



TS1083

7.5A Low Dropout Positive Voltage Regulator

TO-220



- Pin assignment:
1. Ground / Adj
 2. Output
 3. Input

Low Dropout Voltage 1.5V max.

General Description

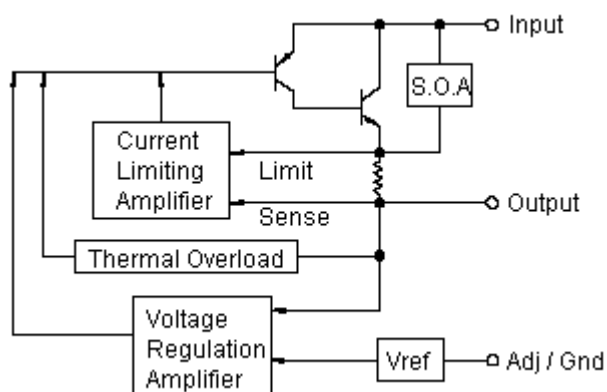
The TS1083 are high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the TS1083 provides excellent regulation over variations due to changes in line, load and temperature. Outstanding features include low dropout performance at rated current, fast transient response, internal current limiting and thermal shutdown protection of the output device. The TS1083 Series are three terminal regulators with fixed and adjustable voltage options available in popular packages.

This item is offered in 3-pin TO-220 package.

Features

- ✧ Low dropout performance 1.5V max.
- ✧ Full current rating over line and temperature.
- ✧ Fast transient response
- ✧ $\pm 2\%$ Total output regulation over line, load and temperature
- ✧ Adjust pin current max $90 \mu A$ over temperature
- ✧ Line regulation typical 0.015%.
- ✧ Load regulation typical 0.05%.
- ✧ Fixed/adjustable output voltage
- ✧ TO-220 package

Block Diagram



Ordering Information

Part No.	Operating Temp.	Package
TS1083CZ	0 ~ +125 °C	TO-220

Absolute Maximum Rating

Input Supply Voltage	V _{in}	30	V
Operation Input Supply Voltage	V _{in} (operate)	20	V
Power Dissipation	P _D	Internally Limited	W
Operating Junction Temperature Range	T _J	0 ~ +125	°C
Storage Temperature Range	T _{STG}	-65 ~ +150	°C
Lead Soldering Temperature (260 °C)			
TO-220		10	S



Electrical Characteristics					
Ta = 25 °C, unless otherwise specified. Adjustable version test with Vout = 2.5V.					
Parameter	Conditions	Min	Typ	Max	Unit
Reference Voltage	(Vin-out) = 1.5V, Io=7.5A	1.225	1.25	1.275	V
Input Supply Voltage		--	--	30	V
Line Regulation	Vout+1.5V ≤ Vin ≤ 20V, Io=10mA	--	0.015	0.2	%
Load Regulation (note 1,2)	Vin=Vout+1.5V, 10mA ≤ Io ≤ 7.5A	--	0.05	1.0	%
Dropout Voltage	Io=5A, ΔVout=0.1%Vout	--	1.3	1.5	V
Minimum Load Current	Vin=5V	--	8	10	mA
Adjustable Pin Current		--	90	--	uA
Current Limit	Vin - Vout=3V	5.5	--	--	A
Temperature Stability	Io=10mA	--	0.5	--	%
Ripple Rejection	F = 120Hz, Io=5A Cout=25uF, Vin=Vout + 3V	--	60	70	dB

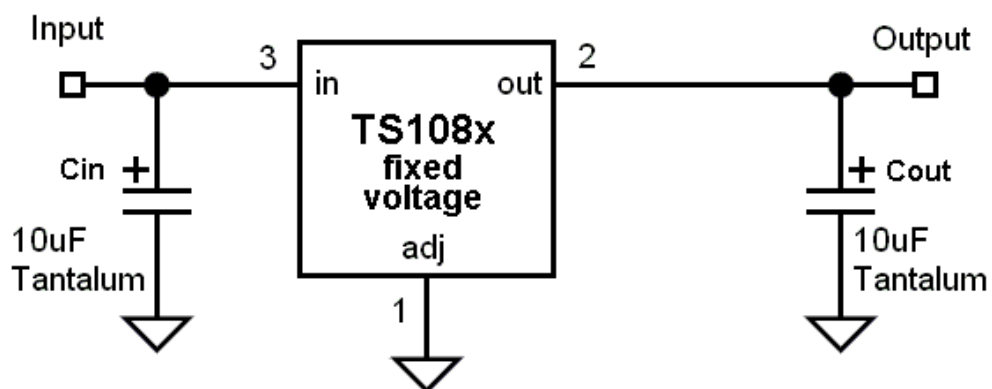
Thermal Performance			
Condition	Package type	Typ	Unit
Thermal Resistance Junction to Ambient	TO-220	80	°C/W

Note 1: See thermal regulation specification for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.

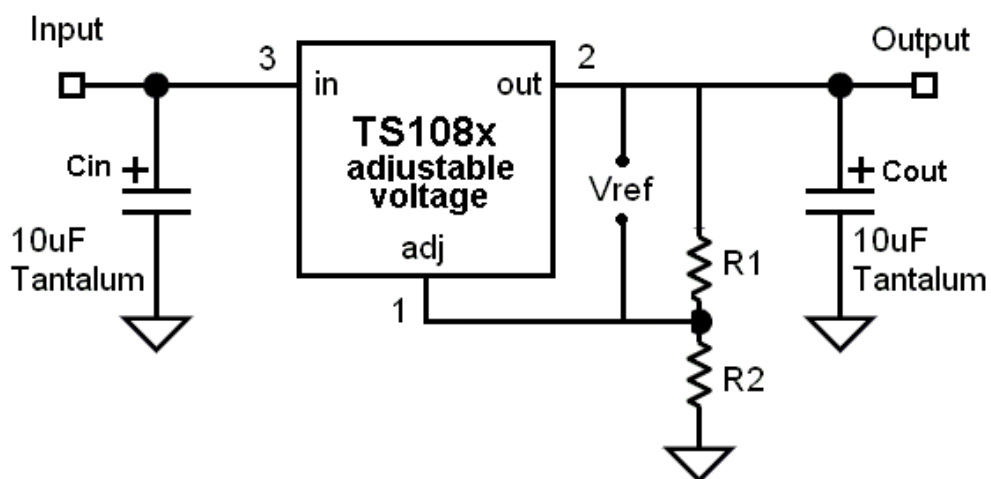
Note 2: Line and load regulation are guaranteed up to the maximum power dissipation of 15W. Power dissipation is determined by the input / output voltage difference and the output current. Guaranteed maximum power dissipation will not be available over the full input / output voltage range.

Note 3: Quiescent current is defined as the minimum output current required to maintain the regulation.

Typical Application Circuit



Fixed output voltage version



$$V_{out} = V_{ref} * (1 + R2 / R1)$$

* C_{in} is requested if regulator is located Far from power supply filter

** Design C_{out} as close to V_{out} pin as possible

Adjustable output voltage version

Electrical Characteristics Curve

Figure 1: Dropout Voltage v.s. Output Current

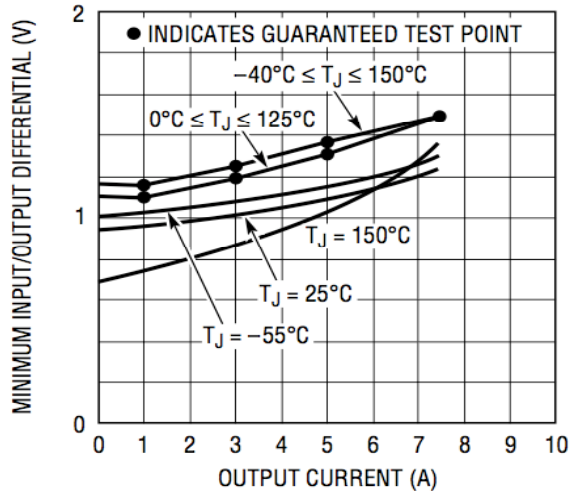


Figure 2: Load regulation v.s. Temp.

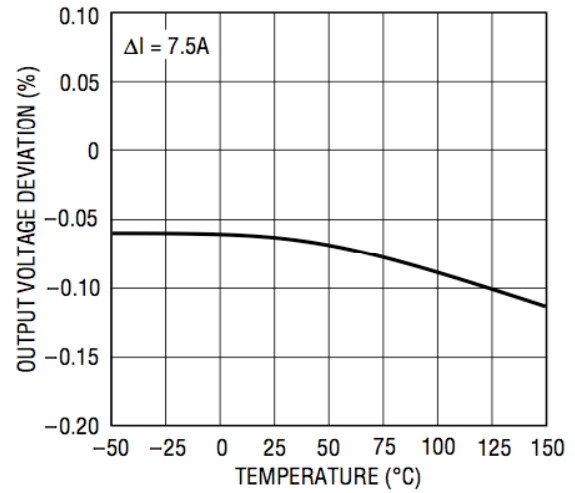
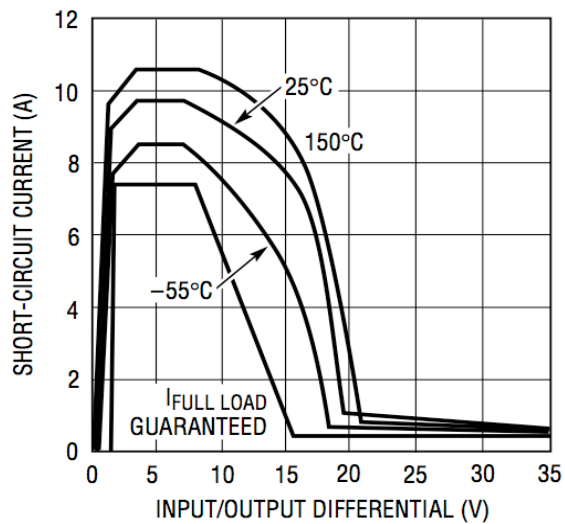
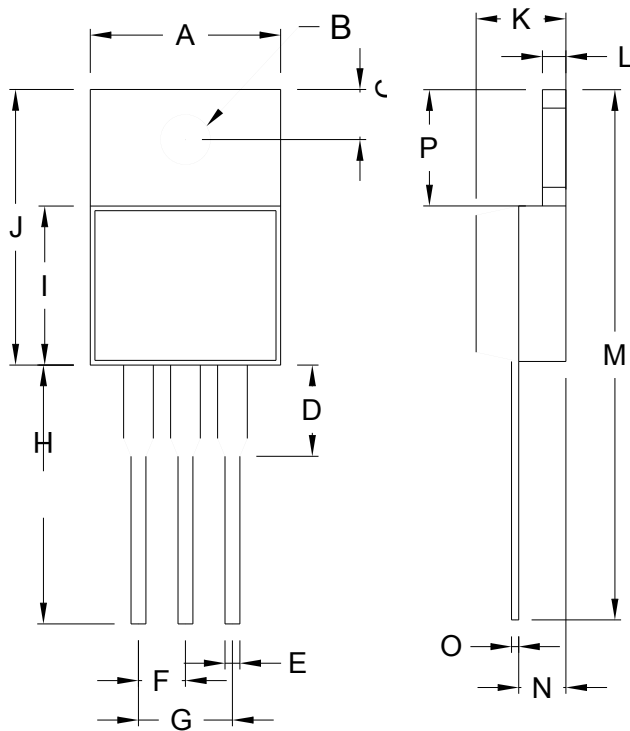


Figure 3: Short-Circuit Current



TO-220 Mechanical Drawing



TO-220 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.000	10.500	0.394	0.413
B	3.240	4.440	0.128	0.175
C	2.440	2.940	0.096	0.116
D	-	6.350	-	0.250
E	0.381	1.106	0.015	0.040
F	2.345	2.715	0.092	0.058
G	4.690	5.430	0.092	0.107
H	12.700	14.732	0.500	0.581
I	8.382	9.017	0.330	0.355
J	14.224	16.510	0.560	0.650
K	3.556	4.826	0.140	0.190
L	0.508	1.397	0.020	0.055
M	27.700	29.620	1.060	1.230
N	2.032	2.921	0.080	0.115
O	0.255	0.610	0.010	0.024
P	5.842	6.858	0.230	0.270