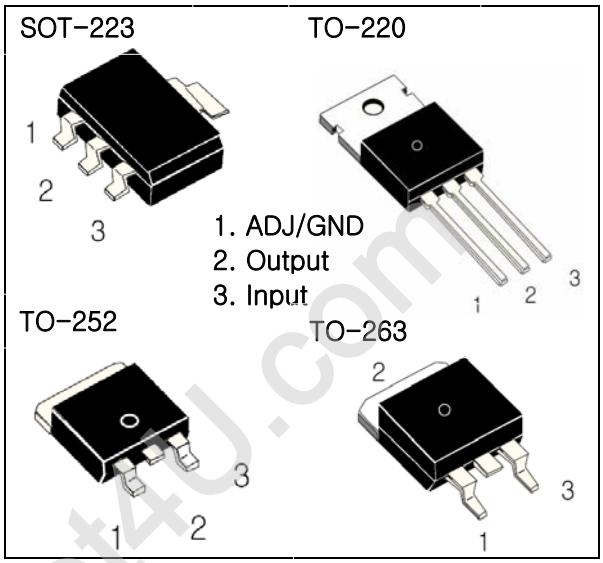
1.0A Low Dropout Positive Voltage Regulator IL1117-xx

Features

- Adjustable and Fixed of 1.2, 1.25, 1.5, 1.8, 2.5, 2.85, 3.3, 5.0V
- Space saving SMD types of SOT-223
- 1.2V Drop-out Voltage
- 1.0A Output Current
- Line Regulation Typically at 0.2% max
- Current Limiting and Thermal Protection



General Description

The IL1117 is a series of low dropout voltage regulators which can provide up to 1A of output current. The IL1117 is available in seven fixed voltage, 1.2, 1.25, 1.5, 1.8, 2.5, 2.85, 3.3 and 5.0V. Additionally it is also available in adjustable version. On chip precision trimming adjusts the reference/ output voltage to within ± 2%. Current limit is also trimmed to ensure specified output current and controlled short-circuit current.
The IL1117 series is available in SOT-223 packages.
A minimum of 10uF tantalum capacitor is required at the output to improve the transient response and stability.

Applications

- Post Regulator for switching DC/DC Converter
- High Efficiency Linear Regulator
- Battery Chargers
- PC Add on Card
- Motherboard clock supplies
- LCD Monitor
- Set-top Box

Absolute Maximum Ratings

- Maximum Input Voltage ~ 15.0V
- Operating Junction Temperature Range -25℃ ~ 125℃
- Storage Temperature Range -50℃ ~ 150℃

Electrical Characteristics

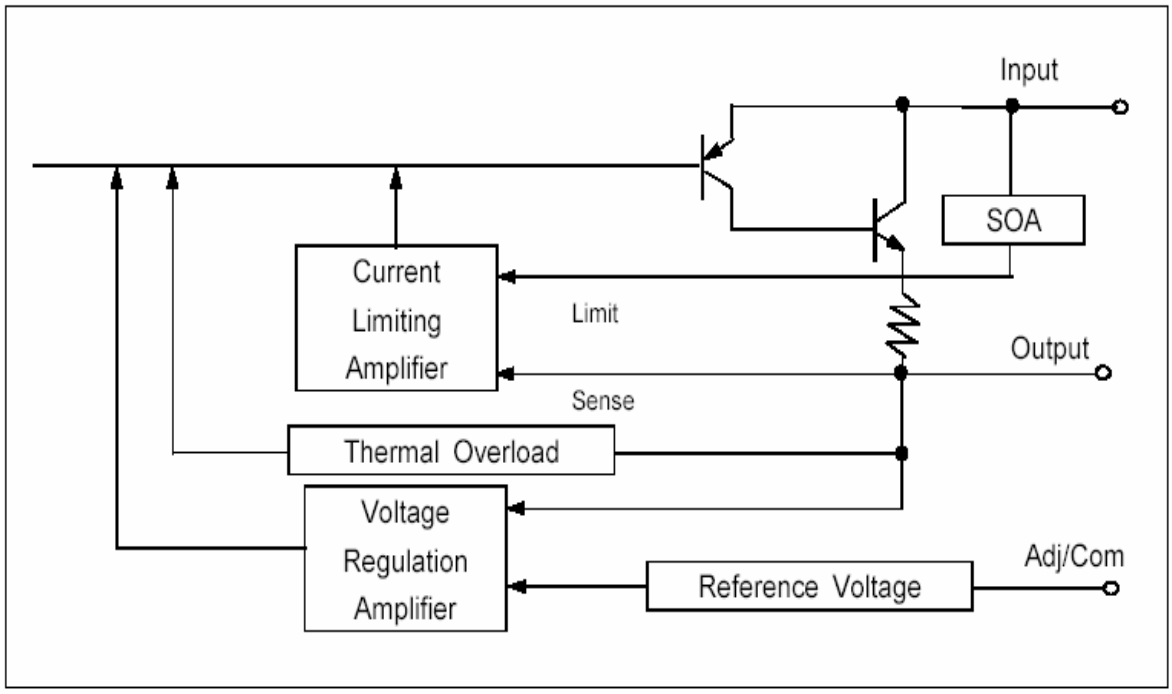
(Vin = 5V, Co = 10uF, Ta = 25℃, unless otherwise specified)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
OUTPUT VOLTAGE	Tj = -25°C to +125°C				
IL1117-1.2	Io = 10mA to 1.0A, Vin = 2.7 to 12.0V	1.176	1.200	1.224	V
IL1117-1.25 (Adjustable)	Io = 10mA to 1.0A, Vin = 2.8 to 12.0V	1.225	1.250	1.280	
IL1117-1.5	Io = 10mA to 1.0A, Vin = 3.0 to 12.0V	1.470	1.500	1.530	
IL1117-1.8	Io = 10mA to 1.0A, Vin = 3.3 to 12.0V	1.764	1.800	1.836	
IL1117-2.5	Io = 10mA to 1.0A, Vin = 4.0 to 12.0V	2.450	2.500	2.550	
IL1117-2.85	Io = 10mA to 1.0A, Vin = 4.4 to 12.0V	2.790	2.850	2.910	
IL1117-3.3	Io = 10mA to 1.0A, Vin = 4.8 to 12.0V	3.240	3.300	3.360	
IL1117-5.0	Io = 10mA to 1.0A, Vin = 6.5 to 15.0V	4.900	5.000	5.100	
LINE REGULATION					
IL1117-1.2	Io =10mA to 1.0A, Vin = 2.7 to 12.0V		0.1	0.2	%
IL1117-1.25 (Adjustable)	Io =10mA to 1.0A, Vin = 2.8 to 12.0V		2.0	7.0	mV
IL1117-1.5	Io =10mA to 1.0A, Vin = 3.0 to 12.0V		2.0	7.0	mV
IL1117-1.8	Io =10mA to 1.0A, Vin = 3.3 to 12.0V		2.0	7.0	mV
IL1117-2.5	Io =10mA to 1.0A, Vin = 4.0 to 12.0V		2.0	7.0	mV
IL1117-2.85	Io =10mA to 1.0A, Vin = 4.4 to 12.0V		2.0	7.0	mV
IL1117-3.3	Io =10mA to 1.0A, Vin = 4.8 to 12.0V		3.0	7.0	mV
IL1117-5.0	Io =10mA to 1.0A, Vin = 6.5 to 15.0V		4.0	10.0	mV
LOAD REGULATION					
IL1117-1.2	Io = 10mA to 1.0A, Vin = 3.2V		0.2	0.4	%
IL1117-1.25 (Adjustable)	Io = 10mA to 1.0A, Vin = 3.3V		3.0	10.0	mV
IL1117-1.5	Io = 10mA to 1.0A, Vin = 3.5V		3.0	10.0	mV
IL1117-1.8	Io = 10mA to 1.0A, Vin = 3.8V		3.0	10.0	mV
IL1117-2.5	Io = 10mA to 1.0A, Vin = 4.5V		3.0	10.0	mV
IL1117-2.85	Io = 10mA to 1.0A, Vin = 4.85V		3.0	10.0	mV
IL1117-3.3	Io = 10mA to 1.0A, Vin = 5.3V		4.0	12.0	mV
IL1117-5.0	Io = 10mA to 1.0A, Vin = 7.0V		5.0	15.0	mV
DROPOUT VOLTAGE (2)					
All Models	Io = 800mA		1.10	1.20	V
	Io =1A		1.20	1.30	
	Io =1A (Tj = -25°C to +125°C.)		1.20	1.55	
CURRENT LIMIT	Vin = 5V	1000	1250	1600	mA
MINIMUM LOAD CURRENT					
Adjustable Models	Vin = 13.75V			5	mA
QUIESCENT CURRENT	Vin = 5V		5.2	10	mA
Adjust Pin Current	Io = 10mA, Vin = 1.4 to 10V		50	120	uA
vs Load Current, IL1117	Io = 10mA to 1A, Vin = 1.4 to 10V		0.5	5	uA
TEMPERATURE DRIFT	Tj = -25°C to +125°C		0.5		%
RMS Output Noise	Bandwidth of 10Hz to 10kHz at 25°C		0.003		%Vo
Ripple Rejection Ratio	120Hz input Ripple(Cadj for ADJ) = 25uF Vin -Vo = 5V, Io = 1.0A Tj = -25°C to +125°C	60	72		dB

NOTES: (1) IL1117-x adjustable versions require a minimum load current for ±3% regulation.

(2) Dropout voltage is the input voltage minus output voltage that produces a 1% decrease in output voltage.

Block Diagram



Application Information

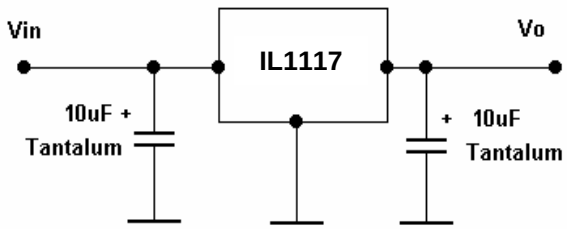


FIGURE 1. Fixed-Voltage Model —Basic Connections.

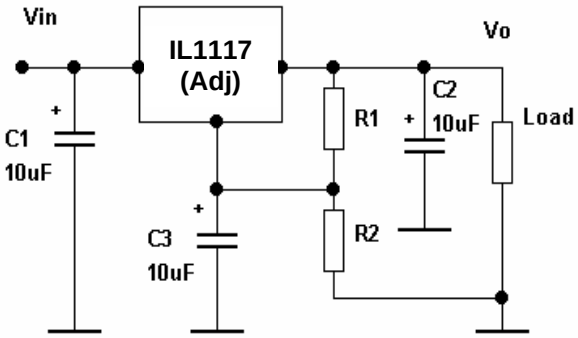
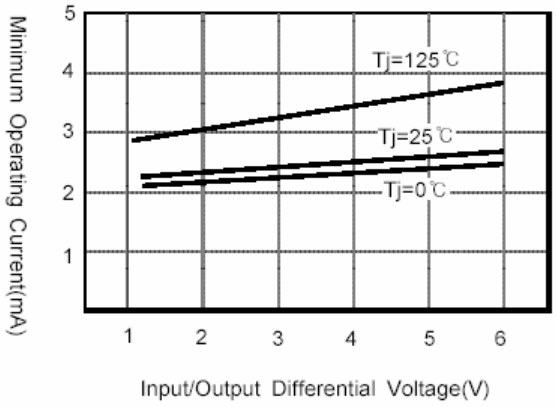


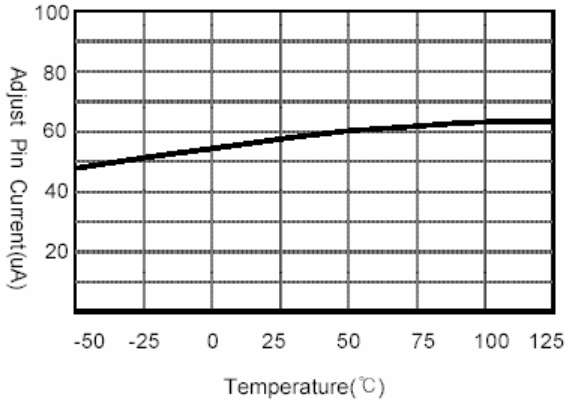
FIGURE 2. Adjustable-Voltage Model --Basic Connections.

TYPICAL PERFORMANCE CHARACTERISTICS

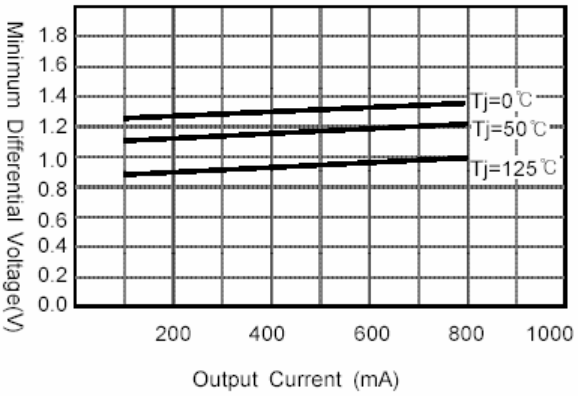
Minimum Load Current(Adjustable)



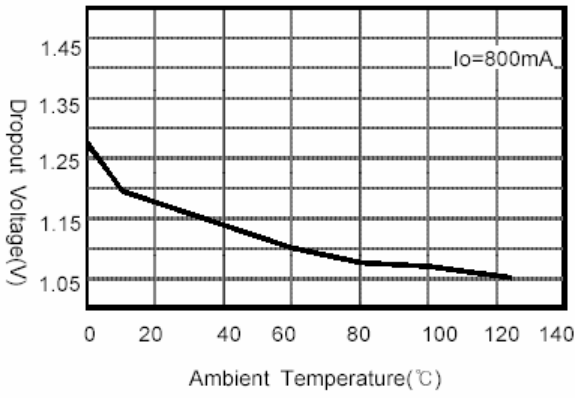
Adjust Pin Current



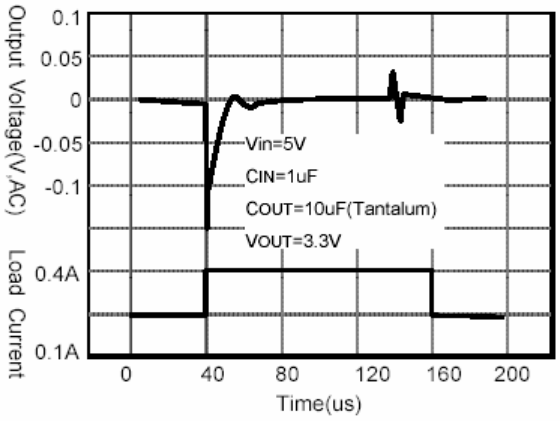
Dropout Voltage



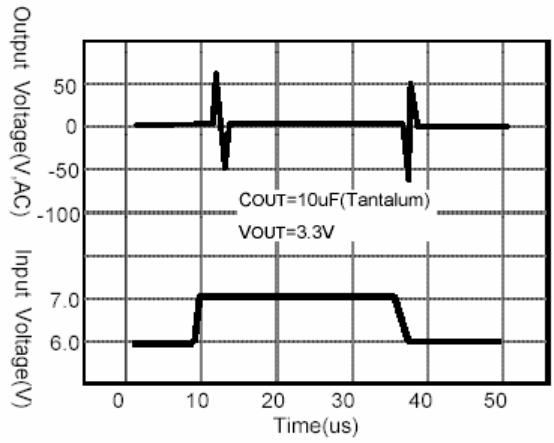
Dropout Voltage - Temperature



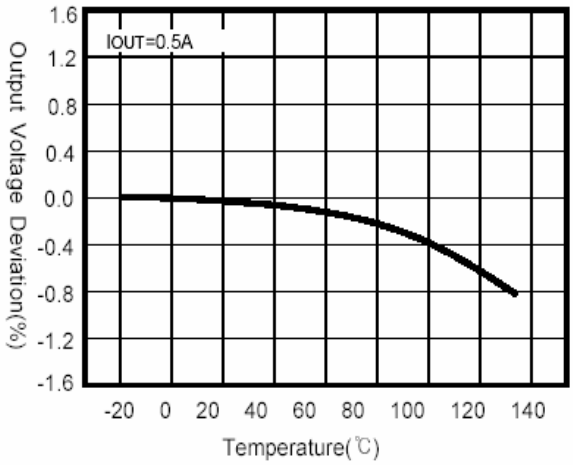
Load Transient Response



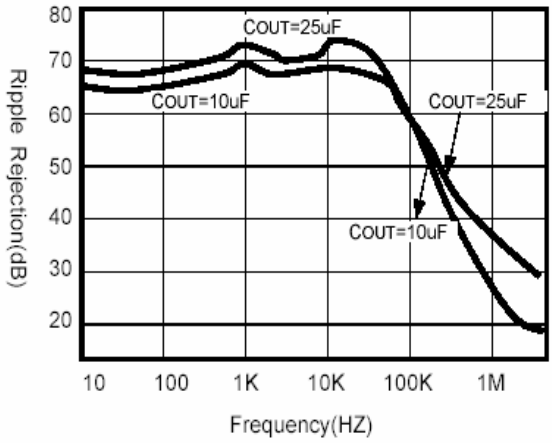
Line Transient Response



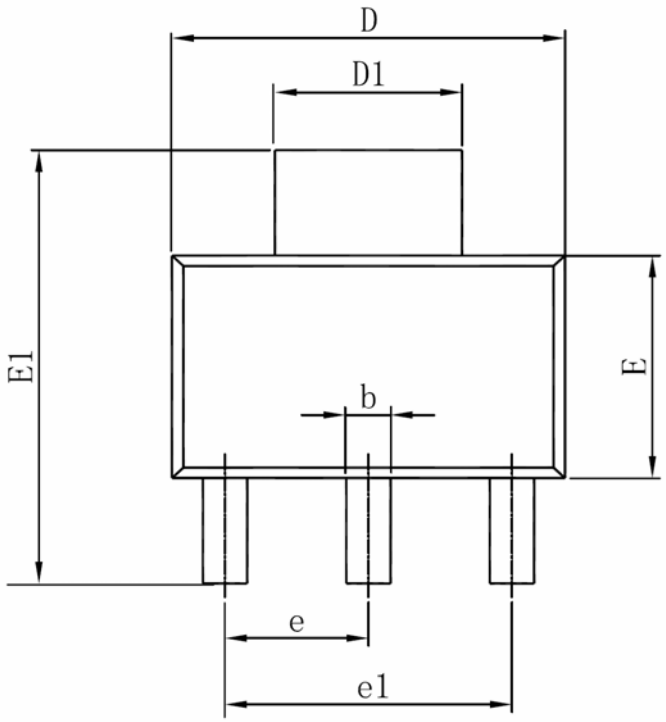
Temperature Stability

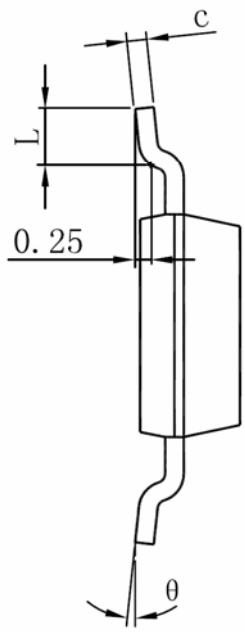


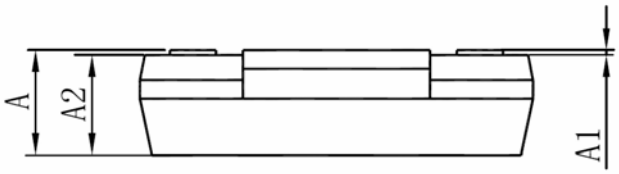
Ripple Rejection(with Cadj 25uF)



SOT-223 PACKAGE OUTLINE DIMENSIONS

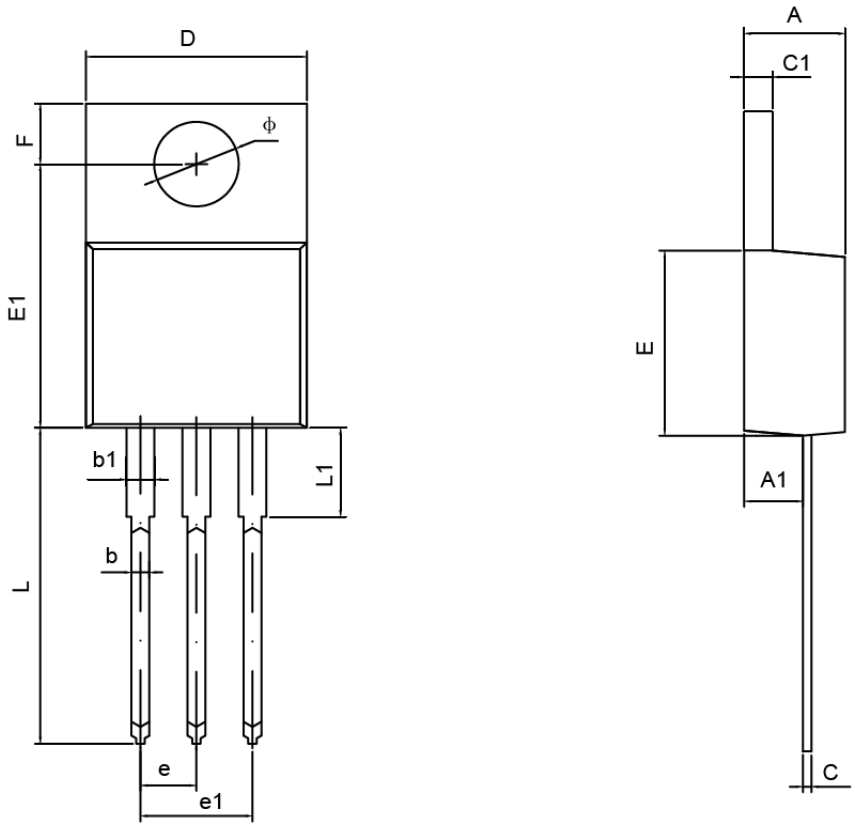






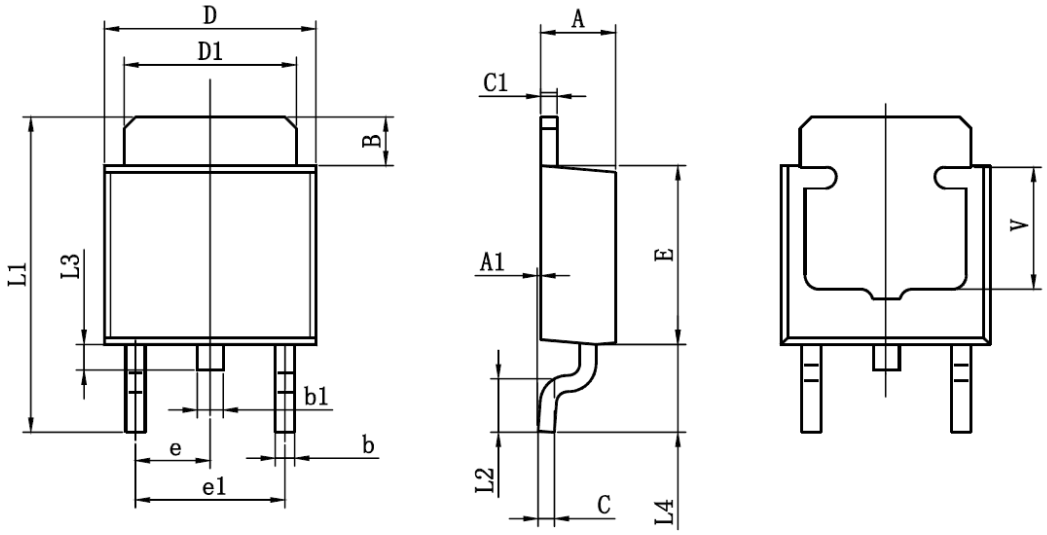
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

TO-220-3L PACKAGE OUTLINE DIMENSIONS



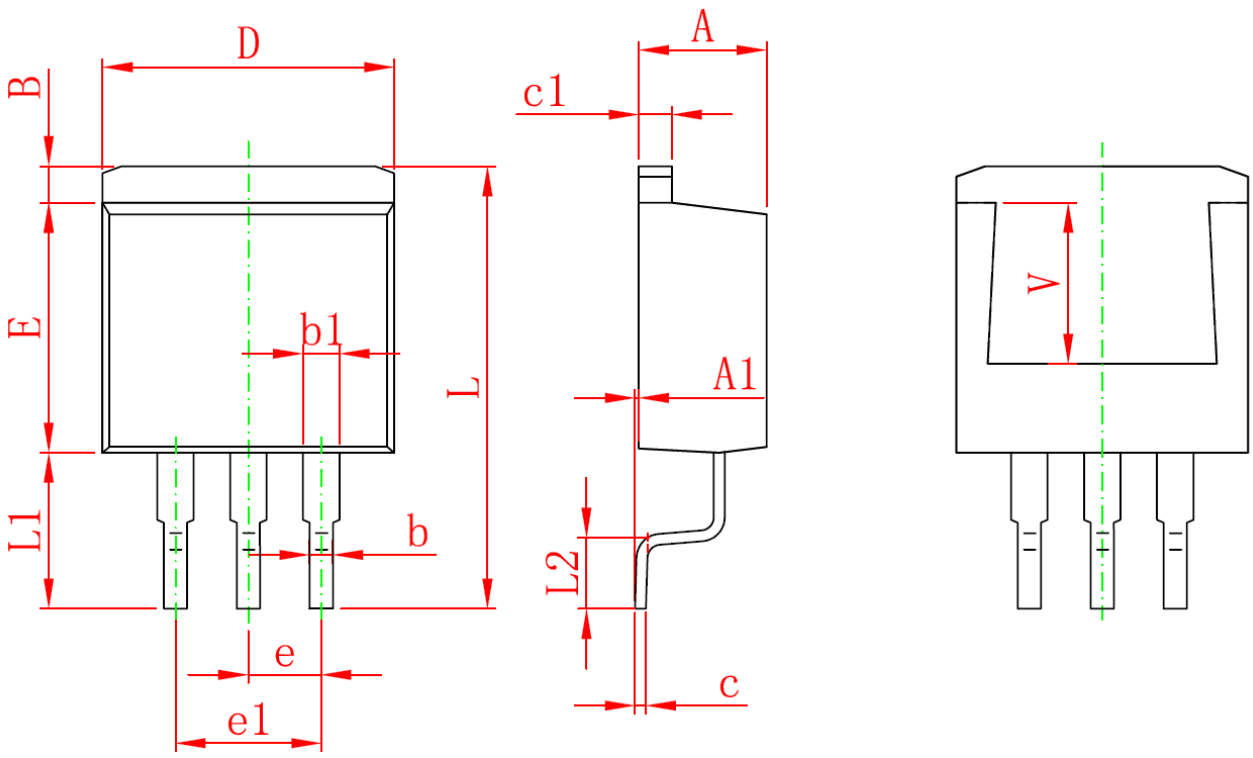
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	1.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.710	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540TYP		0.100TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
ϕ	3.790	3.890	0.149	0.153

TO-252-2L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300TYP		0.091TYP	
e1	4.500	4.700	0.177	0.185
L1	9.500	9.900	0.374	0.390
L2	1.400	1.780	0.055	0.070
L3	0.650	0.950	0.026	0.037
L4	2.550	2.900	0.100	0.114
V	3.80REF		0.150REF	

TO-263-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
V	5.600 REF		0.220 REF	