

GENERAL DESCRIPTION

The LD1084 is a low dropout three terminal regulator with 5A output current capability. The output voltage is adjustable with the use of a resistor divider or fixed 1.5V/1.8V/2.5V/3.3V/5V. Dropout voltage is guaranteed to be at maximum of 1.5V with the maximum output current. Its low dropout voltage and fast transient response make it ideal for low voltage microprocessor applications. Current limit and thermal protection provide protection against any overload condition that would create excessive junction temperatures.

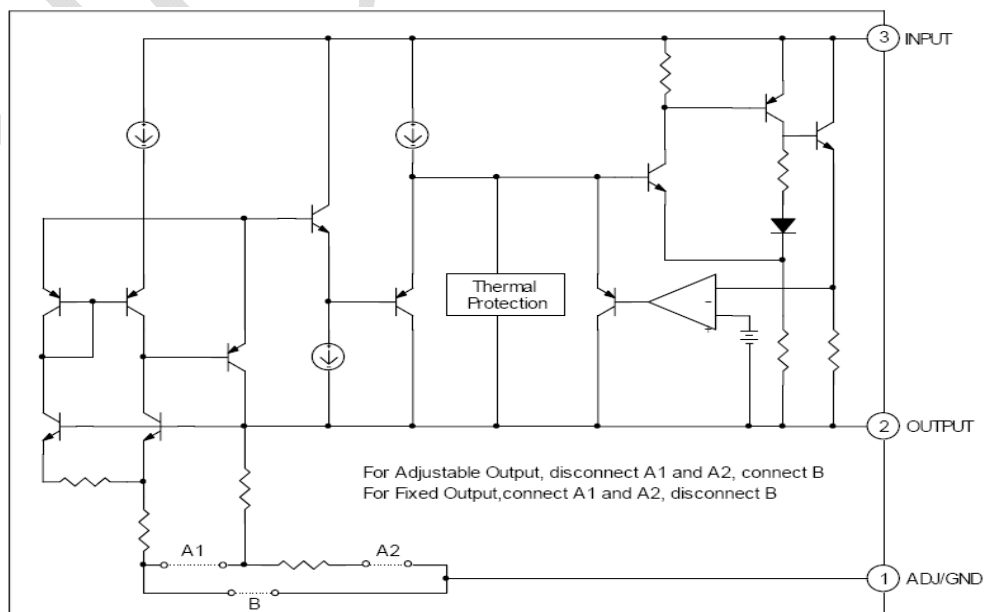
FEATURES

- ◆ 1.5V Max. Dropout Voltage at 5A Output Current.
- ◆ Fast Transient Response.
- ◆ Extremely Tight Line and Load Regulation.
- ◆ Current Limiting and Thermal Protection.
- ◆ Adjustable Output Voltage or Fixed 1.5V, 1.8V, 2.5V, 3.3V, 5.0V.

APPLICATIONS

- Mother Board I/O Power Supplies
- Microprocessor Power Supplies.
- High Current Regulator
- Post Regulator for Switching Supply.
- Notebook Computers

BLOCK DIAGRAM



PIN DESCRIPTIONS

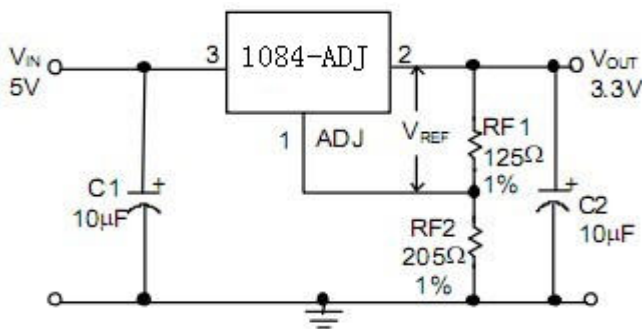
ADJ PIN - Providing $V_{REF}=1.25V$ (typ.) for adjustable V_{OUT} . $V_{REF}=V_{OUT}-V_{ADJ}$ and $I_{ADJ}=60\mu A$ (typ.)

/GND PIN- Power ground.

V_{OUT} PIN - Adjustable output voltage.

V_{IN} PIN - Power Input.

TYPICAL APPLICATION CIRCUIT



Adjustable Voltage Regulator

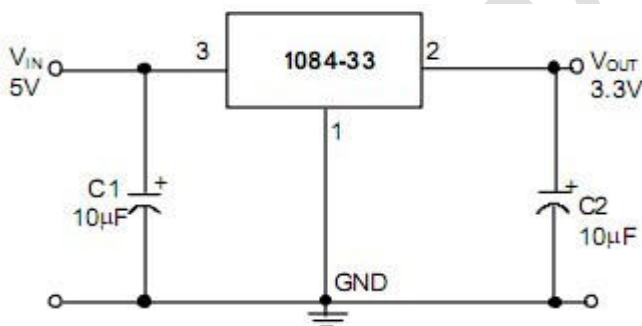
$$V_{REF}=V_{OUT} - V_{ADJ}=1.25V \text{ (typ.)}$$

$$V_{OUT}=V_{REF} \times (1+RF2/RF1)+ I_{ADJ} \times RF2$$

$$I_{ADJ}=60\mu A \text{ (typ.)}$$

(1) C1 needed if device is far away from filter capacitors.

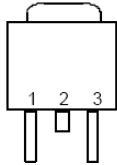
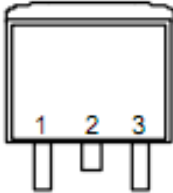
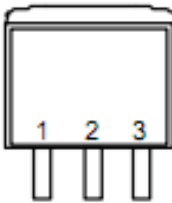
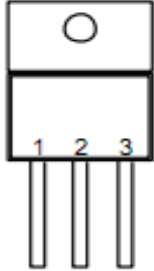
(2) C2 required for stability.



Fixed Voltage Regulator

ORDERING INFORMATION

LD1084	□	□	C	□
				Package Type
				E:TO-252
				M:TO-263-2
				T:TO-220
				MA:TO-263-3
				Output Voltage
				ADJ:adj
				15:1.5V
				18:1.8V
				25:2.5V
				33:3.3V
				50:5.0V

ORDER NUMBER	PIN CONFIGURATION
LD1084CE (TO-252)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN 
LD1084CM (TO-263-2)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN 
LD1084CMA (TO-263-3)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN 
LD1084CT (TO-220)	FRONT VIEW 1: ADJ (GND) 2: VOUT (TAB) 3: VIN 

ABSOLUTE MAXIMUM RATINGS

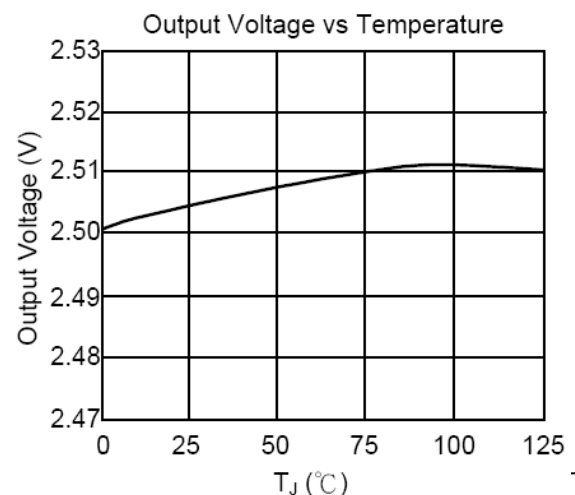
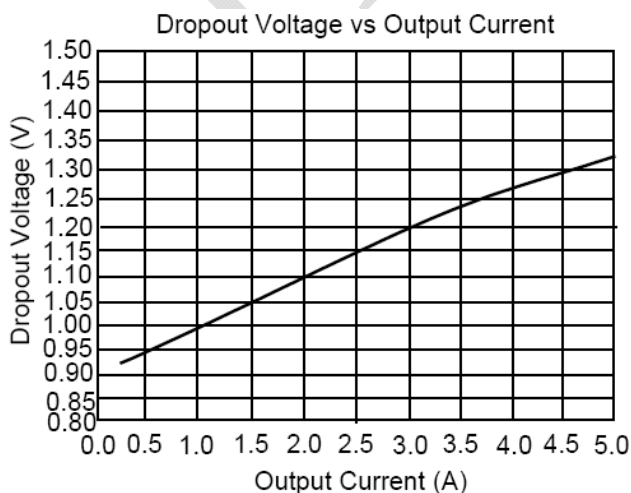
Input Voltage(Note 1).....	30V
Operating Junction Temperature Range	-20°C~ 125°C
Storage Temperature Range	- 65°C ~ 150°C
Thermal Resistance Junction to Case TO-252	15°C/W
TO-263-3, TO263-2, TO-220.....	6°C /W
Thermal Resistance Junction to Ambient TO-252	100°C/W
(Assume no ambient airflow, no heatsink) TO-263-2 ...	60°C /W
TO-263-3 ...	60°C /W
TO-220 ...	50°C /W
Lead Temperature (Soldering) 10 sec.	260°C

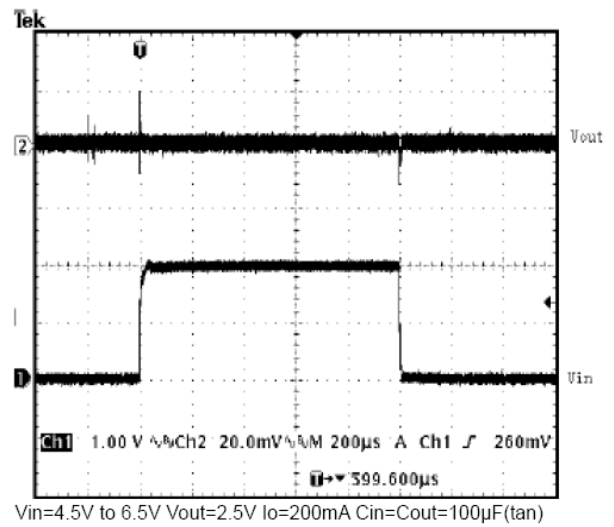
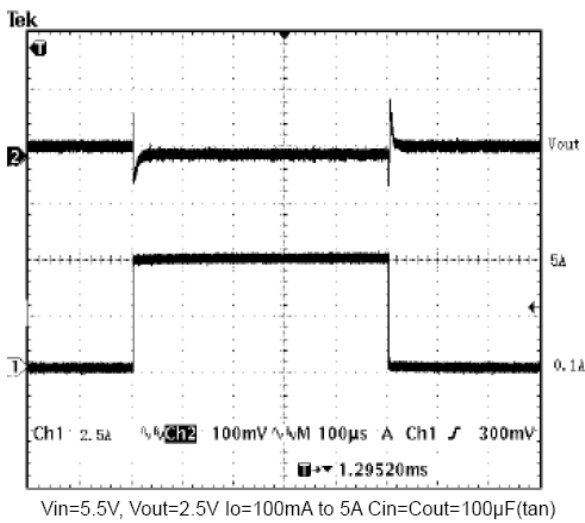
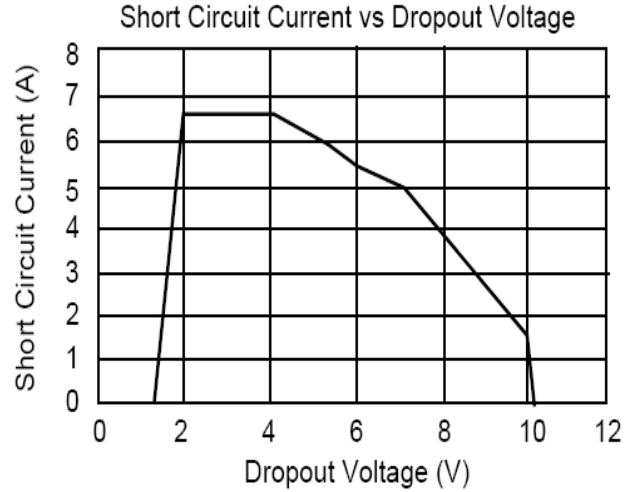
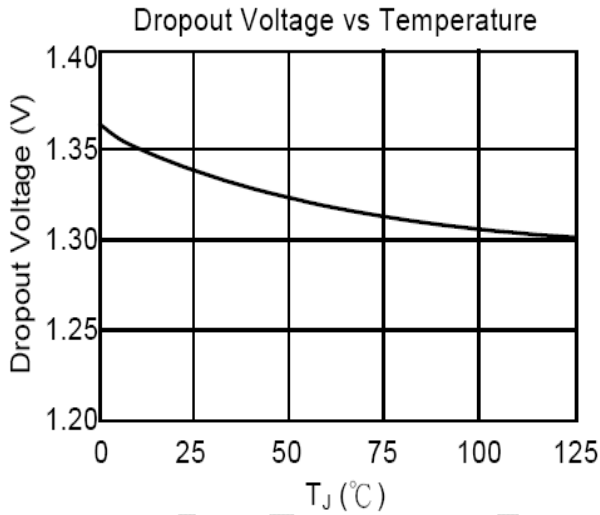
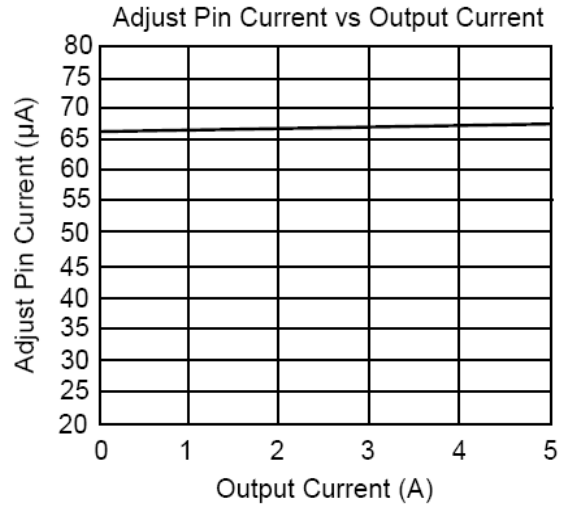
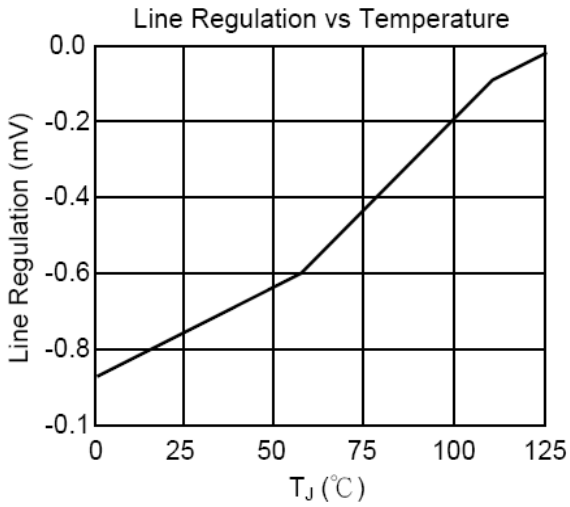
Note 1: Although the devices maximum operating voltage is limited, The devices are guaranteed to withstand transient input voltages up to 30V. For input voltages greater than the maximum operating input voltage some degradation of specifications will occur. For input/output voltage differentials greater than 12V, a minimum external load of 5mA is required to maintain regulation.

ELECTRICAL CHARACTERISTICS (VIN ≤ 10V, TJ = 25°C, IO = 10mA, Unless otherwise specified)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Reference Voltage	LD1084 (ADJ) 1.5V ≤ VIN - VOUT ≤ 8V	1.225	1.25	1.275	V
Output Voltage	LD1084-15 LD1084-18 LD1084-25 LD1084-33 LD1084-50	1.470 1.764 2.450 3.235 4.90	1.50 1.80 2.50 3.30 5.00	1.530 1.836 2.550 3.365 5.10	V
Line Regulation	1.5V ≤ VIN - VOUT ≤ 10V		0.02	0.5	%
Load Regulation	10mA < IO < 5A			1	%
Dropout Voltage	IO = 5A, ΔVOUT = 1% VOUT		1.3	1.5	V
Current Limit	VIN - VOUT = 3V	5.1			A
Adjusted Pin Current	IO = 10mA ~ 5A 1.5V ≤ VIN - VOUT ≤ 10V		60	120	uA
Adjusted Pin Current Change (Δ IADJ)	IO = 10mA ~ 5A 1.5V ≤ VIN - VOUT ≤ 10V		0.2	5	uA
Temperature Stability	IO = 10mA		0.5		%
Minimum Load Current	1.5V ≤ VIN - VOUT ≤ 10V		5	10	mA
RMS Output Noise (% of VOUT)	10Hz ≤ f ≤ 10KHz		0.003		%
Ripple Rejection Ratio	120Hz input ripple COUT = 25Uf (VIN - VOUT) = 3V		60	72	dB

TYPICAL PERFORMANCE CHARACTERISTICS



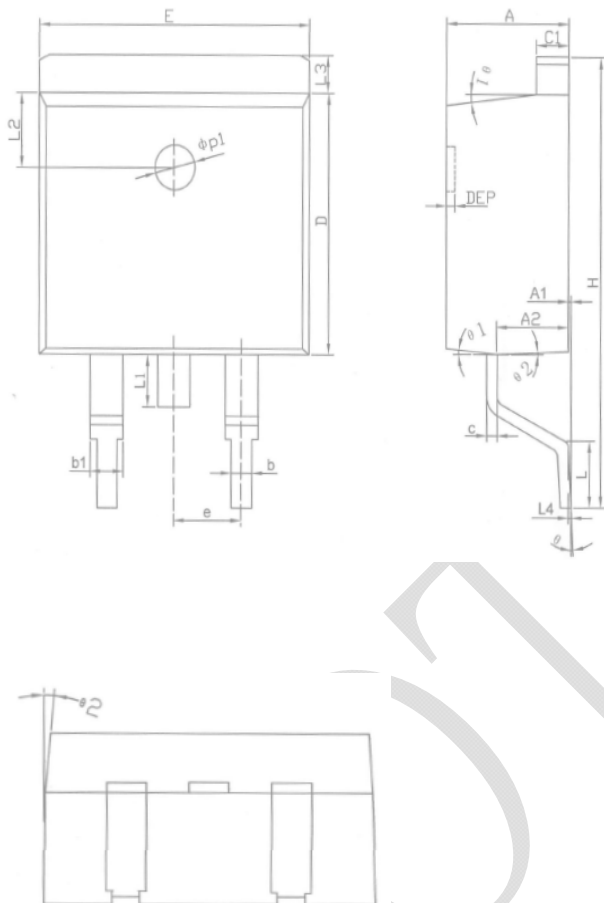


Load Transient Response

Line Transient Response

PACKAGE INFORMATION

TO-263-2



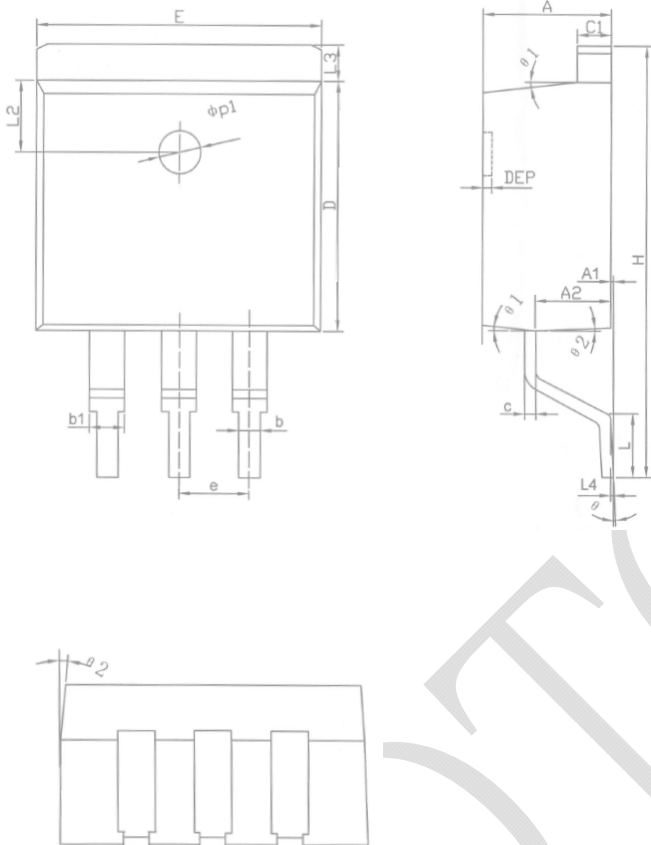
COMMON DIMENSIONS

SYMBOL	MILLIMETER			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	0	0.10	0.25	0	0.004	0.010
A2	2.59	2.69	2.79	0.102	0.106	0.110
b	0.77	-	0.90	0.030	-	0.035
b1	1.23	-	1.36	0.048	-	0.054
c	0.34	-	0.47	0.013	-	0.019
C1	1.22	-	1.32	0.048	-	0.052
D	8.60	8.70	8.80	0.338	0.343	0.346
E	10.06	10.16	10.26	0.396	0.4	0.404
e	2.54BSC			0.1BSC		
H	14.70	15.10	15.50	0.579	0.594	0.610
L	2.00	2.30	2.60	0.079	0.090	0.102
L3	1.17	1.27	1.40	0.046	0.050	0.055
L1	-	-	1.70	-	-	0.067
L4	0.25BSC			0.01BSC		
L2	2.50REF			0.098REF		
θ	0°	-	8°	0°	-	8°
θ_1	5°	7°	9°	5°	7°	9°
θ_2	1°	3°	5°	1°	3°	5°
DEP	0.05	0.10	0.20	0.002	0.004	0.008
$\phi p1$	1.40	1.50	1.60	0.055	0.059	0.063

NOTES:
 1. ALL DIMENSIONS REFER TO JEDEC STANDARD
 TO263-2L DO NOT INCLUDE MOLD FLASH
 OR PROTRUSIONS

TO-263-3

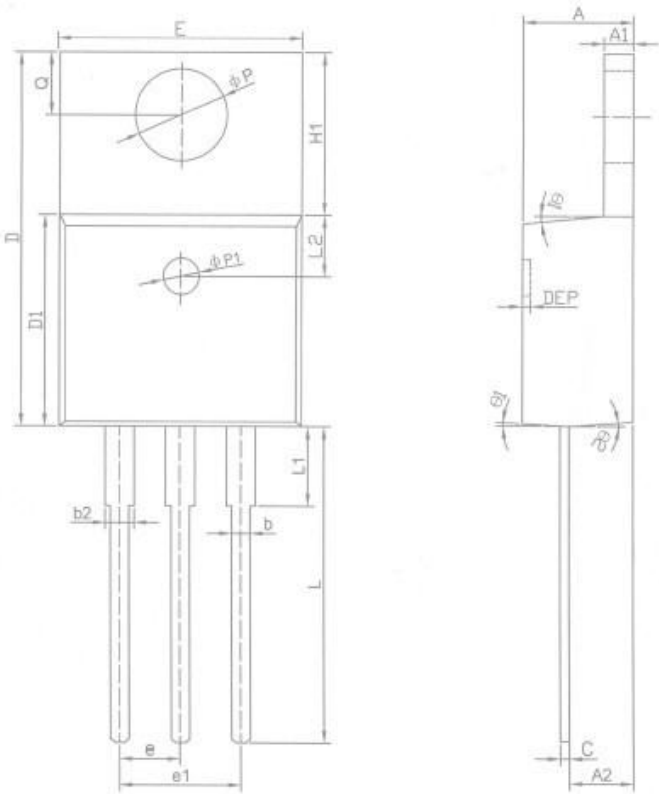
COMMON DIMENSIONS



SYMBOL	MILLIMETER			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	0	0.10	0.25	0	0.004	0.010
A2	2.59	2.69	2.79	0.102	0.106	0.110
b	0.77	-	0.90	0.030	-	0.035
b1	1.23	-	1.36	0.048	-	0.054
c	0.34	-	0.47	0.013	-	0.019
c1	1.22	-	1.32	0.048	-	0.052
D	8.60	8.70	8.80	0.338	0.343	0.346
E	10.06	10.16	10.26	0.396	0.4	0.404
e	2.54BSC			0.1BSC		
H	14.70	15.10	15.50	0.579	0.594	0.610
L	2.00	2.30	2.60	0.079	0.090	0.102
L3	1.17	1.27	1.40	0.046	0.050	0.055
L4	0.25BSC			0.01BSC		
L2	2.50REF			0.098REF		
θ	0°	-	8°	0°	-	8°
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	1°	3°	5°	1°	3°	5°
DEP	0.05	0.10	0.20	0.002	0.004	0.008
$\phi p1$	1.40	1.50	1.60	0.055	0.059	0.063

NOTES:
 1. ALL DIMENSIONS REFER TO JEDEC STANDARD
 TO263-3L DO NOT INCLUDE MOLD FLASH
 OR PROTRUSIONS

TO-220



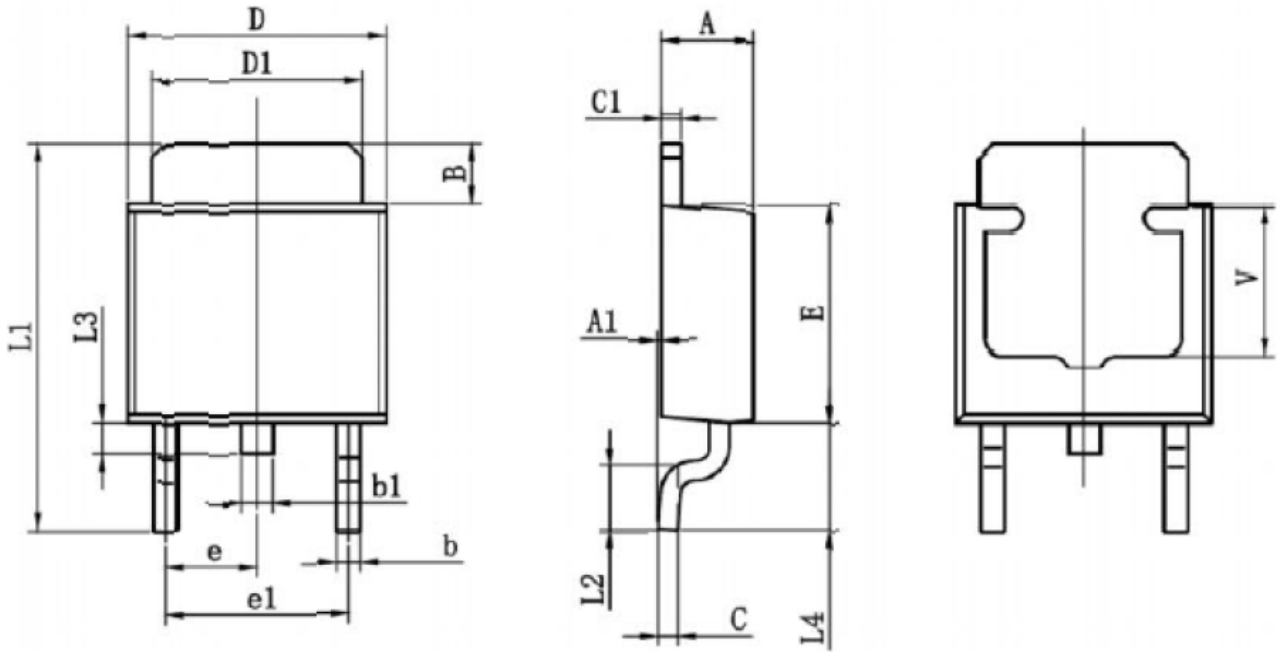
COMMON DIMENSIONS

SYMBOL	MILLIMETER			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.22	-	1.32	0.048	-	0.052
A2	2.59	2.69	2.79	0.102	0.106	0.110
b	0.77	-	0.90	0.030	-	0.035
b2	1.23	-	1.36	0.048	-	0.054
c	0.34	-	0.47	0.013	-	0.019
D	14.70	15.00	15.30	0.579	0.591	0.602
D1	8.60	8.70	8.80	0.338	0.343	0.346
E	10.06	10.16	10.26	0.396	0.400	0.404
e	2.54BSC			0.18SC		
e1	5.08BSC			0.28SC		
H1	6.10	6.30	6.50	0.240	0.248	0.256
L	13.15	-	13.57	0.518	-	0.534
L1	-	-	4.35	-	-	0.171
L2	2.50REF			0.098REF		
ϕP	3.80	3.84	3.88	0.149	0.151	0.153
Q	2.60	-	2.90	0.102	-	0.114
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	1°	3°	5°	1°	3°	5°
DEP	0.05	0.1	0.2	0.002	0.004	0.008
$\phi P1$	1.4	1.5	1.6	0.055	0.059	0.063

NOTES:

1. ALL DIMENSIONS REFER TO JEDEC STANDARD TO-220AB DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

TO-252



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	0.014	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		0.0901TYP	
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	

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