OUT} -V_{ADJ})	SS6085 (ADJ) T_J=25°C	1.238	1.25	1.262	V
Output Voltage	SS6085-15, V_{IN}=5V SS6085-18, V_{IN}=5V SS6085-25, V_{IN}=5V SS6085-33, V_{IN}=5V	1.48 1.78 2.47 3.26	1.50 1.80 2.50 3.30	1.52 1.82 2.53 3.34	V
Line Regulation	ADJ: 2.65V≤ V_{IN} ≤7V, V_{OUT}=1.25V Fix : V_{OUT}+1.4V≤ V_{IN} ≤7V, T_J=25°C		0.015	0.2	%
Load Regulation	10mA < I_O < 3A T_J=25°C			0.6	%
Dropout Voltage	ΔV_{OUT}, ΔV_{REF}=1% 10mA ≤ I_O ≤3A 0°C ≤T_J ≤125°C		1.3	1.4	V
Current Limit	0°C ≤T_J ≤125°C	3	4		A
Adjusted Pin Current (I_{ADJ})	2.65V ≤ V_{IN} ≤ 7V		55	120	µA
Adjusted Pin Current Change (ΔI_{ADJ})	2.65V ≤ V_{IN} ≤ 7V 0°C ≤T_J≤125°C		0.2	5	µA
Temperature Stability	I_O=0.5A 0°C ≤T_J≤125°C		0.5		%
Minimum Load Current	0°C ≤T_J ≤125°C		5	10	mA
RMS Output Noise (% of V_{OUT})	10Hz ≤ f ≤ 10KHz		0.003		%
Ripple Rejection Ratio	120Hz input ripple C_{OUT}=25µF (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}=55µA (typ.)

GND PIN -Power Ground.

VOUT PIN - Adjustable output voltage.

VIN PIN - Power Input.

TYPICAL PERFORMANCE CHARACTERISTICS

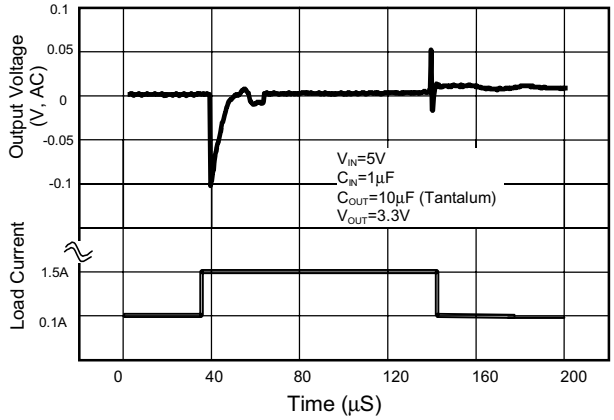


Fig. 1 Load Transient Response

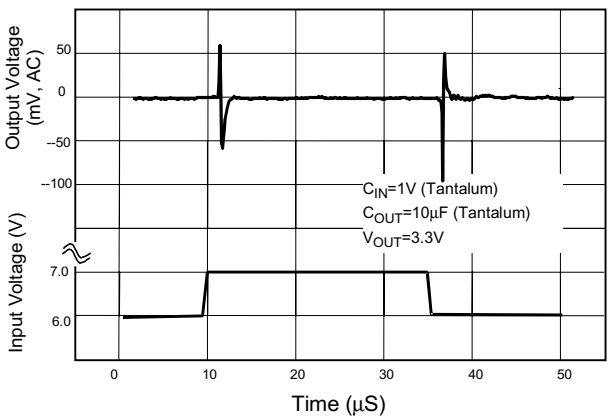


Fig. 2 Line Transient Response

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

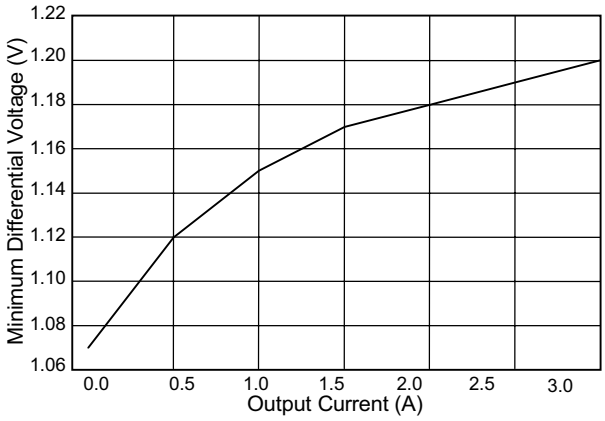


Fig. 3 Dropout Voltage (V_{OUT}=3.3V)

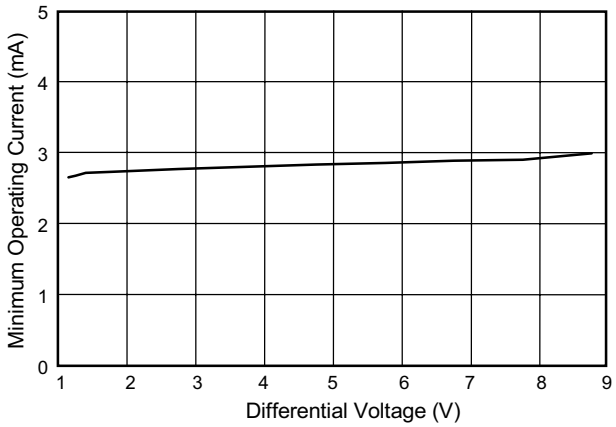
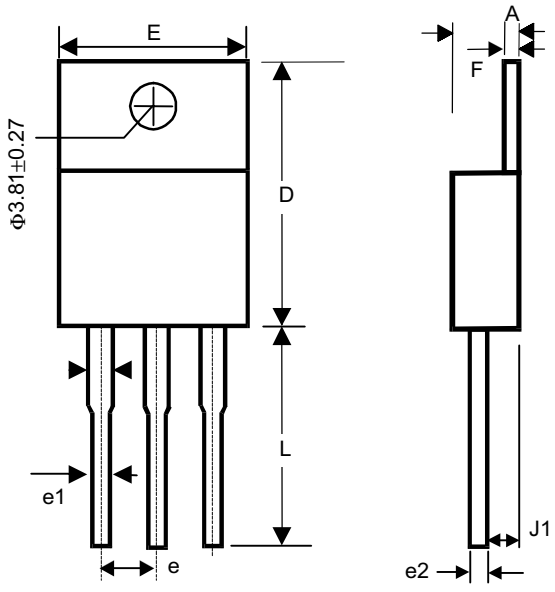


Fig. 4 Minimum Operating Current

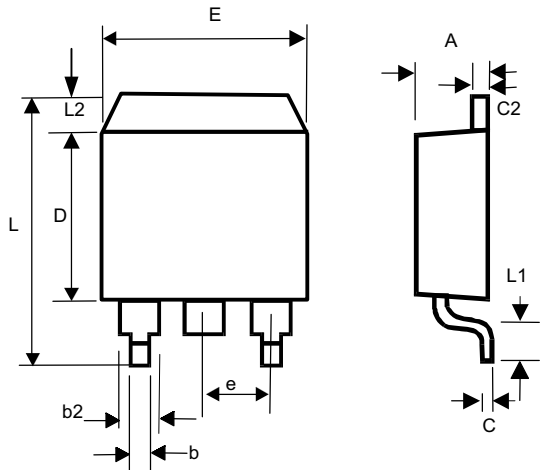
PHYSICAL DIMENSIONS

- **TO-220 (unit: mm)**



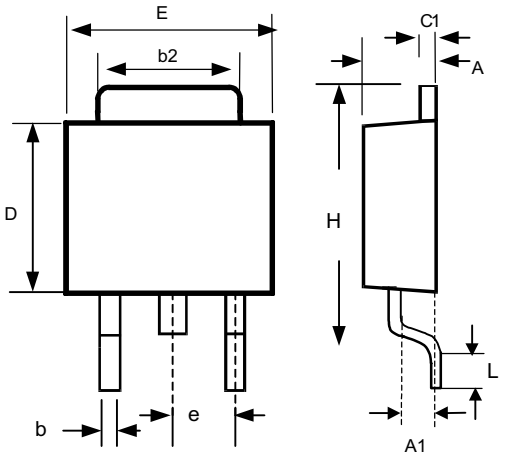
SYMBOL	MIN	MAX
A	3.56	4.82
D	14.23	16.51
E	9.66	10.66
e	2.29	2.79
e1	0.50	1.15
e2	-	1.10
F	0.51	1.39
J1	2.04	2.92
L	12.70	14.73

- **TO-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

- **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	-

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