1.8V 1A Regulator

Features

- **Output current in excess of 1A**
- **Output voltage accuracy ±2%**
- **Quiescent current, typically 480μA**
- **Internal short circuit current limit**
- **Internal over temperature protection**

Applications

- **PC motherboard**
- **ADSL/Cable Modem**
- **Set-Top-Box**
- **LAN switch/Hub**
- **Broad band access**

General Description

The G952 positive 1.8V voltage regulator features the ability to source 1A of output current. The typical quiescent current is 0.48mA.

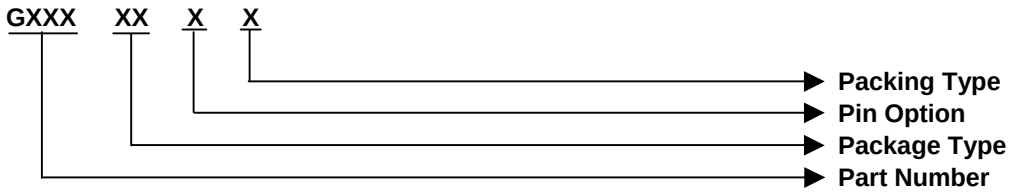
Familiar regulator features such as over temperature and over current protection circuits are provided to prevent it from being damaged by abnormal operating conditions.

Ordering Information

ORDER NUMBER	PACKAGE TYPE	PIN OPTION		
		1	2	3
G952T63U	SOT223	GND	V_{OUT}	V_{IN}

* For other package types and pin options, please contact us at sales @gmt.com.tw

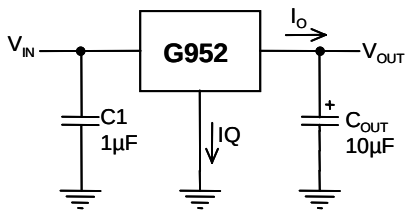
Order Number Identification



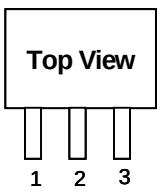
PACKAGE TYPE	PIN OPTION			PACKING
	1	2	3	
T3: TO 220	1: V_{OUT}	GND	V_{IN}	U & D: Tape & Reel Direction
T4: TO 252	2: V_{OUT}	V_{IN}	GND	T: Tube
T5: TO 263	3: GND	V_{OUT}	V_{IN}	
T6: SOT 223	4: GND	V_{IN}	V_{OUT}	
	5: V_{IN}	GND	V_{OUT}	
	6: V_{IN}	V_{OUT}	GND	

Typical Application

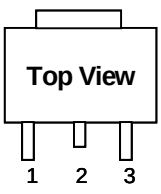
[Note 4] : Type of C_{OUT}



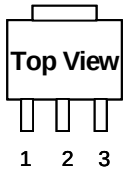
Package Type



TO 220



TO252、263



SOT 223

Absolute Maximum Ratings (Note 1)

Input Voltage……..……7V
Power Dissipation Internally Limited …. (Note 2)
Maximum Junction Temperature…..…… …..150°C
Storage Temperature Range……..-65°C ≤ T_J ≤+150°C
Lead Temperature, Time for Wave Soldering
SOT-223 Package……..260°C, 4s
Continuous Power Dissipation (T_A = +25°C)……..0.8W

Operating Conditions (Note 1)

Input Voltage……..2.7V~6.5V
Temperature Range……0°C ≤ T_J ≤125°C

Electrical Characteristics

V_{IN} =3.3V, I_O = 1A, C_{IN} = 1µF, C_{OUT} =10µF, All specifications apply for T_A = T_J = 25°C. [Note 3]

PARAMETER	CONDITIONS			MIN	TYP	MAX	UNITS
Output Voltage	10mA ≤ I_O ≤ 1A			1.764	1.800	1.836	V
Line Regulation	3V ≤ V_{IN} ≤ 6.5V, I_O = 10mA				3	30	mV
Load Regulation	10mA ≤ I_O ≤ 1A				30	50	mV
Output Impedance	200mA DC and 100mA AC, fo = 120Hz				80		mΩ
Quiescent Current	V_{IN} = 3.3V				480		µA
Ripple Rejection	f_i = 120Hz,V_{ripple} =1V_{P-P}, Io = 100mA				53		dB
Dropout Voltage	I_O = 0A				880		mV
	I_O = 100mA				895		
	I_O = 500mA				950		
	I_O = 1A				1160		
Output Current	Continuous Test, T_A = 25°C, T_J <150°C, V_{OUT} within ±2%	V_{IN} = 3V	Minimum footprint (0.0625 square inch)		660		mA
		V_{IN} = 3.3V	Mounted on 0.53 square inch pcb area		1		A
Short Circuit Current					1.6		A
Over Temperature					150		°C

Note 1: Absolute Maximum Ratings are limits beyond which damage to the device may occur. Operating Conditions are conditions under which the device functions but the specifications might not be guaranteed. For guaranteed specifications and test conditions see the Electrical Characteristics.

Note2: The maximum allowable power dissipation is a function of the maximum junction temperature, T_J, the junction-to-ambient thermal resistance, $R_{\theta JA}$, and the ambient temperature, T_A. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Maximum power dissipation can be calculated based on the output current and the voltage drop across the pass. To determine the maximum power dissipation can use basic equation: $P_{D(max)}$ =$T_{J\ (max)}$-T_A/ θ_{JA} = I_{OUT} (V_{IN}-V_{OUT}) = 800mW. The safe operation of SOT-223 package by G952, it can see "Typical Performance Characteristics". (Safe Operation Area)

Note3: Low duty pulse techniques are used during test to maintain junction temperature as close to ambient as possible.

Note4: The type of output capacitor should be tantalum or aluminum.

Definitions

Dropout Voltage

The input/output Voltage differential at which the regulator output no longer maintains regulation against further reductions in input voltage. Measured when the output drops 100mV below its nominal value. Dropout voltage is affected by junction temperature, load current and minimum input supply requirements.

Line Regulation

The change in output voltage for a change in input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that average chip temperature is not significantly affected.

Load Regulation

The change in output voltage for a change in load current at constant chip temperature. The measurement is made under conditions of low dissipation or by using pulse techniques such that average chip temperature is not significantly affected.

Maximum Power Dissipation

The maximum total device dissipation for which the regulator will operate within specifications.

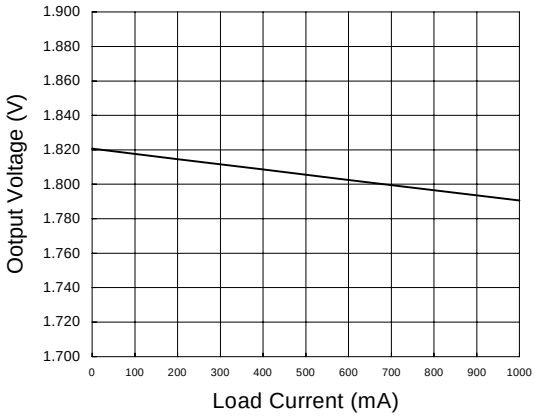
Quiescent Bias Current

Current which is used to operate the regulator chip and is not delivered to the load.

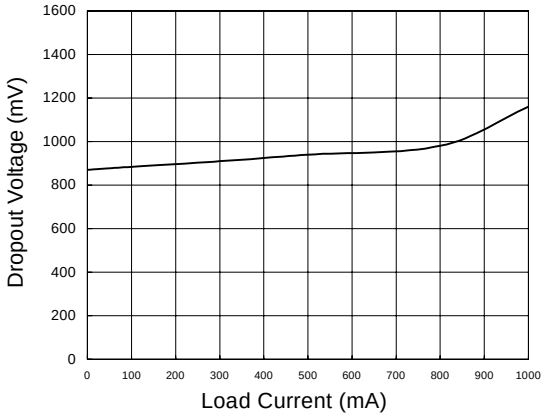
Typical Performance Characteristics

(V_{IN}= +3.3V, C_{IN}=1µF, C_{OUT}=10µF, T_A=25°C, unless otherwise noted.)

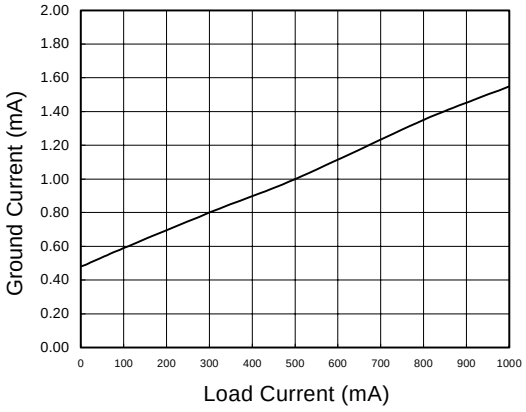
Output Voltage vs. Load Current



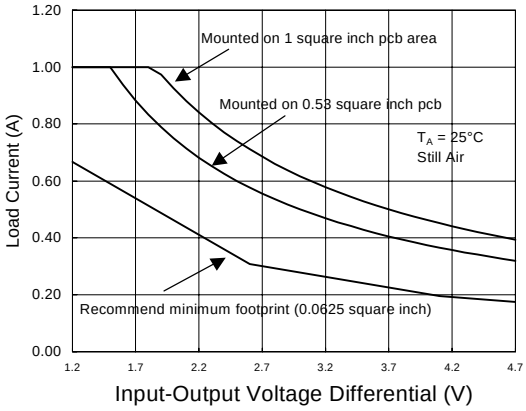
Dropout Voltage vs. Load Current



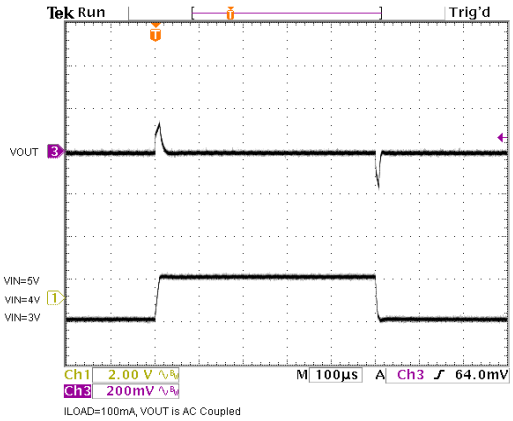
Ground Current vs. Load Current



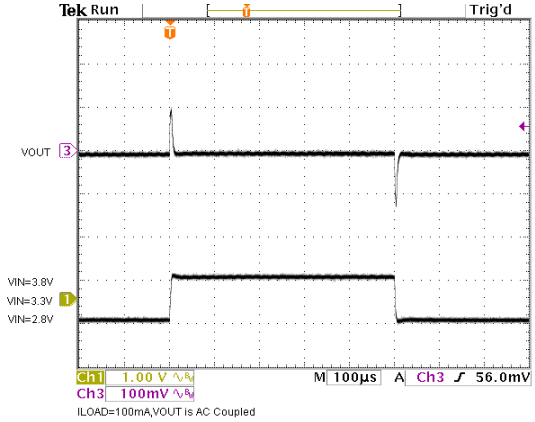
Safe Operation Area of SOT-223



Line Transient



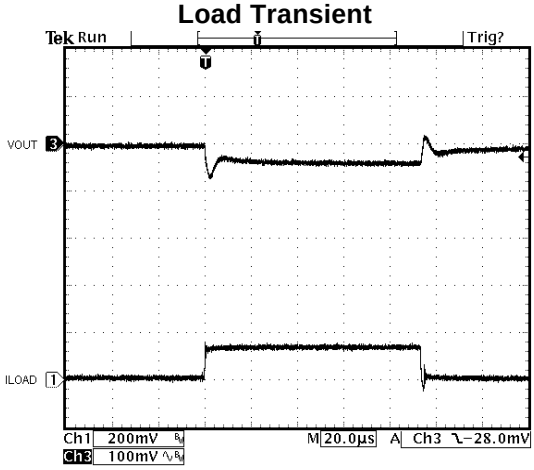
Line Transient



Typical Performance Characteristics

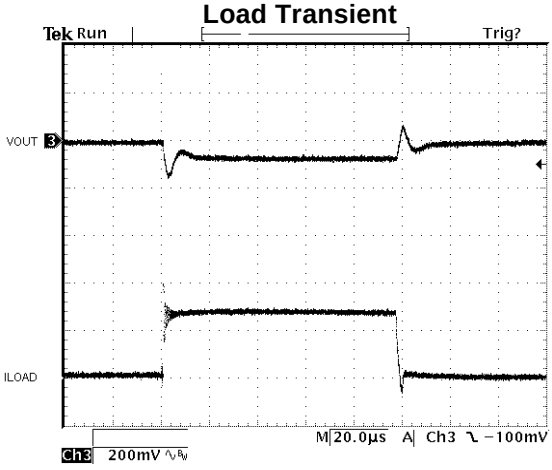
(V_{IN}= +3.3V, C_{IN}=1µF, C_{OUT}=10µF, T_A=25°C, unless otherwise noted.)

Load Transient



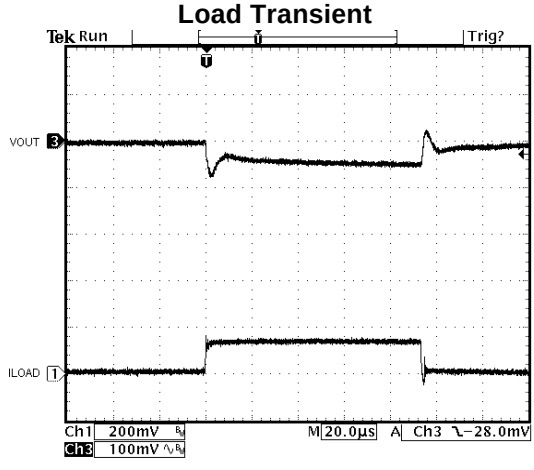
VIN=3.3V, ILOAD = 0mA to 500mA , VOUT is AC Coupled

Load Transient



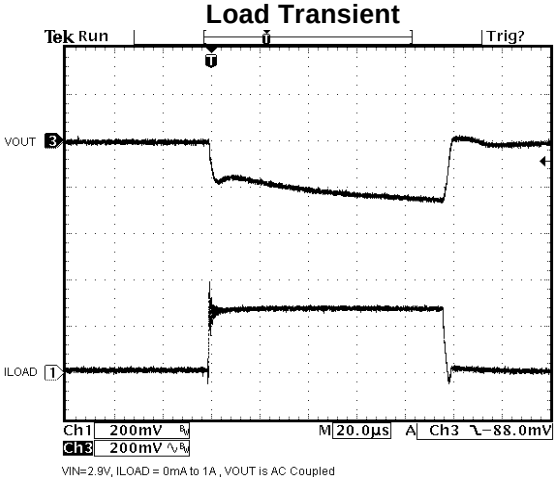
VIN=3.3V , ILOAD = 0mA to 1A , VOUT is AC Coupled

Load Transient



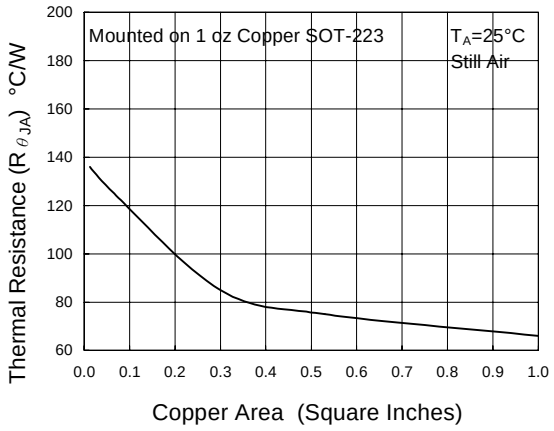
VIN=2.9V, ILOAD = 0mA to 500mA , VOUT is AC coupled

Load Transient

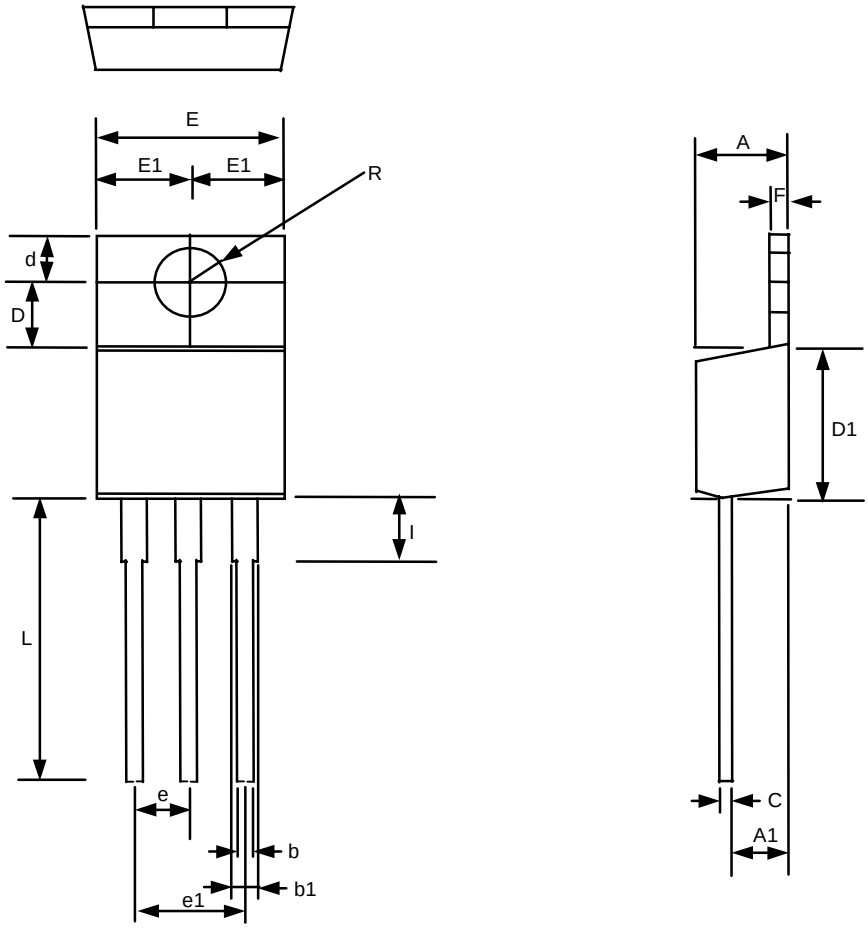


VIN=2.9V, ILOAD = 0mA to 1A , VOUT is AC Coupled

$R_{\theta JA}$ vs. Copper (1 ounce) Area for the SOT-223 Package

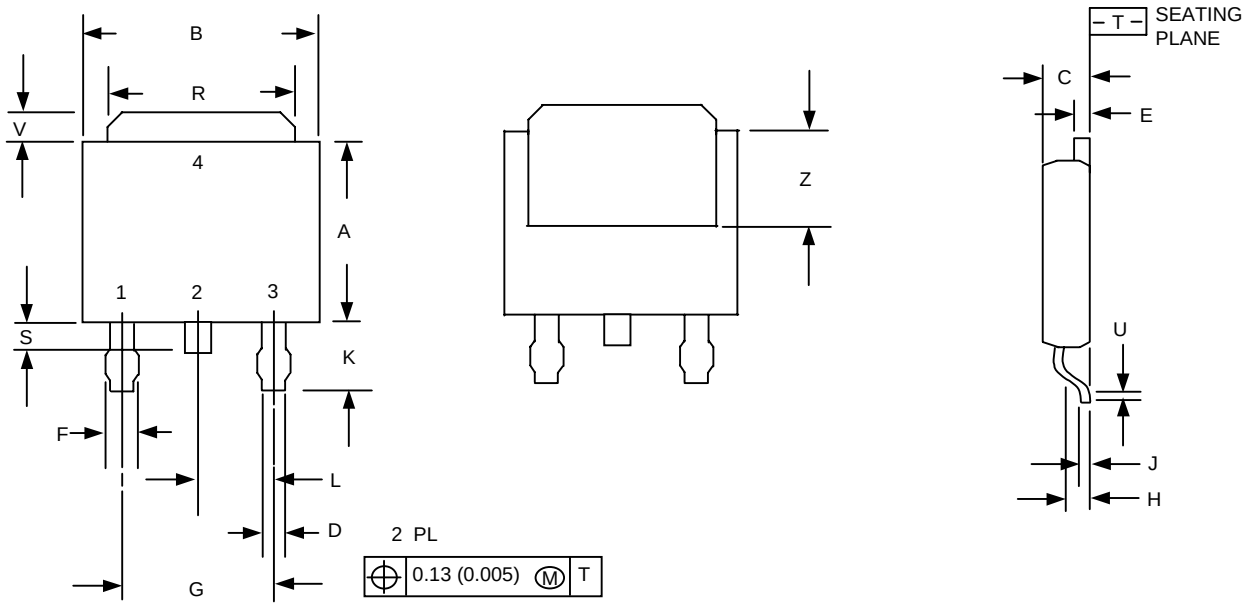


Package Information



TO-220 (T3) Package

SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.318	4.826	0.170	0.190
A1	2.46	2.72	0.097	0.107
b	0.69	0.94	0.027	0.037
b1	1.143	1.397	0.045	0.055
C	0.304	0.460	0.012	0.018
D	3.429	3.683	0.135	0.145
D1	8.53	9.04	0.336	0.356
d	2.62	2.87	0.103	0.113
E	9.906	10.40	0.390	0.410
E1	2.84	5.13	0.112	0.202
e	2.29	2.79	0.090	0.110
e1	4.83	5.33	0.190	0.210
F	1.143	1.397	0.045	0.055
I	3.454	3.962	0.136	0.156
L	13.589	14.351	0.535	0.565

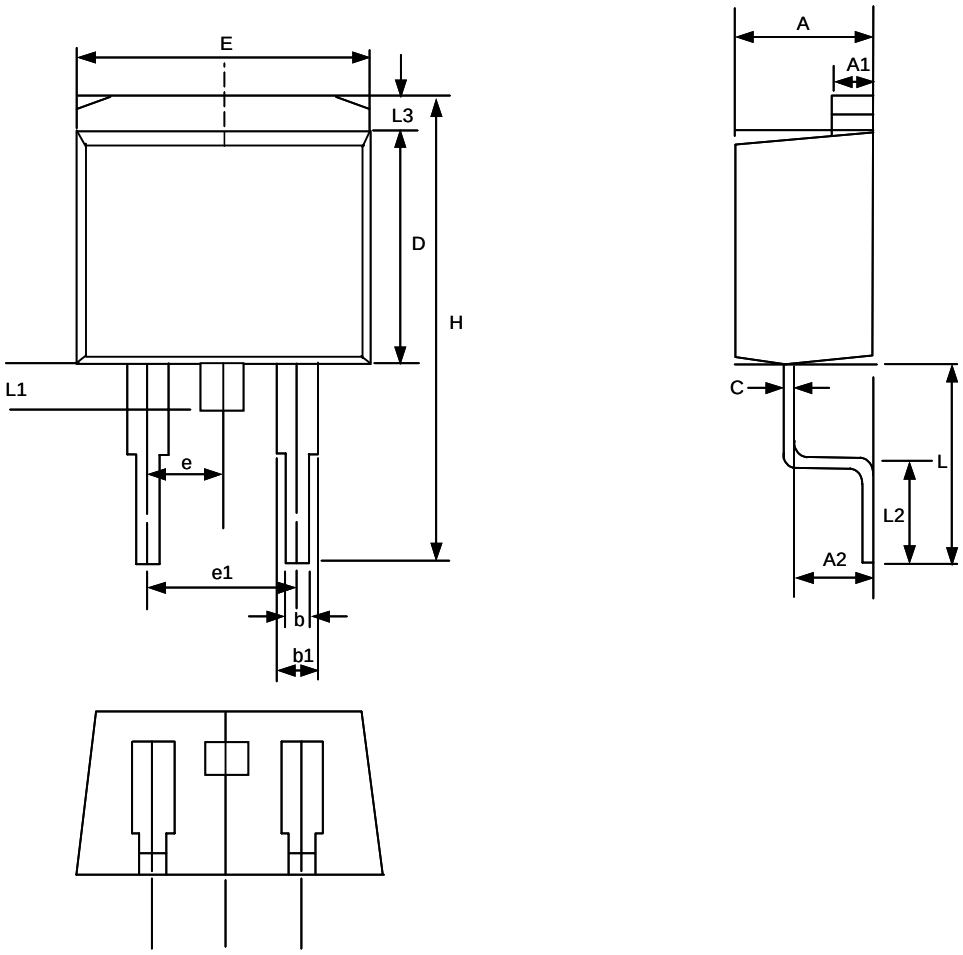


TO-252 (T4) Package

Notes:

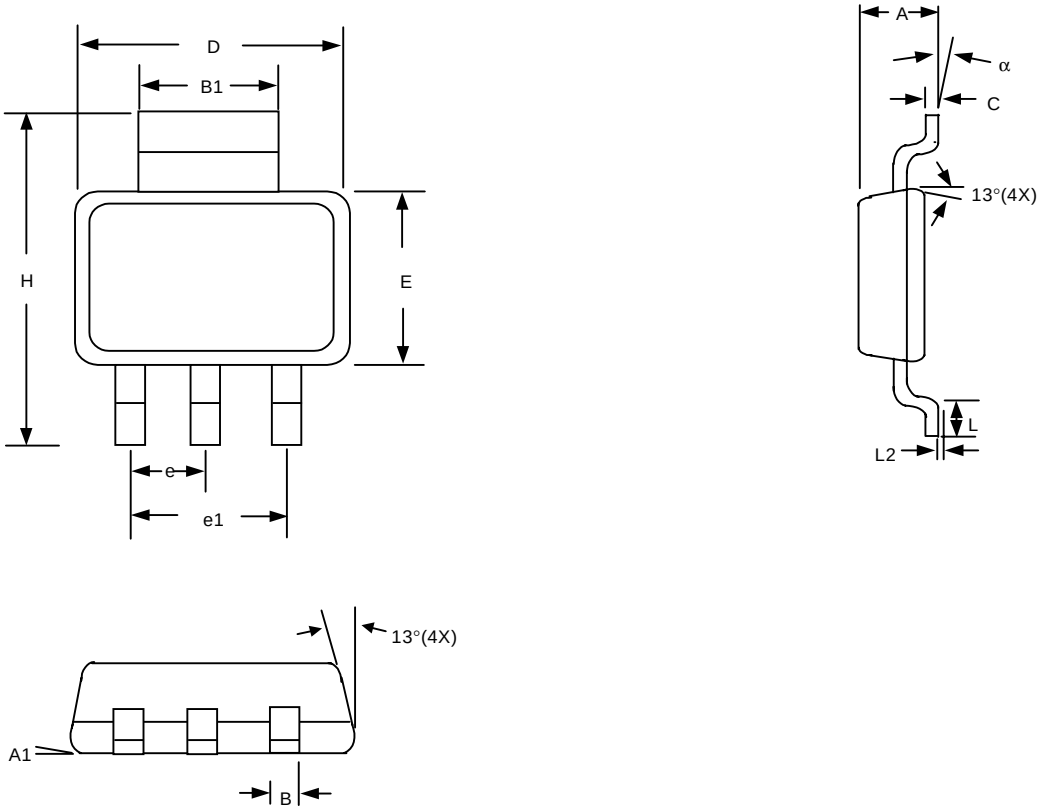
1. Dimensioning and tolerancing per ansi y14.5m, 1982.
2. Controlling dimension: inch

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.250	5.97	6.35
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.033	0.040	0.84	1.01
F	0.037	0.047	0.94	1.19
G	0.180BSC		4.58BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090BSC		2.29BSC	
R	0.175	0.215	4.45	6.46
S	0.020	0.050	0.51	1.27
U	0.020	---	0.51	---
V	0.030	0.050	0.77	1.27
Z	0.138	---	3.51	---



TO-263 (T5) Package

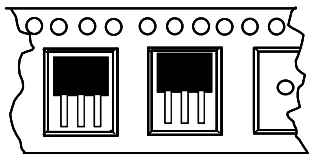
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.70	0.169	0.185
A1	1.22	1.32	0.048	0.055
A2	2.45	2.69	0.104	0.106
b	0.69	0.94	0.027	0.037
b1	1.22	1.40	0.048	0.055
C	0.36	0.56	0.014	0.022
D	8.64	9.652	0.340	0.380
E	9.70	10.54	0.382	0.415
e	2.29	2.79	0.090	0.110
e1	4.83	5.33	0.190	0.210
H	14.60	15.78	0.575	0.625
L	4.70	5.84	0.185	0.230
L1	1.20	1.778	0.047	0.070
L2	2.24	2.84	0.088	0.111
L3	1.40MAX		0.055MAX	



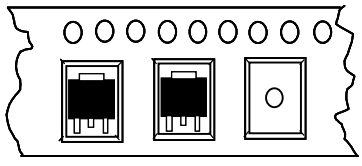
SOT-223 (T6) Package

SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.55	1.80	0.061	0.071
A1	0.02	0.12	0.0008	0.0047
B	0.60	0.80	0.024	0.031
B1	2.90	3.10	0.114	0.122
C	0.24	0.32	0.009	0.013
D	6.30	6.70	0.248	0.264
E	3.30	3.70	0.130	0.146
e	2.30 BSC		0.090 BSC	
e1	4.60 BSC		0.181 BSC	
H	6.70	7.30	0.264	0.287
L	0.90 MIN		0.036 MIN	
L2	0.06 BSC		0.0024 BSC	
α	0º	10º	0º	10º

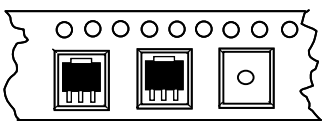
Package Orientation



Feed Direction
TO 220 Package Orientation



Feed Direction
TO252、263 Package Orientation



Feed Direction
SOT 223 Package Orientation