Features

- Low voltage drop: 0.06V@100mA
- High input voltage: 8.5V
- Low temperature coefficient
- Low Quiescent Current: 2uA at 5.0V
- Output voltage accuracy: tolerance ±2%

Applications

- Battery-powered equipment
- Hand-Hold Equipment
- GRS Receivers
- Wireless LAN

General Description

The HM6245 series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and laser trimming technologies.

The HM6245 consists of a high-precision voltage reference, an error amplification circuit, and a current limited output driver. Transient response to load variations have improved in comparison to the existing series.
SOT89-3 SOT89-5 TO92 SOT223 TO252 TO263 and TO220 packages are available.

Order Information

HM6245P②③①④

| Designator	Symbol	Description
①	M5	Package:SOT23-5
	P	Package:SOT89A
	PB	Package:SOT89B
	P5	Package:SOT89-5
	TB	Package:TO220
②③	Integer	Output Voltage(2.1~5.0V)
④	R	RoHS / Pb Free
	G	Halogen Free

Typical Application
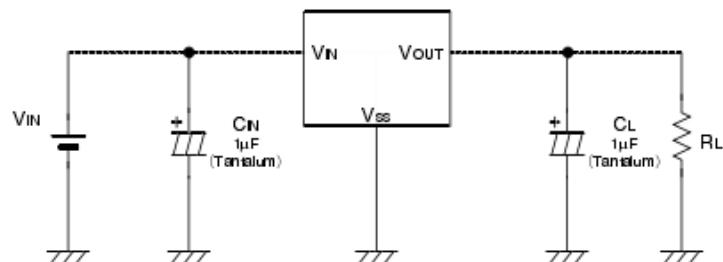
Note1:Input capacitor   CIN=1uF.

Note2:Ouput capacitor COUT=1uF/6.8uF(1uF Tantalum capacitor or 6.8uF ceramic capacitor is recommended).

Block Diagram
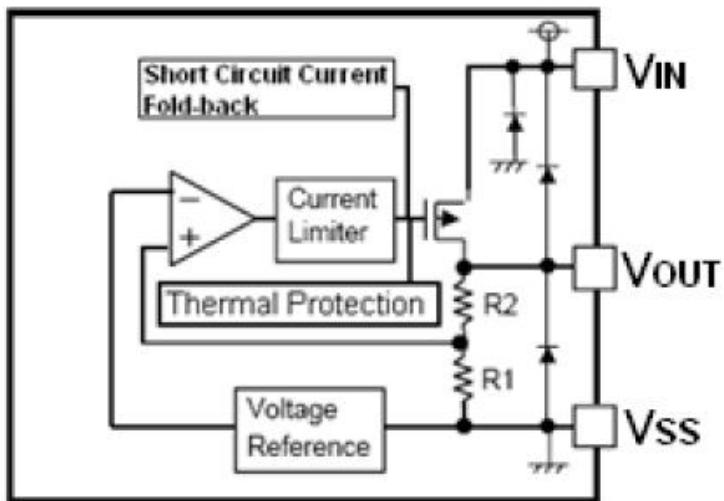
Pin Assignment

TO92 (Front view)

GND VIN VOUT

SOT89 A (Top view)

GND VIN VOUT

SOT89 B (Top view)

VIN GND VOUT

SOT89-5 (Top view)

VOUT GND VIN

CE GND NC

SOT23-5 (Top view)

VOUT NC

VIN GND CE

SOT223 (Top View)

GND VIN VOUT

TO252 (Top View)

GND

VIN   VOUT

TO263 (Top View)

VIN GND VOUT

TO220 (Top View)

VIN GND VOUT
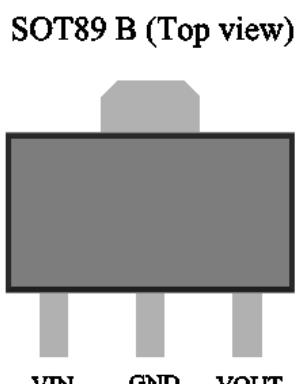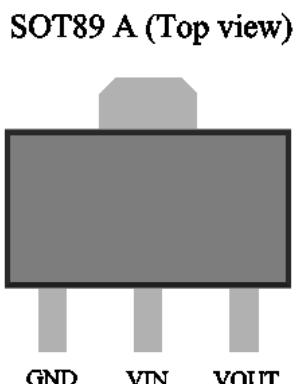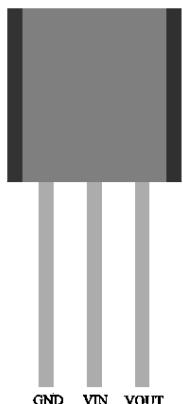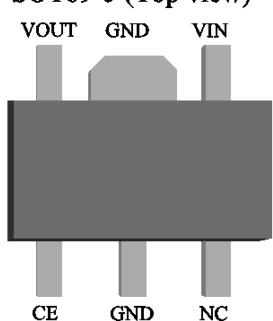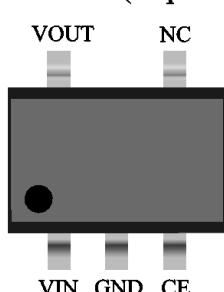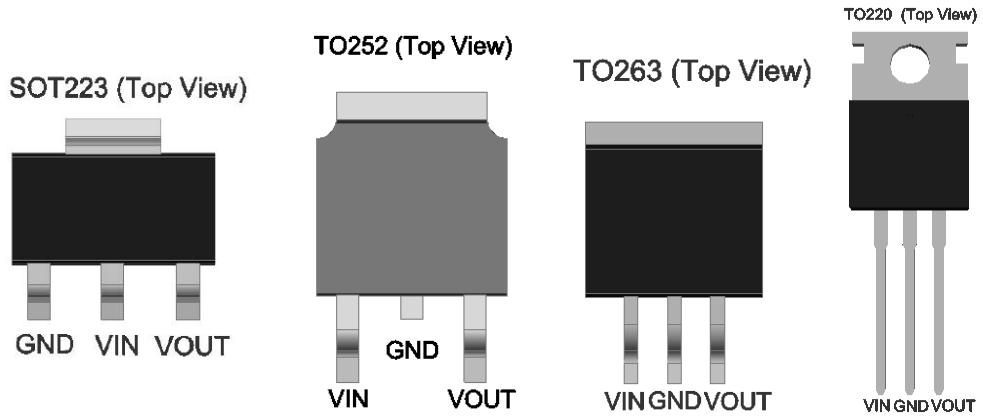
Marking Rule
  SOT89-3
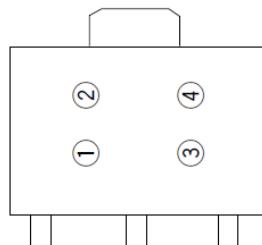
① represents the integer of the output voltage

SYMBOL	VOLTAGE(V)
1	1.②
2	2.②
3	3.②
4	4.②
5	5.②
6	6.②

② represents the decimal number of the output voltage

SYMBOL	VOLTAGE(V)	SYMBOL	VOLTAGE(V)
A	①. 0	F	①. 5
B	①. 1	H	①. 6
C	①. 2	K	①. 7
D	①. 3	L	①. 8
E	①. 4	M	①. 9

③ based on internal standards

SYMBOL
0

④ represents the assembly LOT No.
   Based on internal standards

SOT89-5、SOT23-5 and TO220
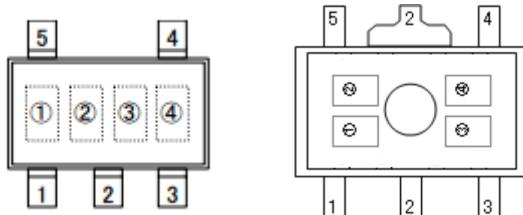
① product code: G

② output voltage code:

Voltage(V)	Code	Voltage(V)	Code	Voltage(V)	Code
1.0	a	2.4	0	3.8	N
1.1	b	2.5	A	3.9	O
1.2	c	2.6	B	4.0	P
1.3	d	2.7	C	4.1	Q
1.4	e	2.8	D	4.2	R
1.5	1	2.9	E	4.3	S
1.6	2	3.0	F	4.4	T
1.7	3	3.1	G	4.5	U
1.8	4	3.2	H	4.6	V
1.9	5	3.3	I	4.7	W
2.0	6	3.4	J	4.8	X
2.1	7	3.5	K	4.9	Y
2.2	8	3.6	L	5.0	Z
2.3	9	3.7	M		

③ CE code

Symbol	Standard
E	With CE
N	Without CE

④ Data Code: X

Absolute Maximum Ratings

Supply Voltage ....-0.3V to 8.5V

Output Current…………………………..1.1A

Operating Temperature ....-40℃ to 85℃

Storage Temperature ....-40℃ to 125℃

Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics

=U   for any output voltage   （Ta=25℃）

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{OUT}	Output Voltage	Vin=Vout+1V 1.0mA≤Iout≤30mA	Vout×0.98	--	Vout×1.02	V
I_{OUT}	Output Current*1	Vin-Vout=1V	--	1000	--	mA
V_{DROP}	Low dropout*2	Refer to the next table				
$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	1.6V≤Vin≤8V Iout=100mA	--	0.05	0.2	%/V
$\Delta V_{OUT}\ \Delta I_{OUT}$	△Vout /△Iout	Vin= Vout+1V 1.0mA≤Iout≤100mA	--	12	30	mV
Output voltage Temperature Coefficiency	△Vout/(Ta·Vout)	Iout=30mA 0℃≤Ta≤70℃	--	±100	--	Ppm/℃
Supply Current	Iss	--	--	2	5	uA
Input Voltage	Vin	--	--	--	8.5	V

Electrical Characteristics by Output Voltage：

Output Voltage Vout(V)	Dropout Voltage Vdif（V）		
	Conditions	Typ.	Max.
Vout ≤ 2.0V	Iout=60 mA	0.05	0.08
2.0 < Vout ≤ 3.0	Iout=80 mA	0.05	0.08
3.0 < Vout ≤ 4.0	Iout=100 mA	0.06	0.08
4.0 < Vout ≤ 5.0		0.05	0.08
3.0 < Vout ≤ 4.0	Iout=200 mA	0.13	0.16
4.0 < Vout ≤ 5.0		0.12	0.16
3.0 < Vout ≤ 4.0	Iout=1000 mA	0.65	0.8
4.0 < Vout ≤ 5.0		0.6	0.8

Package Information

3-pin TO92 Outline Dimensions
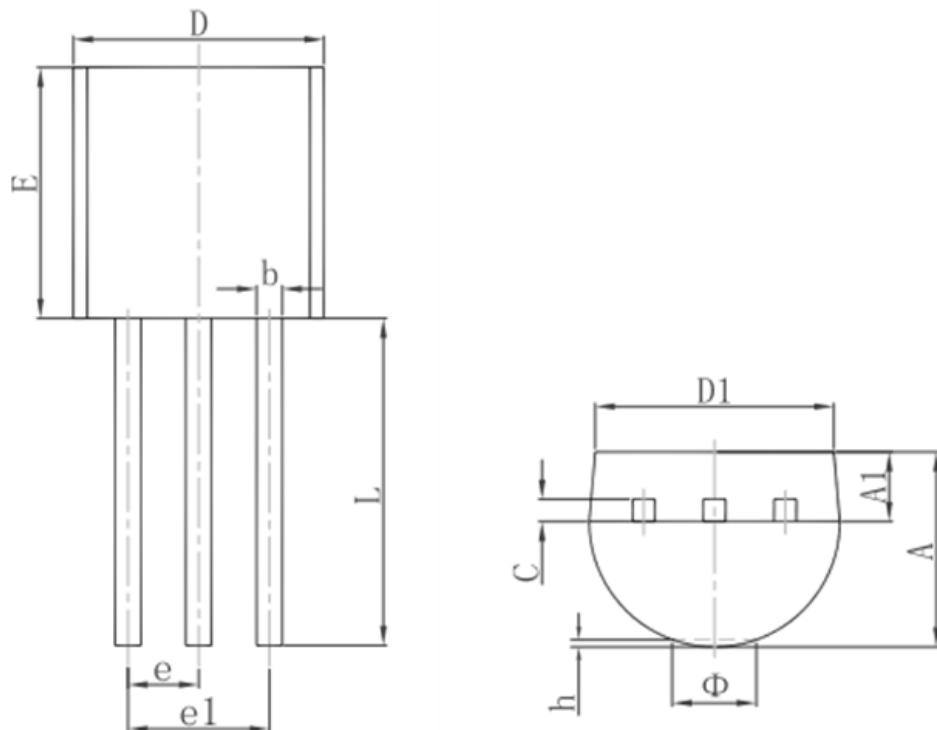
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

3-pin SOT89 Outline Dimensions
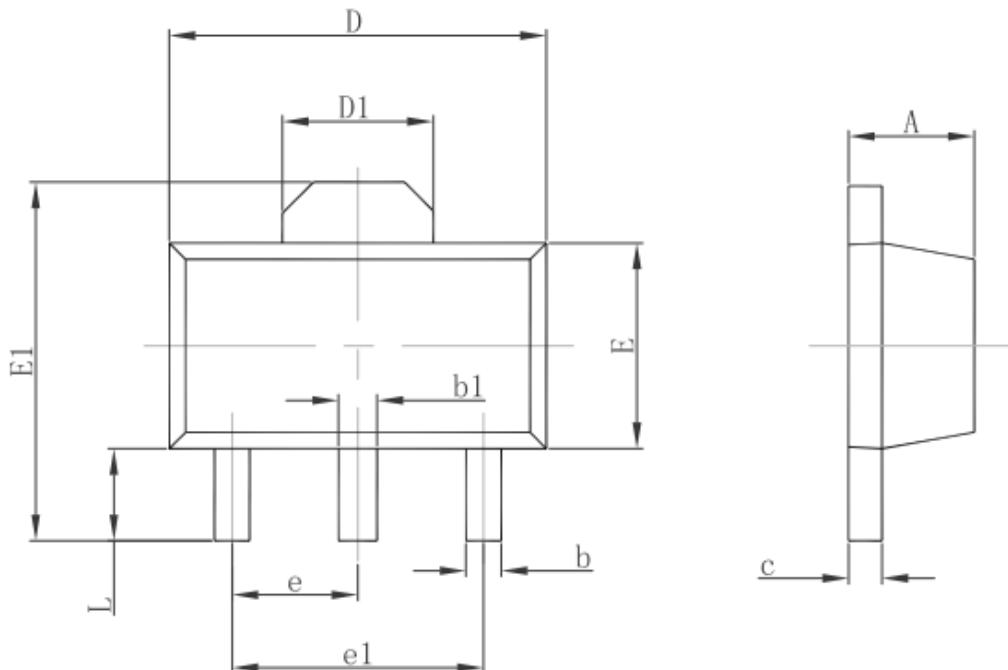
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

SOT-89-5L PACKAGE OUTLINE DIMENSIONS
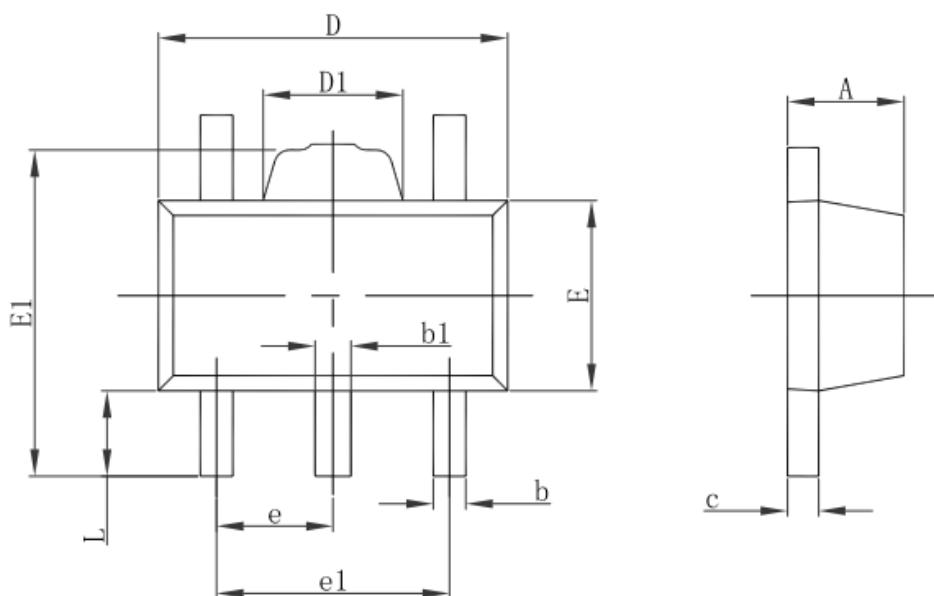
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP.		0.060TYP.	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

3-pin SOT23-3 Outline Dimensions

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-23-5L PACKAGE OUTLINE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-223 PACKAGE OUTLINE DIMENSIONS
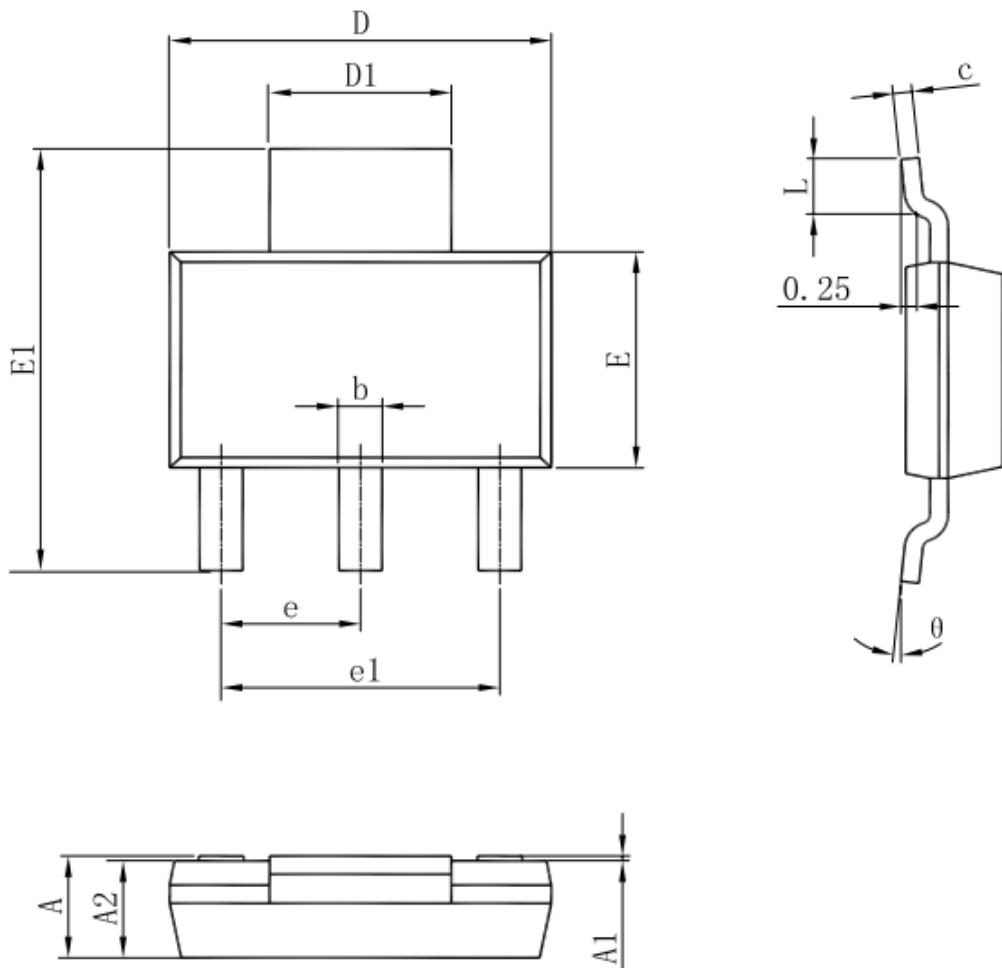
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	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-252-2L PACKAGE OUTLINE DIMENSIONS
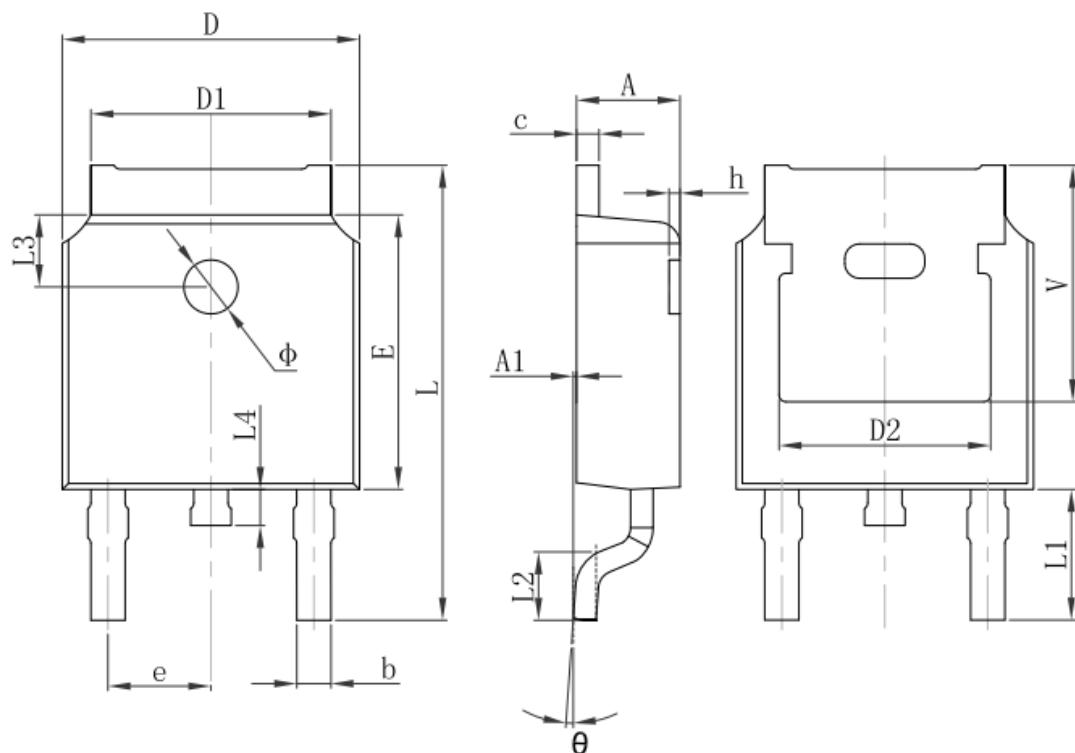
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

TO-263-3L PACKAGE OUTLINE DIMENSIONS
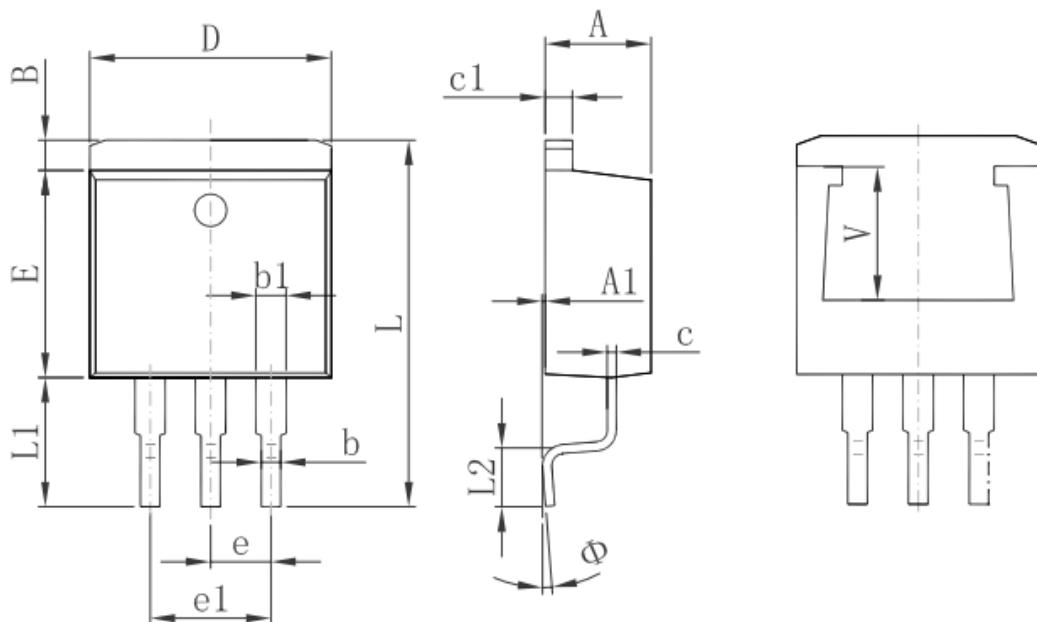
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
Φ	0°	8°	0°	8°
V	5.436 REF.		0.214REF.	

TO-220-3L PACKAGE OUTLINE DIMENSIONS
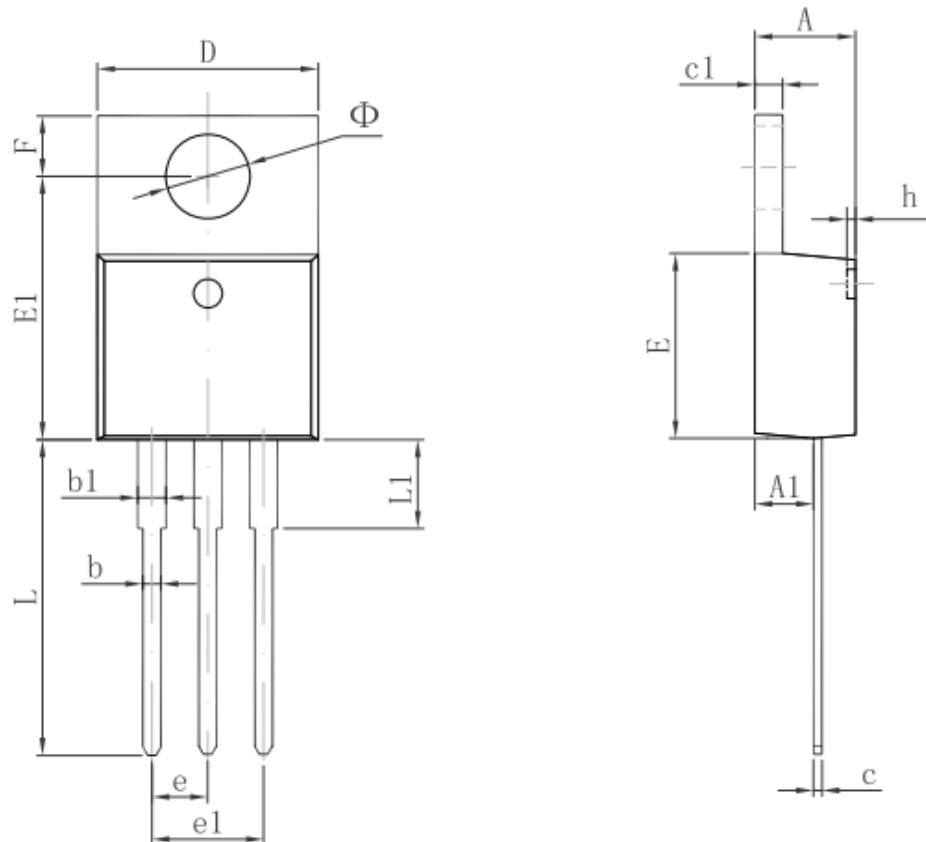
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155