1A positive Voltage Regulator

Description

The CYT8117-ADJ and CYT8117-1.2,-1.5, -1.8, -2.5, -3.3 and -5 are low dropout three-terminal regulators with 1A output current capability. These devices have been optimized for low voltage where transient response and minimum input voltage are critical. The 2.85V version is designed specifically to be used in Active Terminators for SCSI bus.

On-chip thermal limiting provides protection against any combination of overload and ambient temperatures that would create excessive junction temperatures.

Unlike PNP type regulators where up to 10% of the output current is wasted as quiescent current, the quiescent current of the CYT8117 flows into the load, increasing efficiency.

The CYT8117 series regulators are available in the industry-standard SOT-223, power packages.

Features

- Low dropout voltage
- Load regulation: 0.05% typical
- Optimized for Low Voltage
- On-chip thermal limiting-Standard SOT223 packages
- Three-terminal adjustable or fixed low dropout1.2V,1.5V,1.8V, 2.5V, 3.3V ,5V , ADJ . regulators
- ROHS Compliant and 100% Lead(Pb)-Free

Application

- Active SCSI terminators
- High efficiency linear regulators
- Post regulators for switching supplies
- Battery chargers
- 12V to 5V linear regulators
- Motherboard clock supply

Pin Configuration

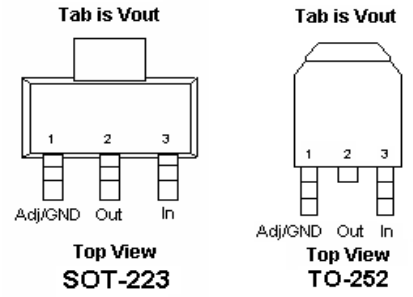

Figure 1. Pin Assignments of CYT8117

Ordering Information

Device	Marking	Package	Vout
CYT8117TXXLF	CYT8117TXXLF	SOT-223 (Lead-free)	Fixed output voltages; XX denotes voltage options (1.2V,1.5V,1.8V, 2.5V,3.3V and 5.0V)
CYT8117TALF	CYT8117TALF		Adjustable output voltage.

Absolute Maximum Rating

Parameter	Min.	Max.	Unit
Vin		18	V
(VIN– VOUT) * IOUT		See Figure 2	
Operating Junction Temperature Range	0	125	°C
Storage Temperature Range	-65	150	°C
Lead Temperature (Soldering, 10 sec.)		300	°C

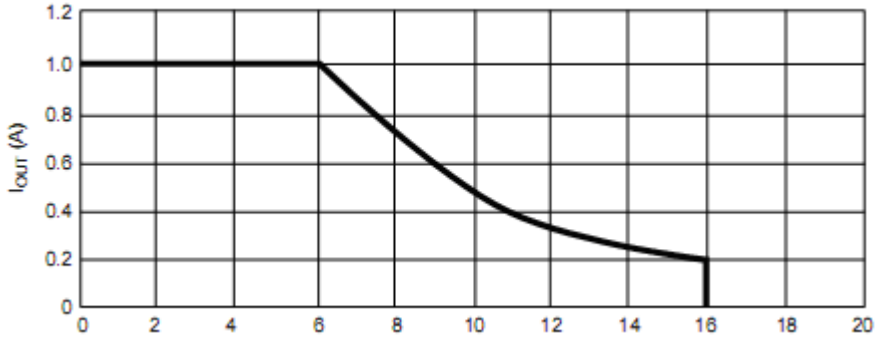

Figure 2. Absolute Maximum Safe Operating Area

Block Diagram

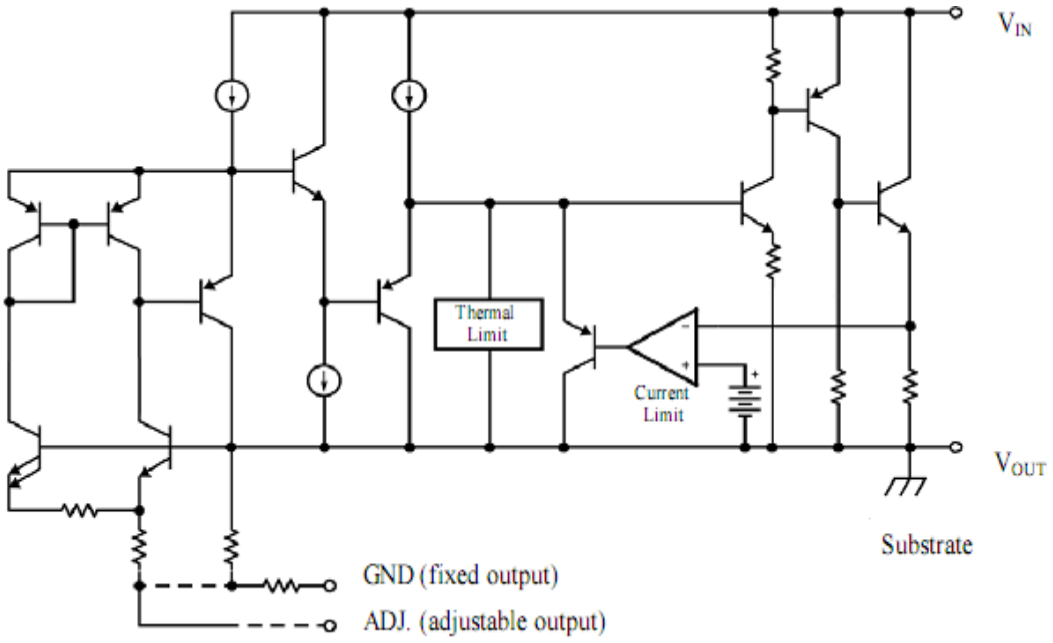

Figure 3. Block Diagram of CYT8117

Electrical Characteristic

Typicals and limits appearing in normal type apply for TJ=25℃.Limits appearing in Boldface type apply over the entire junction temperature for operation,0℃to 125℃.

Parameter	Conditions	Min (Note 2)	Typ (Note2)	Max (Note 2)	Units
Reference Voltage	1.5V ≤(VIN- VOUT) ≤3.2V 10mA ≤ IOUT≤1A	1.225 (-2%)	1.250	1.275 (+2%)	V
Output Voltage	10mA ≤IOUT≤1A CYT8117-1.2 ,2.7V≤ VIN≤4.4V CYT8117-1.5, 2.8V ≤VIN≤4.5V CYT8117-1.8, 3.3V ≤VIN≤5.0V CYT8117-2.5, 4V≤VIN≤7.0V CYT8117-3.3, 4.8V ≤VIN≤6.5V CYT8117-5.0, 6.5V ≤VIN≤8.0V	 1.152 1.470 1.764 2.450 3.234 4.900	 1.200 1.500 1.800 2.500 3.300 5.000	 1.248 1.530 1.836 2.550 3.366 5.100	 V V V V V V
Line Regulation (Note 3)	(VOUT+ 1.5V) ≤VIN≤12V, IOUT = 10mA		0.035	0.2	%
Load Regulation(Note 3)	(VIN-VOUT) = 2V, 10mA ≤ IOUT≤1A		0.2	0.5	%
Dropout Voltage	△VREF = 1%, Iout= 1A		1.100	1.250	V
Current Limit	(VIN-VOUT) = 2V	1.1	1.5		A
Adjust Pin Current			50	120	uA
Adjust Pin Current Change	1.5V ≤ (Vin-Vout) ≤3.2V 10mA ≤ IOUT≤1A		0.2	5	uA
Minimum Load Current(Note 4)	10mA ≤ IOUT≤1A 1.5V ≤(VIN-VOUT) ≤3.2V	10			mA
Quiescent Current	VIN= VOUT+ 1.25V		5	13	mA
Ripple Rejection	f=120Hz, Tantalum, (VIN-VOUT) = 3V, IOUT= 1A,	60	72		dB
Thermal Regulation	TA= 25°C, 30ms pulse		0.01	0.1	%/W
Temperature Stability			0.5		%
Long-Term Stability	TA= 125°C, 1000hrs.		0.3		%
RMS Output Noise (% of VOUT)	TA= 25°C, 10Hz≤f ≤10kHz		0.003		%
Thermal Resistance, Junction to Case	SOT-223		15		°C/W
Thermal Shutdown	Junction Temperature		155		°C
Thermal Shutdown Hysteresis			25		°C

Note 1: Typical Values represent the most likely parametric norm.

Note 2: All limits are guaranteed by testing or statistical analysis.

Note 3: Load and line regulation are measured at constant junction room temperature.

Note 4: The minimum output current required to maintain regulation

Typical Application

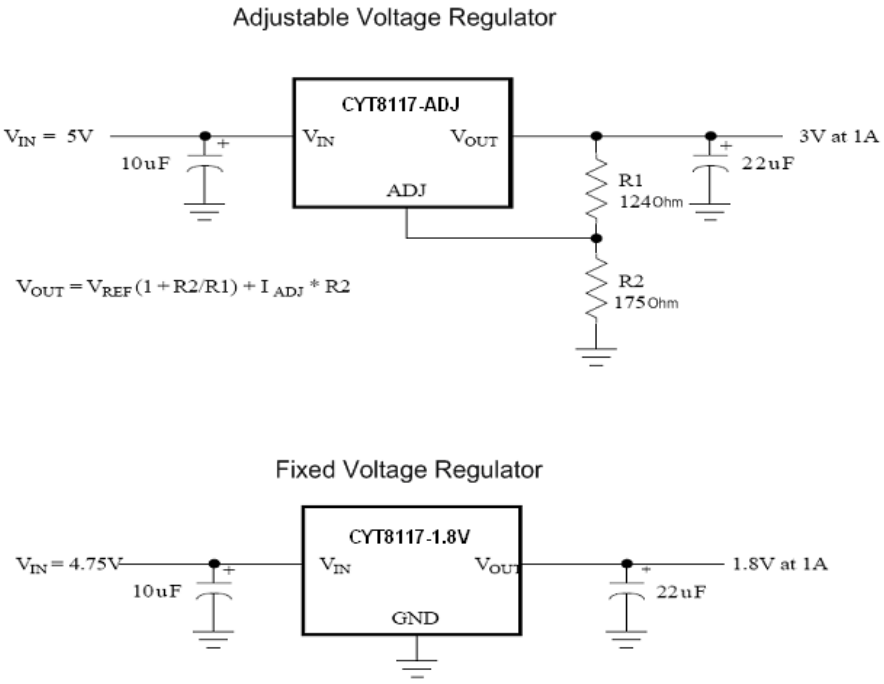

Figure4. Typical Applications of CYT8117

Notice: The distance between Vout pin and Capacitor should not exceed 4cm for excellent performance

Typical Performance Characteristics (continued)

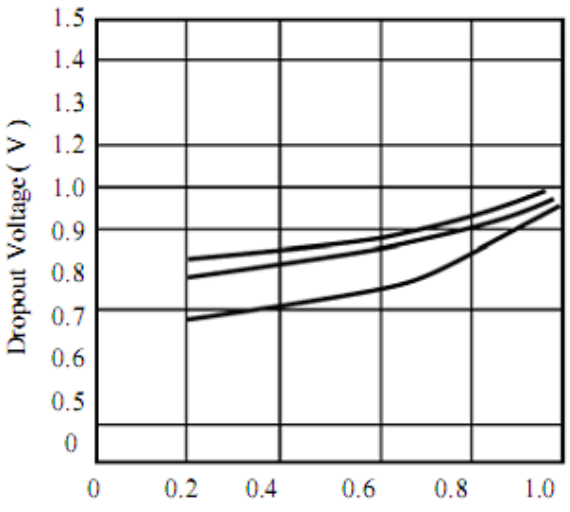

Figure 5. Dropout Voltage VS. Output Current

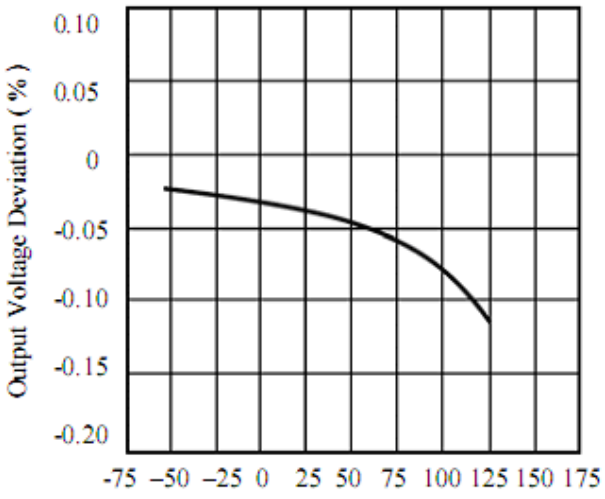

Figure 6. Load Regulatioin VS. Temperature

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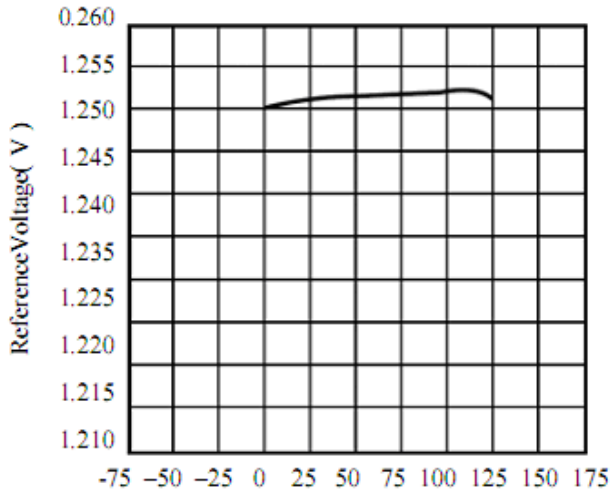

Figure 7. Reference Voltage VS. Temperature

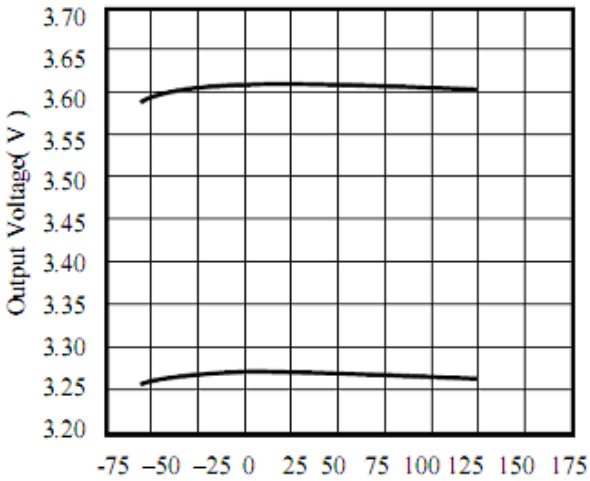

Figure 8. Output Voltage VS. Temperature

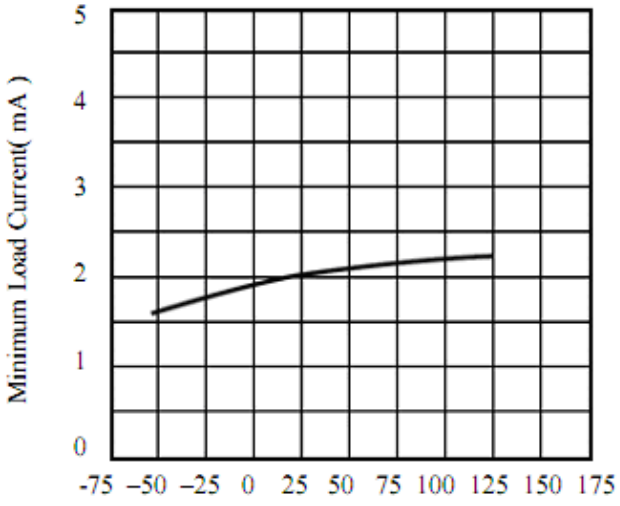

Figure 9. Minimum Load Current VS. Temperature

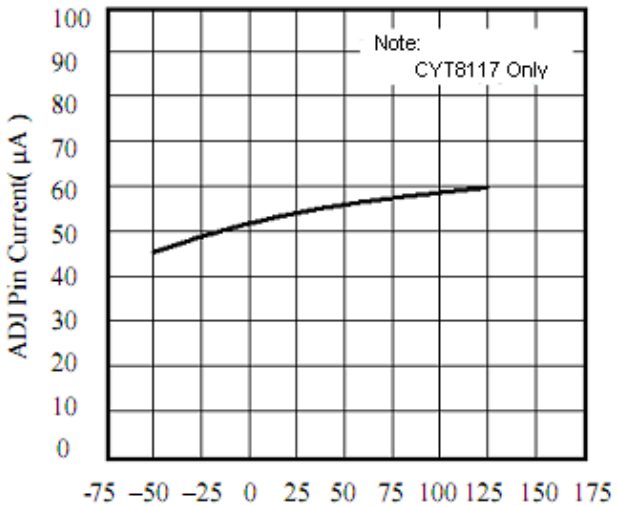

Figure 10. ADJ Pin Current VS. Temperature

CONTINUE

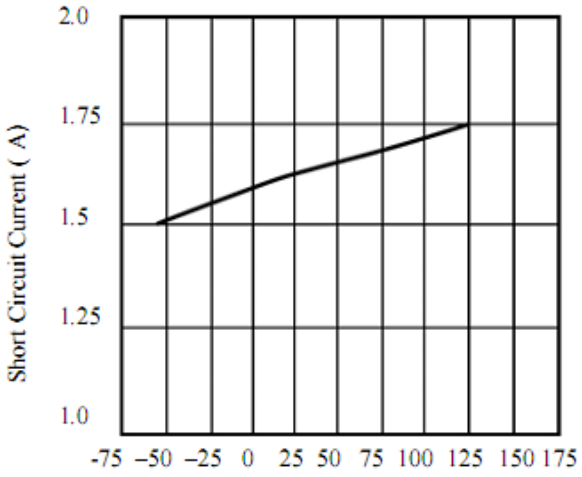

Figure 11. Short-Circuit Current VS. Temperature

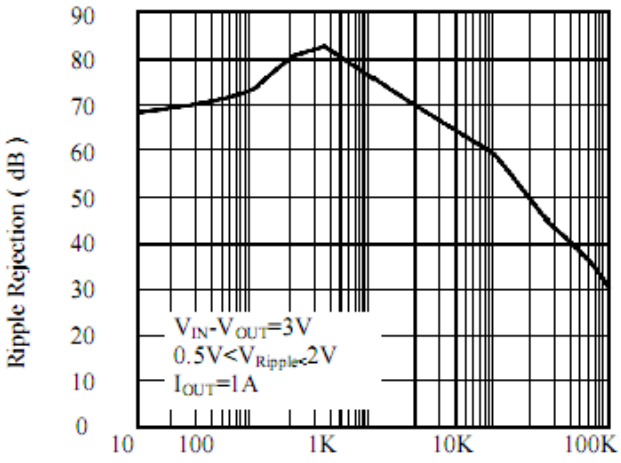

Figure 12. Ripple Rejection VS. Temperature

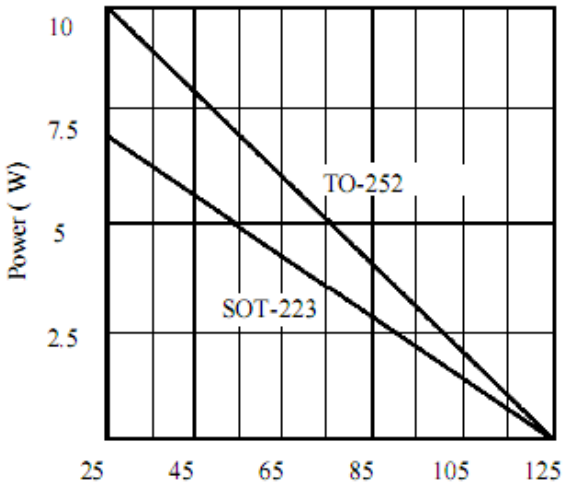

Figure 13. Maximum Power VS. Dissipation

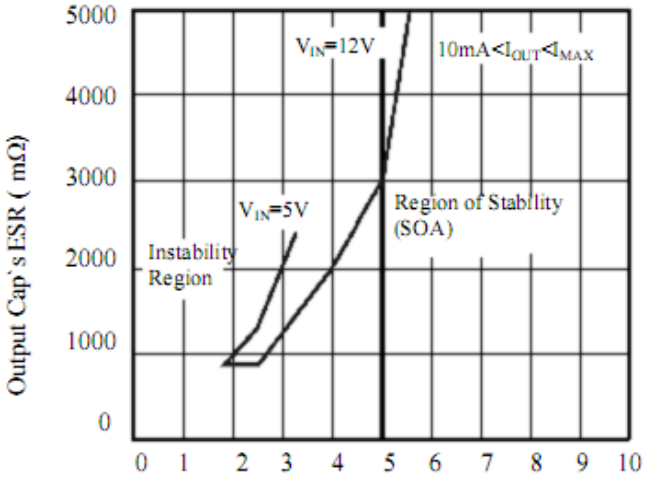

Figure 14. Stability Region (SOA) VS. the Cout

Outline Drawing for SOT-223

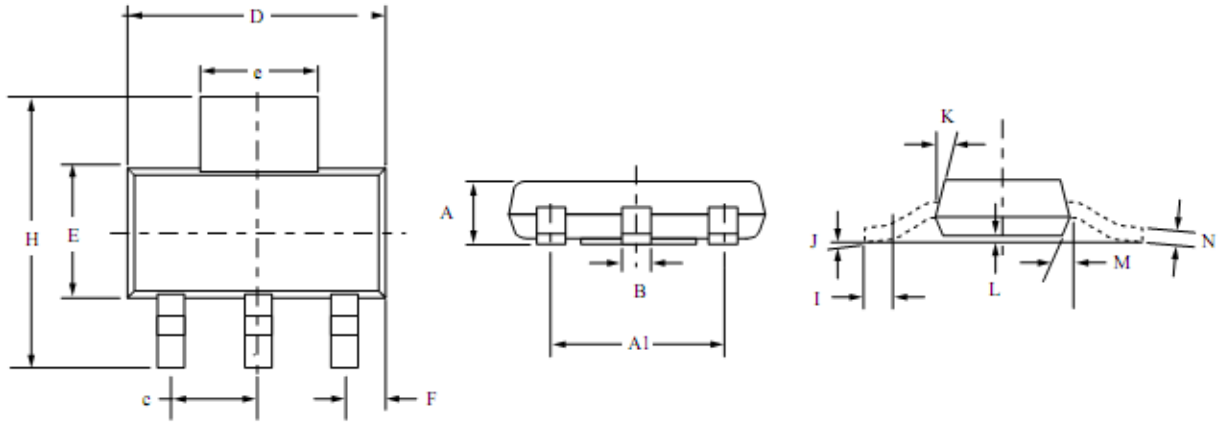

Figure 15. 4-Lead SOT-223 Package

Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	Ñ	.071	Ñ	1.80	
A1	Ñ	.181	Ñ	4.80	
B	.025	.033	.064	.840	
c	Ñ	.090	Ñ	2.29	
D	.248	.264	6.30	6.71	
E	.130	.148	3.30	3.71	
e	.115	.124	2.95	3.15	
F	.033	.041	.840	1.04	
H	.264	.287	6.71	7.29	
I	.0121	Ñ	.310	Ñ	
J	Ñ	10°	Ñ	10°	
K	10°	16°	10°	16°	
L	.0008	.0040	.0203	.1018	
M	10°	16°	10°	16°	
N	.010	.014	.250	.360	

Outline Drawing for TO-252

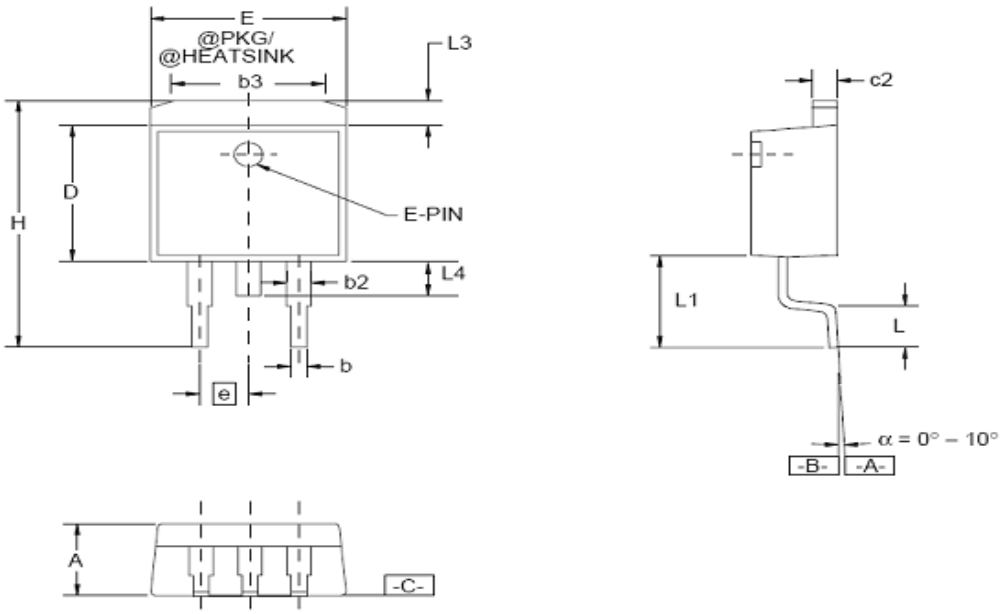

Figure 16. 3-Lead TO-252 Package

Symbol	Inches		Millimeters		Notes
	Min.	Max.	Min.	Max.	
A	.086	.094	2.19	2.39	
b	.025	.035	0.64	0.89	
b2	.030	.045	0.76	1.14	
b3	.205	.215	5.12	5.46	4
c	.018	.024	0.46	0.61	
c2	.018	.023	0.46	0.58	
D	.210	.245	5.33	6.22	1
E	.250	.265	6.35	6.73	1
e	.090 BSC		2.29 BSC		
H	.370	.410	9.40	10.41	
L	.055	.070	1.40	1.78	3
L1	.108 REF		2.74 REF		
L3	.035	.080	0.89	2.03	4
L4	.025	.040	0.64	1.02	

Notes:

1. Dimensions are exclusive of mold flash, metal burrs or interlead protrusion.
2. Stand off-height is measured from lead tip with ref. to Datum –B-.
3. Foot length is measured with ref. To Datum –A– with lead surface.
4. Thermal pad contour optional within dimension b3 and L3.
5. Formed leads to be planar with respect to one another at seating place –C-.
6. Dimensions and tolerances.

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