

1A Low Dropout Positive Voltage Regulator

Absolute Maximum Rating (Note 1)

Parameter	Symbol	Limit	Unit
Input Supply Voltage	V_{IN}	15	V
Recommend Operation Input Supply Voltage	V_{IN} (Opr. Typ.)	12	V
Power Dissipation (Note 2)	P_D	Internal limited	
Thermal Resistance Junction to Ambient	TO-252	105	$^{\circ}\text{C/W}$
	SOT-223	130	
	SOP-8	160	
Operating Temperature Range	T_{OPER}	0 ~ +125	$^{\circ}\text{C}$
Junction Temperature Range	T_J	+150	
Storage Temperature Range	T_{STG}	-65 ~ +150	
Lead Soldering Temperature (260 $^{\circ}\text{C}$)	TO-252 / SOT-223	5	S
	SOP-8	2	

Electrical Specification (Ta = 25 $^{\circ}\text{C}$, unless otherwise specified.)

Parameter	Conditions	Min	Typ	Max	Unit
Reference Voltage	$V_{IN} = 2.75, I_O = 1\text{A}$	1.225	1.25	1.275	V
Output Voltage (Note 4)	$V_{IN} = 2.7\text{V} \sim 12\text{V}, I_O = 1\text{A}$	1.176	1.2	1.224	V
	$V_{IN} = 3\text{V} \sim 12\text{V}, I_O = 1\text{A}$	1.470	1.5	1.530	V
	$V_{IN} = 3.3\text{V} \sim 12\text{V}, I_O = 1\text{A}$	1.764	1.8	1.836	V
	$V_{IN} = 4\text{V} \sim 12\text{V}, I_O = 1\text{A}$	2.450	2.5	2.550	V
	$V_{IN} = 4.8\text{V} \sim 12\text{V}, I_O = 1\text{A}$	3.235	3.3	3.366	V
	$V_{IN} = 6.5\text{V} \sim 12\text{V}, I_O = 1\text{A}$	4.900	5.0	5.100	V
Line Regulation	$V_O + 1.5\text{V} \leq V_{IN} \leq 12\text{V}, I_O = 10\text{mA}$	--	0.2	0.5	%
Load Regulation (Note 1,2)	$V_{IN} = V_{OUT} + 1.5\text{V}, I_O = 10\text{mA} \sim 1\text{A}$	--	0.05	1.0	%
Dropout Voltage	$I_O = 1\text{A}, \Delta V_{OUT} = 1\% V_{OUT}$	--	1.3	1.5	V
Quiescent Current	$V_{IN} = 5\text{V}$	--	5	10	mA
Adjustable Pin Current		--	90	--	μA
Output Current Limit	$V_{IN} - V_{OUT} = 1.5\text{V}$	1.1	--	--	A
Temperature Stability	$I_O = 10\text{mA}$,	--	0.5	--	%
Ripple Rejection	$F = 120\text{Hz}, I_O = 1\text{A}, C_{OUT} = 25\mu\text{F}, V_{IN} = V_{OUT} + 3\text{V}$	--	60	70	dB

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.

Note 4: The Output Capacitor does not have a theoretical upper limit and increasing its value will increase stability. $C_{OUT} = 100\mu\text{F}$ or more is typical for high current regulator design.

Electrical Characteristics Curve

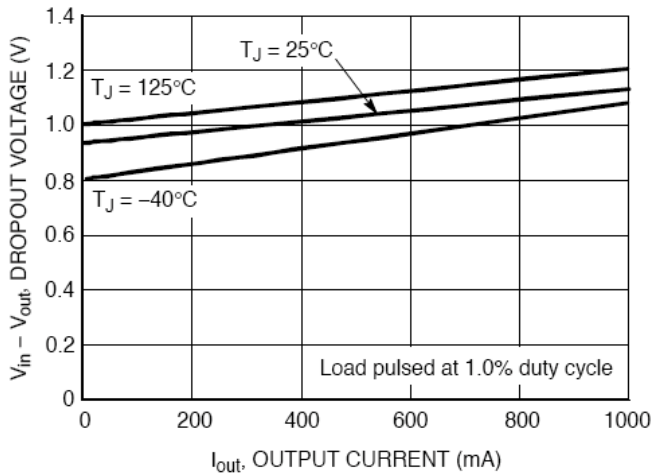


Figure 1. Vdrop vs. Output Current

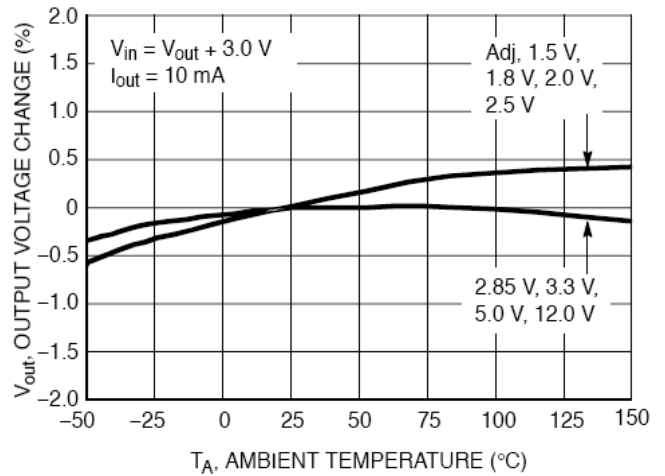


Figure 2. Vout Change vs. Temperature

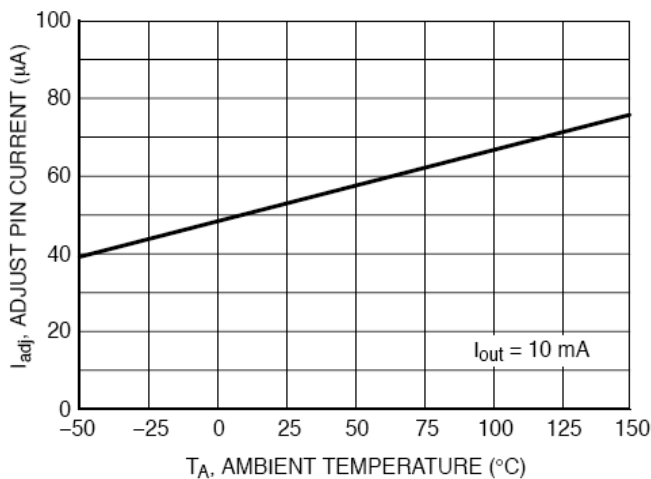


Figure 3. Adjust Pin Current vs. Temperature

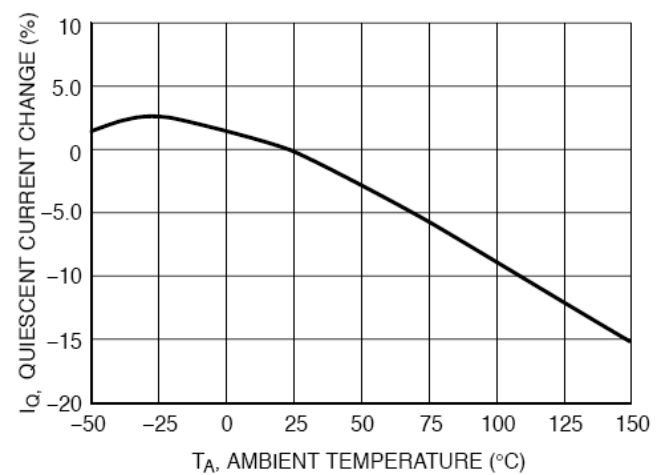


Figure 4. Iq Change vs. Temperature

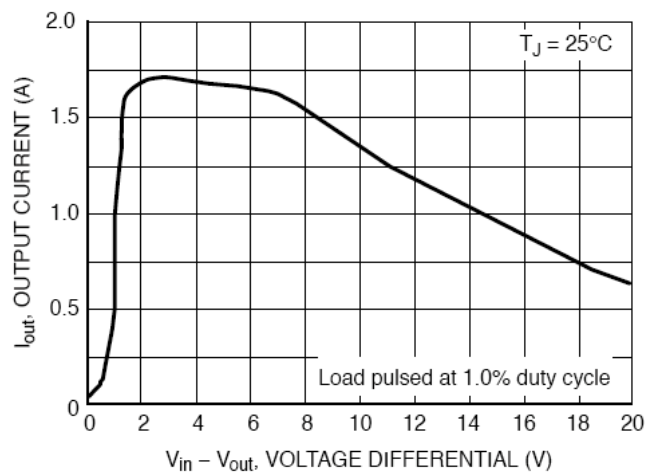


Figure 5. Output Short Circuit Current vs. Differential Voltage

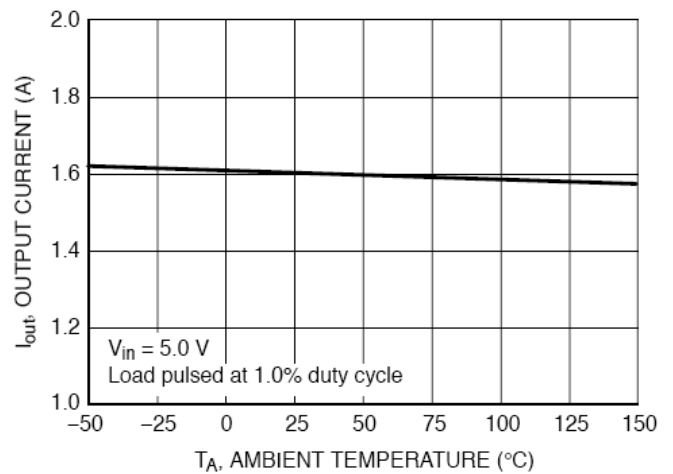
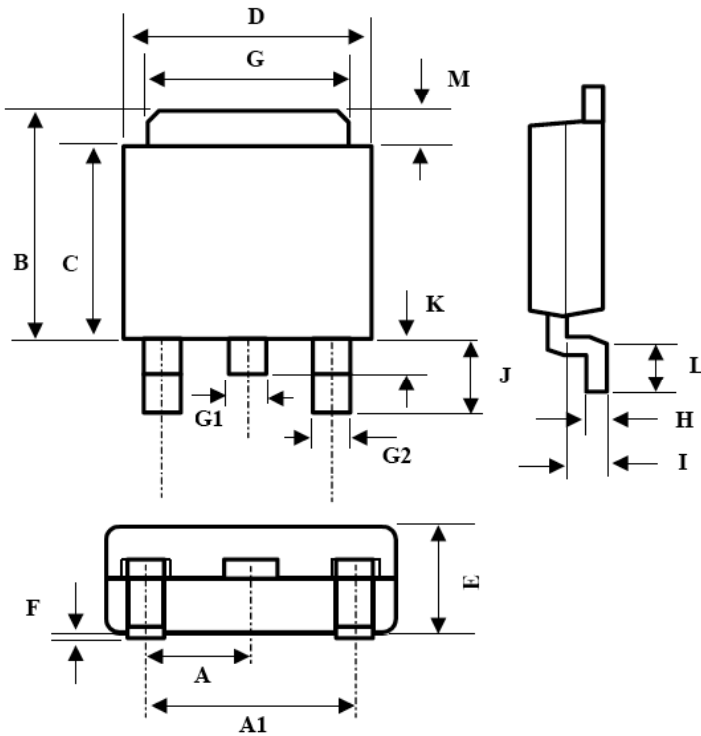


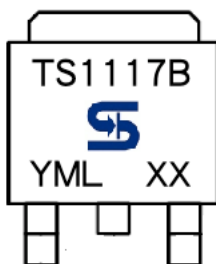
Figure 5. Output Short Circuit Current vs. Temperature

TO-252 Mechanical Drawing



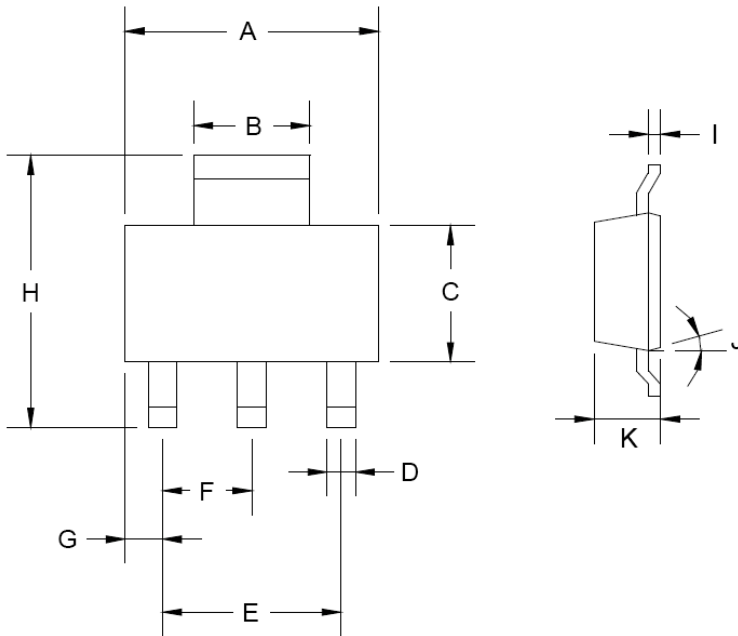
TO-252 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.3BSC		0.09BSC	
A1	4.6BSC		0.18BSC	
B	6.80	7.20	0.268	0.283
C	5.40	5.60	0.213	0.220
D	6.40	6.65	0.252	0.262
E	2.20	2.40	0.087	0.094
F	0.00	0.20	0.000	0.008
G	5.20	5.40	0.205	0.213
G1	0.75	0.85	0.030	0.033
G2	0.55	0.65	0.022	0.026
H	0.35	0.65	0.014	0.026
I	0.90	1.50	0.035	0.059
J	2.20	2.80	0.087	0.110
K	0.50	1.10	0.020	0.043
L	0.90	1.50	0.035	0.059
M	1.30	1.70	0.051	0.67

Marking Diagram



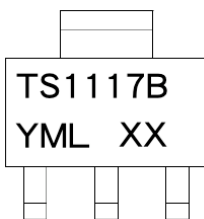
- Y** = Year Code
- M** = Month Code for Halogen Free Product
(O=Jan, P=Feb, Q=Mar, R=Apl, S=May, T=Jun, U=Jul, V=Aug, W=Sep, X=Oct, Y=Nov, Z=Dec)
- L** = Lot Code
- XX** = Output Voltage
(1.2=1.2V, 1.5=1.5V, 1.8=1.8V, 2.5=2.5V, 3.3=3.3V, 5.0=5V)

SOT-223 Mechanical Drawing



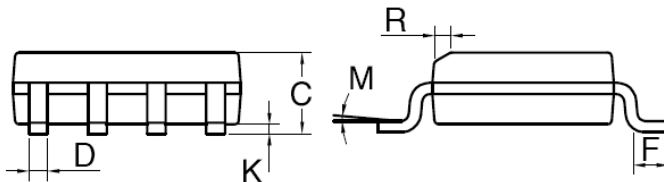
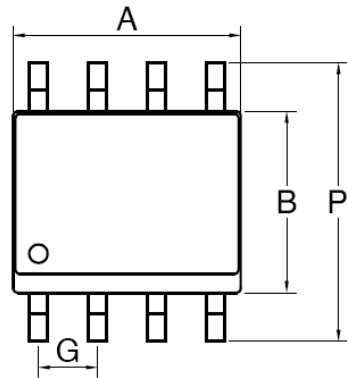
SOT-223 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.350	6.850	0.250	0.270
B	2.900	3.100	0.114	0.122
C	3.450	3.750	0.136	0.148
D	0.595	0.635	0.023	0.025
E	4.550	4.650	0.179	0.183
F	2.250	2.350	0.088	0.093
G	0.835	1.035	0.032	0.041
H	6.700	7.300	0.263	0.287
I	0.250	0.355	0.010	0.014
J	10°	16°	10°	16°
K	1.550	1.800	0.061	0.071

Marking Diagram



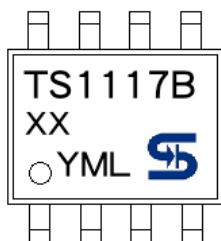
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- L** = Lot Code
- XX** = Output Voltage
(**1.2**=1.2V, **1.5**=1.5V, **1.8**=1.8V, **2.5**=2.5V, **3.3**=3.3V, **5.0**=5V)

SOP-8 Mechanical Drawing



SOP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.05BSC	
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

Marking Diagram



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TS1117B

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