



Description

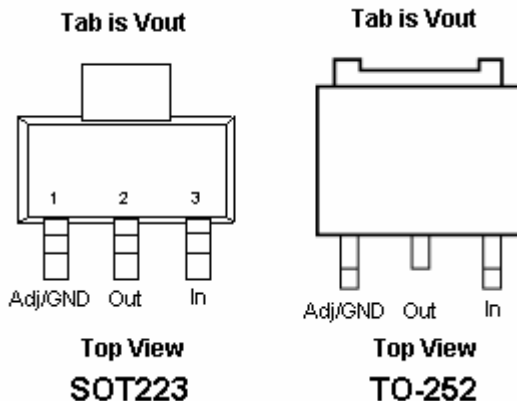
The SE8117B series of high performance low dropout voltage regulators are designed for applications that require efficient conversion and fast transient response.

In addition, SE8117B is designed to be stable under conditions where Cin and Cout are not present. However, it is recommended to include Cin and Cout in the system design as this will increase the PSRR rating. SE8117B is characterized under Junction Temperature from -40°C to +130°C.

Features

- Low Dropout Performance.
- Low Quiescent Current: 3mA (Typ.)
- Guaranteed 1A Output Current.
- Wide Input Supply Voltage Range.
- Stable operation without Cin and Cout.
- Over-temperature and Over-current Protection.
- Fixed or Adjustable Output Voltage.
- Rugged 2KV ESD withstand capability.
- Available in SOT-223 and TO252 Packages.
- RoHS Compliant and 100% Lead (Pb)-Free

Pin Configuration



Application

- Active SCSI Terminators.
- High Efficiency Linear Regulators.
- 5V to 3.3V Linear Regulators
- Motherboard Clock Supplies.

Ordering Information

Device	Marking Information	Package	V _{OUT}
SE8117BTXXLF	SE8117TXXLF	SOT-223 TO-252 (Lead-free)	Fixed output voltages; XX denotes voltage options (1.5V,1.8V, 2.5V,3.3V and 5.0V).
SE8117BTALF	SE8117TALF		Adjustable output voltage.

Absolute Maximum Rating

Symbol	Parameter	Maximum	Units
V _{IN}	Input Supply Voltage	9	V
θ _{JA}	Thermal Resistance Junction to Ambient (SOT-223)	60	°C/W
T _J	Operating Junction Temperature Range	-40 to 130	°C
T _{STG}	Storage Temperature Range	-40 to 150	°C
T _{LEAD}	Lead Temperature (Soldering 10 Sec)	260	°C



Electrical Characteristic

$V_{IN,MAX} \leq 8V$, $V_{IN,MIN} - V_{OUT} = 1.5V$, $I_{OUT} = 10mA$, $C_{IN} = 10\mu F$, $C_{OUT} = 22\mu F$, $T_A = 25^\circ C$, unless otherwise specified.

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_O	Output Voltage ⁽¹⁾	SE8117BT15	1.470	1.5	1.530	V
		SE8117BT18	1.764	1.8	1.836	
		SE8117BT25	2.450	2.5	2.550	
		SE8117BT33	3.234	3.3	3.366	
		SE8117BT50	4.900	5.0	5.100	
V_{REF}	Reference Voltage ⁽¹⁾ (Adj. Voltage Version)	$(V_{IN} - V_{OUT}) = 1.5V$ $I_{OUT} = 10mA$	(-2%)	1.250	(+2%)	V
V_{SR}	Line Regulation ⁽¹⁾	$V_{OUT} + 1.5V < V_{IN} < 8V$ $I_{OUT} = 10mA$	--	0.3	--	%
V_{LR}	Load Regulation ⁽¹⁾	$(V_{IN} - V_{OUT}) = 1.5V$ $10mA \leq I_{OUT} \leq 1A$	--	0.5	--	%
I_Q	Quiescent Current ⁽²⁾	Fixed Output Version	--	3	--	mA
I_{ADJ}	Adjust Pin Current		--	65	--	μA
ΔI_{ADJ}	Adjust Pin Current Change	$V_{OUT} + 1.5V < V_{IN} < 8V$ $10mA \leq I_{OUT} \leq 1A$	--	14	--	μA
V_D	Dropout Voltage ⁽³⁾	$I_{OUT} = 1A$	--	1.3	--	V
I_O	Minimum Load Current		--	0.4	--	mA
I_{CL}	Current Limit		--	1.8	--	A
T_C	Temperature Coefficient		--	0.07	--	%/ $^\circ C$
OTP	Thermal Protection		--	175	--	$^\circ C$
V_N	RMS Output Noise	$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$	--	0.003	--	% V_O
R_A	Ripple Rejection Ratio	$f = 120Hz$, $C_{OUT} = 22\mu F$ (Tantalum), $(V_{IN} - V_{OUT}) = 3V$, $I_{OUT} = 100mA$	--	57	--	dB

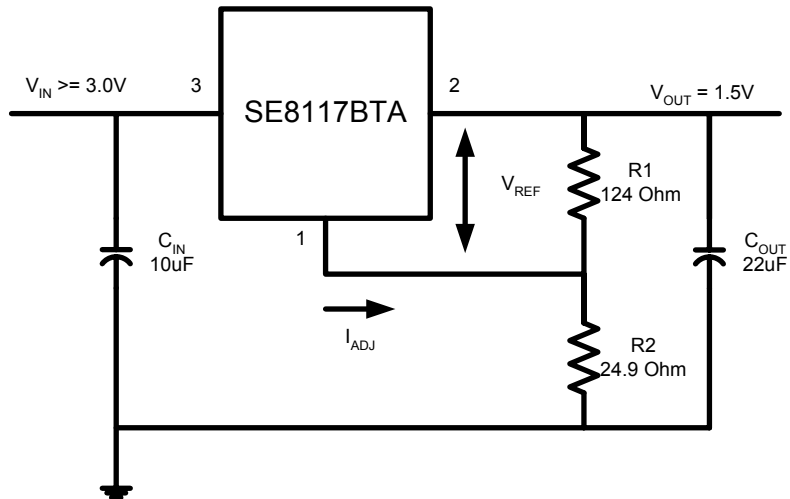
Notes:

1. Low duty cycle pulse testing with which T_J remains unchanged.
2. The I_Q of SE8117BT15 is 1.2mA(Typ.)
3. The dropout voltage is the input/output differential at which the circuit ceases to regulate against further reduction in input voltage. It is measured when the output voltage has dropped 98% from the nominal value obtained at $V_{IN} = V_{OUT} + 1.5V$.



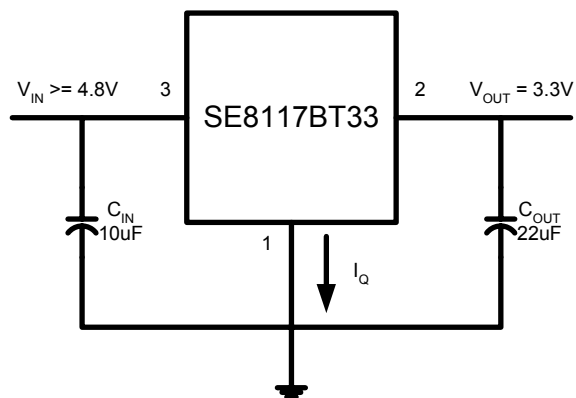
Typical Application

Adjustable Voltage Regulator



$$V_{OUT} = V_{REF} \left(1 + \frac{R_2}{R_1} \right) + I_{ADJ} R_2$$

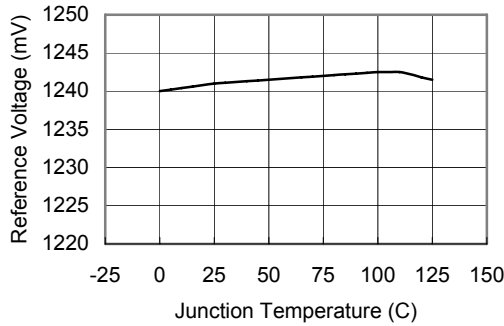
Fixed Voltage Regulator



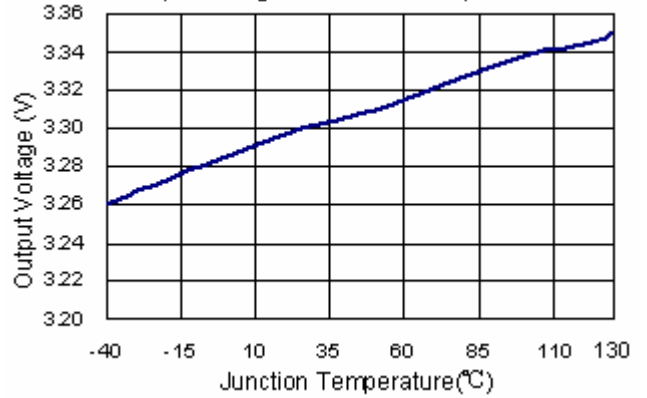


Typical Performance Characteristics

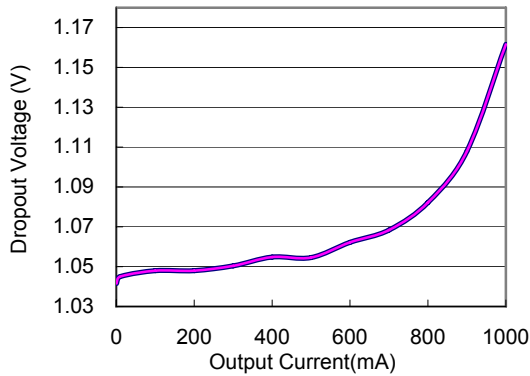
Reference Voltage vs Junction Temperature



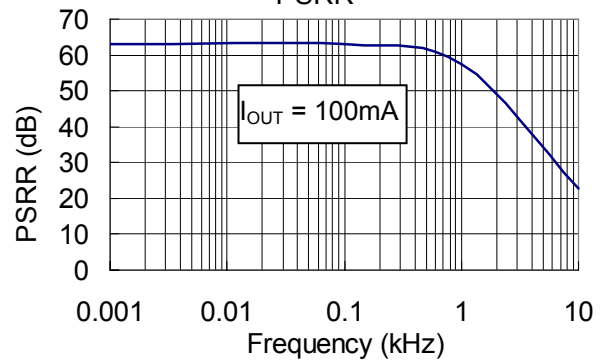
Output Voltage vs Junction Temperature



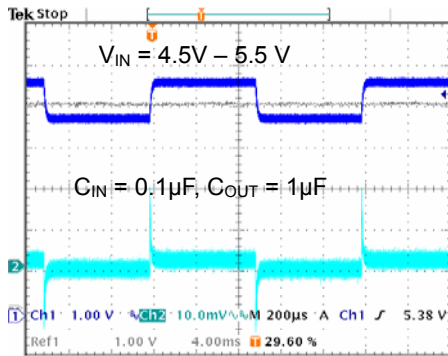
Dropout Voltage vs. Output Current



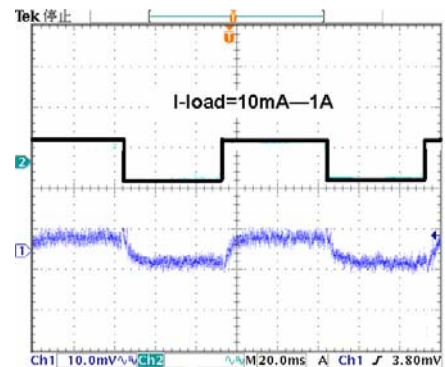
PSRR



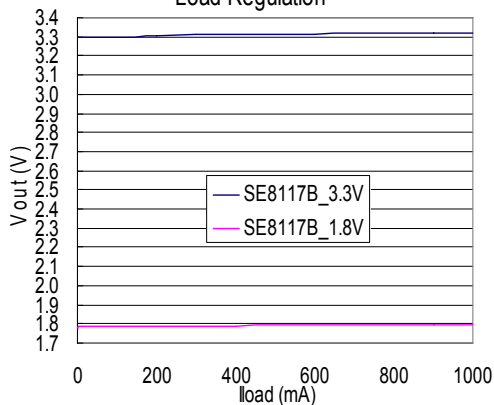
Line Transients



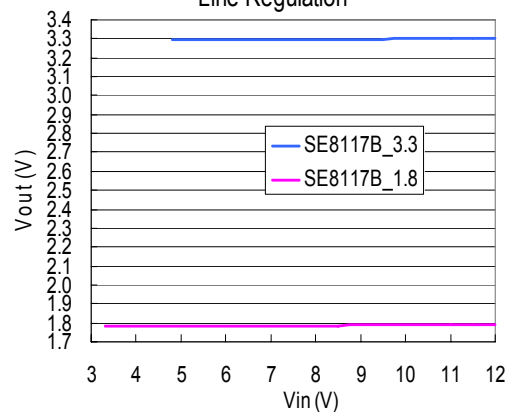
Load Transients



Load Regulation



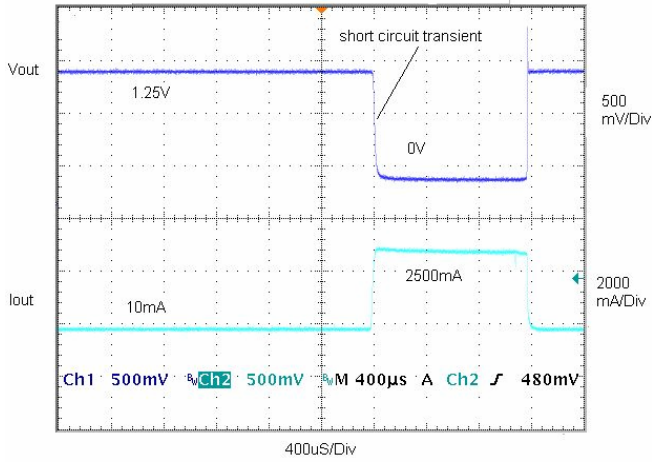
Line Regulation





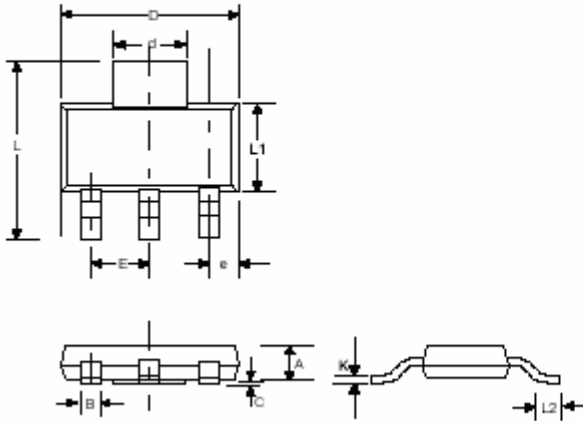
Typical Performance Characteristics

Short Transient Response



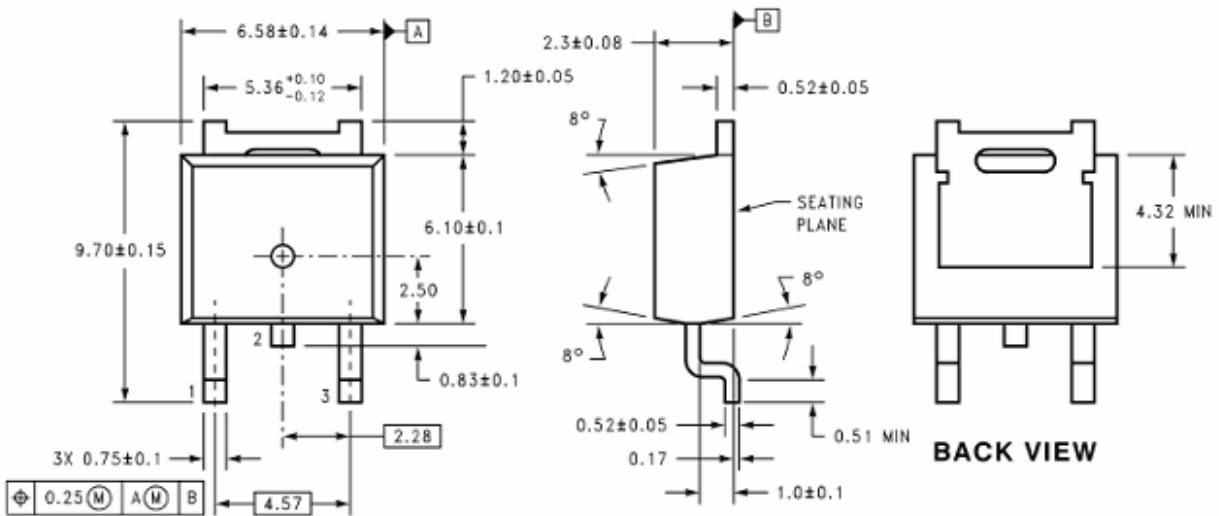


Outline Drawing for SOT-223



DIMENSIONS				
DIM ^N	INCHES		MM	
	MIN	MAX	MIN	MAX
A	—	0.071	—	1.80
B	0.025	0.033	0.640	0.840
C	0.012	—	0.31	—
D	0.248	0.264	6.30	6.71
d	0.115	0.124	2.95	3.15
E	—	0.090	—	2.29
e	0.033	0.041	0.840	1.04
L	0.264	0.287	6.71	7.29
L1	0.130	0.148	3.30	3.71
L2	0.012	—	0.310	—
K	0.010	0.014	0.250	0.360

Outline Drawing for TO252



DIMENSIONS ARE IN MILLIMETERS

3-Lead TO-252 Package



Customer Support

Seaward Electronics Incorporated – China

Section B, 2nd Floor, ShangDi Scientific Office Complex, #22 XinXi Road
Haidian District, Beijing 100085, China
Tel: 86-10-8289-5700/01/05
Fax: 86-10-8289-5706

Seaward Electronics Corporation – Taiwan

2F, #181, Sec. 3, Minguan East Rd,
Taipei, Taiwan R.O.C
Tel: 886-2-2712-0307
Fax: 886-2-2712-0191

Seaward Electronics Incorporated – North America

1512 Centre Pointe Dr.
Milpitas, CA95035, USA
Tel: 1-408-821-6600

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