

GS1085L

3A Low Dropout Voltage Regulator

Product Description

The GS1085L is a low drop voltage regulator able to provide up to 3A output current. The dropout voltage of the device is guaranteed at a maximum 1.3V at the maximum output current, decreasing at lower loads.

The GS1085L is pin compatible with older 3-terminal adjustable regulators, but has better performances in term of drop and output tolerance.

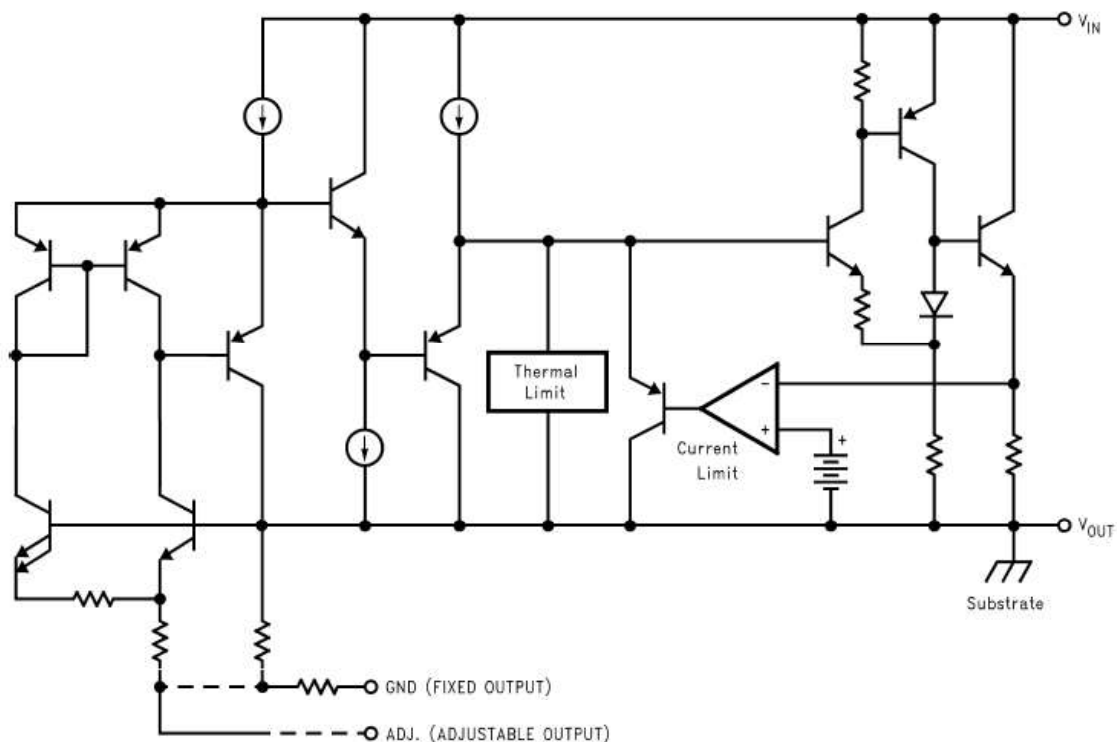
Features

- Three Terminal Adjustable or Fixed Output Voltages 1.5V, 1.8V, 2.5V, 3.3V and 5V
- Guaranteed Output Current up to 3A
- Typical Dropout 1.3V (at 3A)
- Output Tolerance: $\pm 2\%$ at 25 °C
- Wide Operating Temperature Range: -40 °C to 125 °C
- Package Available: TO-263, TO-252, and SOT-223
- RoHS Compliant, 100%Pb & Halogen Free

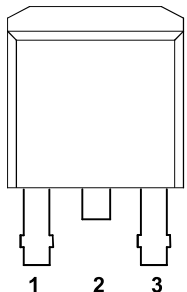
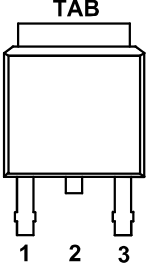
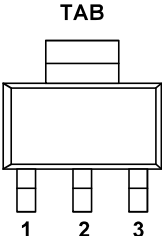
Applications

- Post Regulators for Switching Supply
- Battery-Powered Circuitry
- Low Voltage Logic Supplies
- High efficiency linear regulators
- Adjustable power supply

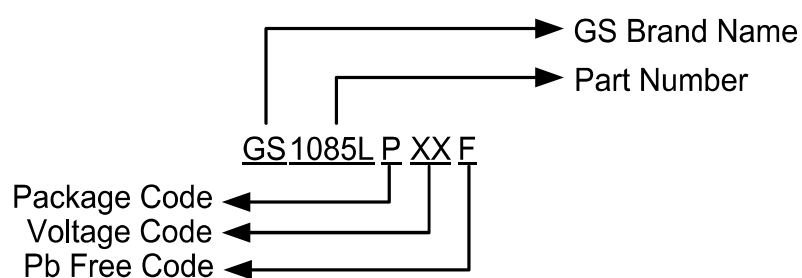
Block Diagram



Packages & Pin Assignments

GS1085LM (TO-263)		GS1085LD (TO-252)		GS1085LX (SOT-223)	
					
1	GND/ADJ	1	GND/ADJ	1	GND/ADJ
2	V _{OUT}	2	V _{OUT}	2	V _{OUT}
3	V _{IN}	3	V _{IN}	3	V _{IN}

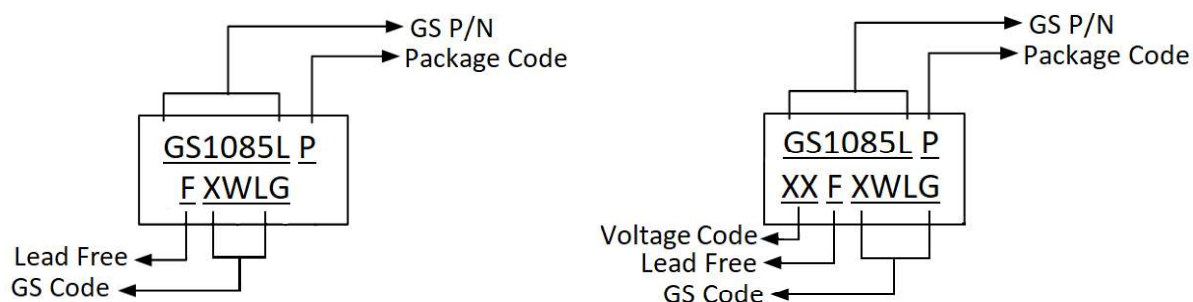
Ordering Information



TO-263	TO-252	SOT-223	Output
GS1085LMF	GS1085LDF	GS1085LXF	ADJ
GS1085LM15F	GS1085LD15F	GS1085LX15F	1.5V
GS1085LM18F	GS1085LD18F	GS1085LX18F	1.8V
GS1085LM25F	GS1085LD25F	GS1085LX25F	2.5V
GS1085LM33F	GS1085LD33F	GS1085LX33F	3.3V
GS1085LM50F	GS1085LD50F	GS1085LX50F	5.0V

Adjustable Version does not need Voltage Code.

Marking Information



Absolute Maximum Ratings

Symbol	Parameter	Maximum Ratings		Units
V_{IN}	Input Voltage	15		V
θ_{JC}	Thermal Resistance (Junction to Case)	TO-263	3	$^{\circ}\text{C/W}$
		TO-252	5	
		SOT-223	8	
θ_{JA}	Thermal Resistance (Junction to Ambient)	TO-263	62.5	$^{\circ}\text{C/W}$
		TO-252	104	
		SOT-223	138	
P_D	Internal Power Dissipation	TO-263	2	W
		TO-252	1.2	
		SOT-223	0.9	
T_J	Operating Junction Temperature	-40 to 125		$^{\circ}\text{C}$
T_{STG}	Storage Range	-65 to 150		$^{\circ}\text{C}$
T_{LEAD}	Lead Temperature (Soldering 10sec)	300		$^{\circ}\text{C}$

Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device

Electrical Characteristics

$I_{OUT} = 0 \text{ mA}$, and $T_J = +25^\circ\text{C}$, unless otherwise noted

Parameter	Device	Conditions	Min	Typ	Max	Units
Reference Voltage ₍₁₎	GS1085L	$V_{in}=2.75\text{V}$, $I_o=10\text{mA}$ $V_{in}=2.7 \text{ to } 7\text{V}$, $I_o=10\text{mA to } 3\text{A}$	1.238 1.225	1.250 1.250	1.263 1.275	V V
Output Voltage	GS1085L- 1.5	$V_{in}=4.0\text{V}$ $V_{in}=3.0\text{V}$, $I_o= 0\text{mA to } 3\text{A}$	1.485 1.470	1.500 1.500	1.515 1.530	V V
	GS1085L- 1.8	$V_{in}=4.3\text{V}$ $V_{in}=3.3\text{V}$, $I_o= 0\text{mA to } 3\text{A}$	1.782 1.764	1.800 1.800	1.818 1.836	V V
	GS1085L- 2.5	$V_{in}=5.0\text{V}$ $V_{in}=4.0\text{V}$, $I_o= 0\text{mA to } 3\text{A}$	2.475 2.450	2.500 2.500	2.525 2.550	V V
	GS1085L- 3.3	$V_{in}=5.8\text{V}$ $V_{in}=4.8\text{V}$, $I_o= 0\text{mA to } 3\text{A}$	3.267 3.234	3.300 3.300	3.333 3.366	V V
	GS1085L- 5.0	$V_{in}=7.5\text{V}$ $V_{in}=6.5\text{V}$, $I_o= 0\text{mA to } 3\text{A}$	4.950 4.900	5.000 5.000	5.050 5.100	V V
Line Regulation ₍₁₎	All	$I_o = 10\text{mA}$ $(V_o+1.5\text{V}) \leq V_{in} \leq 7\text{V}$		0.04	0.2	%
Load Regulation ₍₁₎	All	$V_{in}=V_o+2.5\text{V}$, $I_o=0\text{mA to } 3\text{A}$		0.08	0.4	%
Dropout Voltage ($V_{IN} - V_{OUT}$) (1),(3)	All	ΔV_{OUT} , $\Delta V_{REF} = 1\%$, $I_{OUT} = 3\text{A}$		1.1	1.3	V
Current Limit ₍₁₎	All		3	4		A
Quiescent Current	All	$V_{IN}=5\text{V}$		5	10	mA
Ripple Rejection ₍₁₎	All	$f = 120\text{Hz}$, $C_{OUT} = 25\mu\text{F Tantalum}$, $I_{OUT} = 3\text{A}$, $(V_{IN}-V_{OUT}) = 3\text{V}$, $C_{ADJ} = 25\mu\text{F}$	60	75		dB
Adjust Pin Current ₍₁₎	GS1085L			50	120	μA
Temperature Stability				0.5		%
Long Term Stability		$T_A = 25^\circ\text{C}$, 1000Hrs		0.03	1	%

NOTE 1: For GS1085L(adjustable) $V_{ADJ}=0\text{V}$

NOTE 2: For the adjustable device the minimum load current is the minimum current required to maintain regulation. Normally the current in the resistor divider used to set the output voltage is selected to meet the minimum load current requirement.

NOTE 3 : The specification represent the minimum input/output voltage required to maintain 1% regulation.

Typical Applications

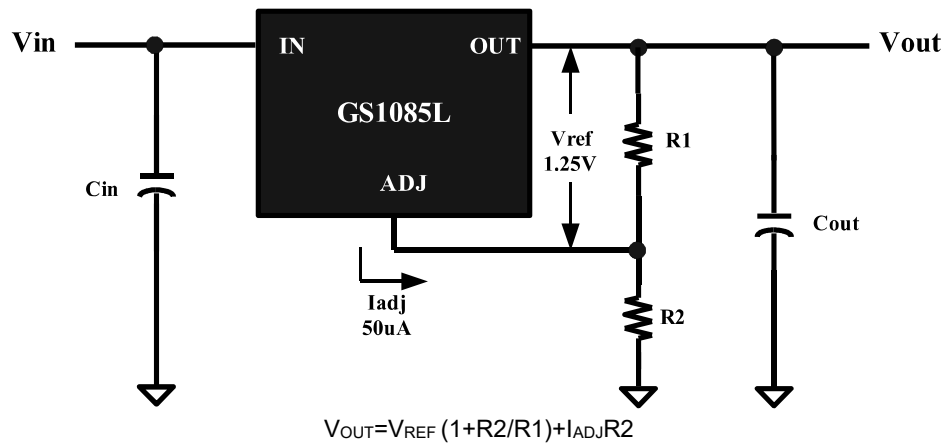


Figure1. Adjustable Voltage Regulator

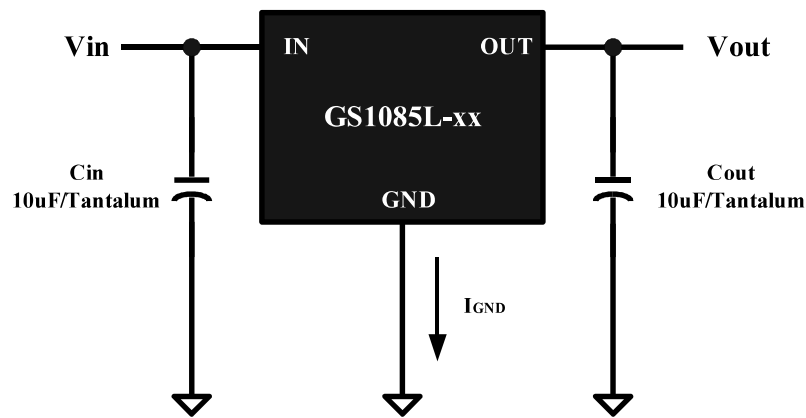
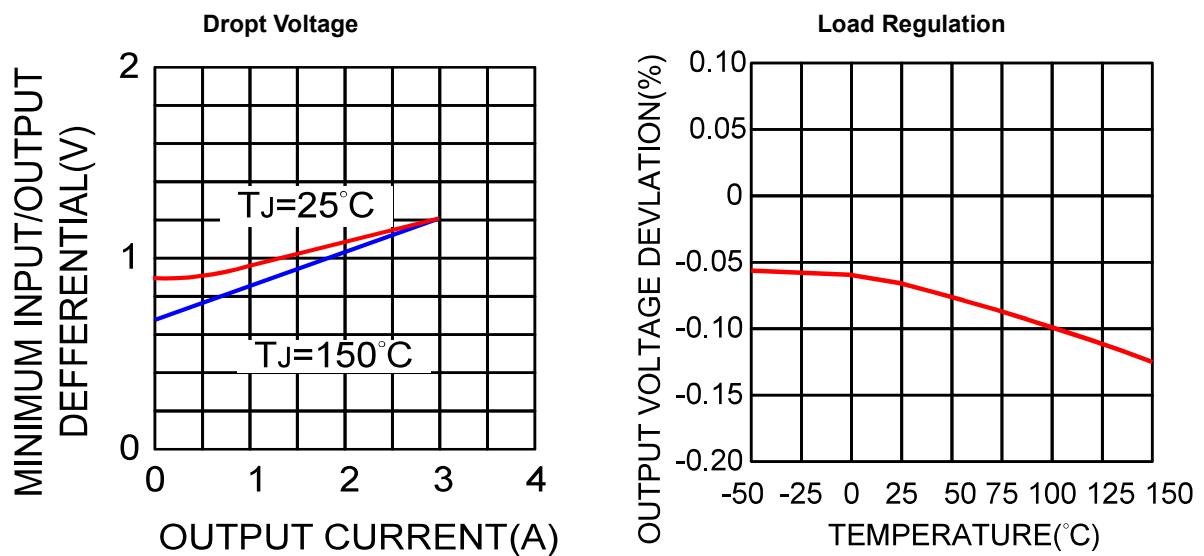


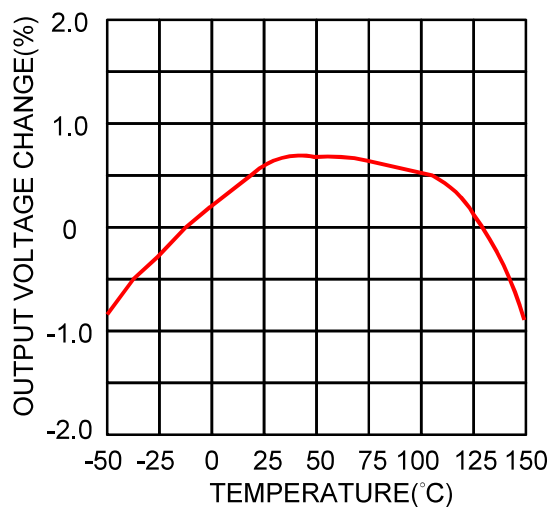
Figure2. Fixed Voltage Regulator

Typical Performance Characteristics

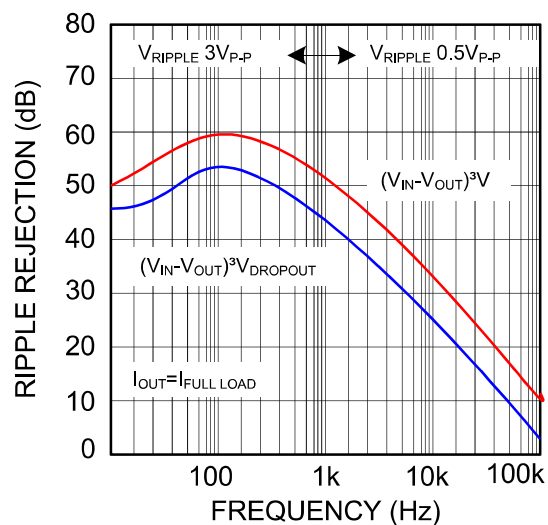


Typical Performance Characteristics(Continue)

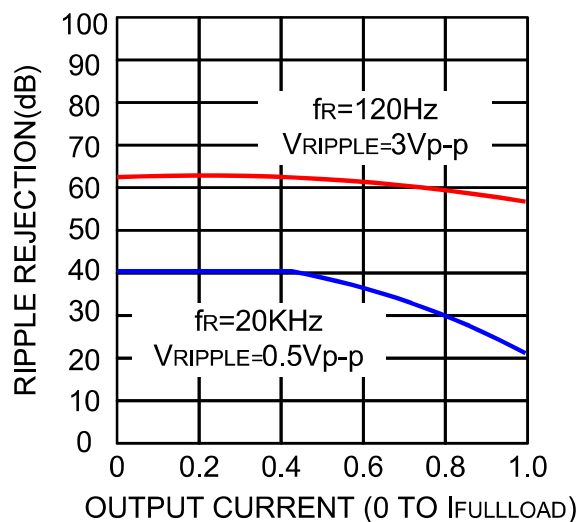
Temperature Stability



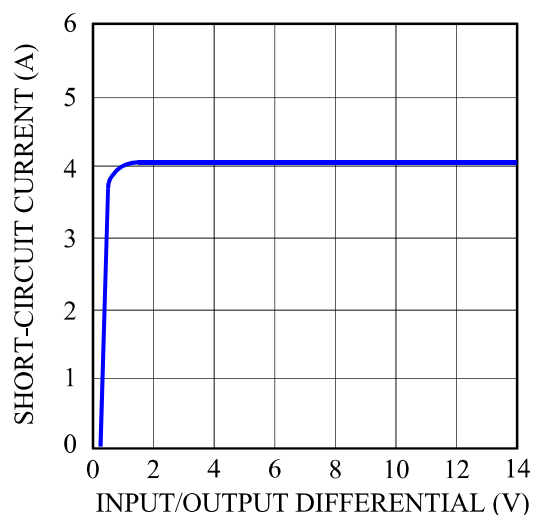
Ripple Rejection



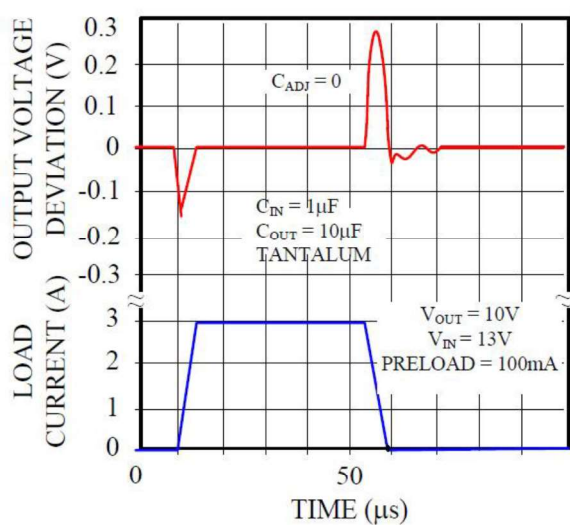
Ripple Rejection vs. Current



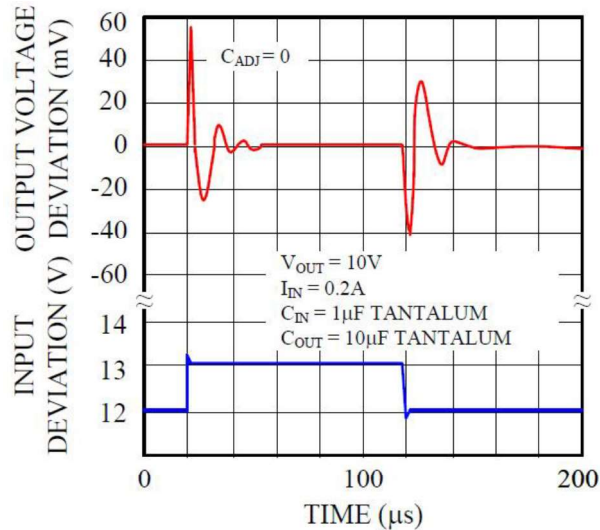
Short-Circuit Current



Load Transient Response

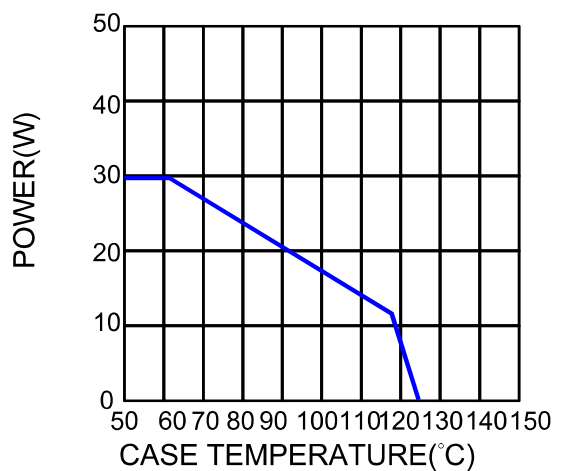


Line Transient Response



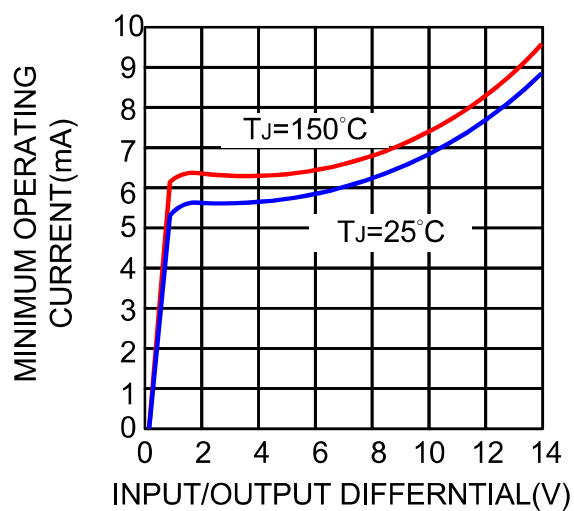
Typical Performance Characteristics(Continue)

Line Transient Response

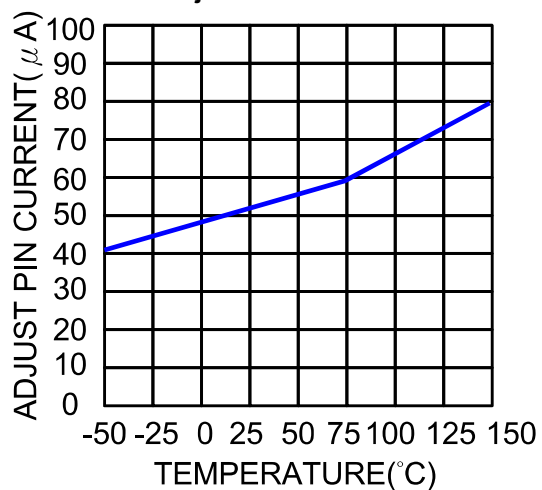


*AS LIMITED BY MAXIMUM JUNCTION TEMPERATURE

Minimum Operating Current

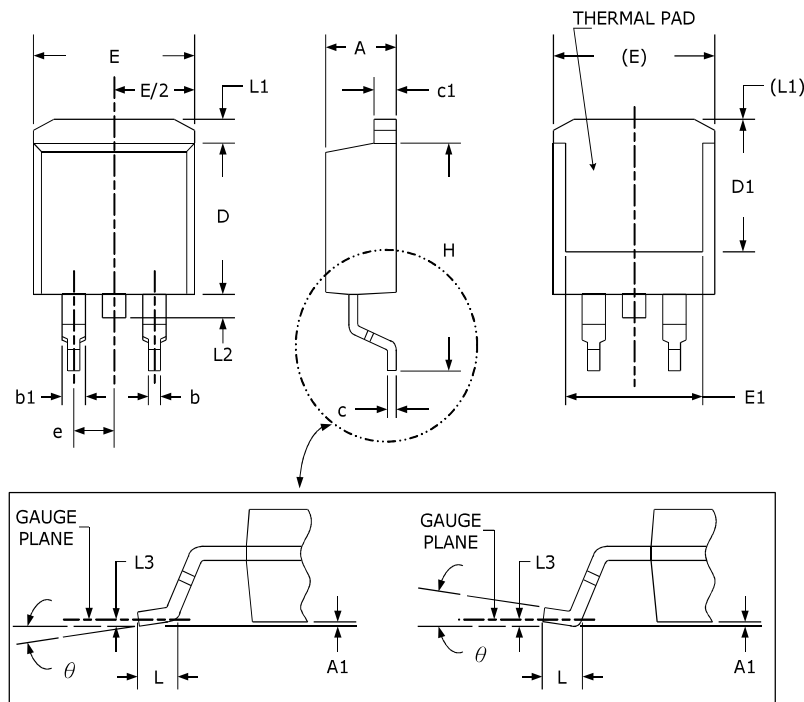


Adjust Pin Current



Package Dimension

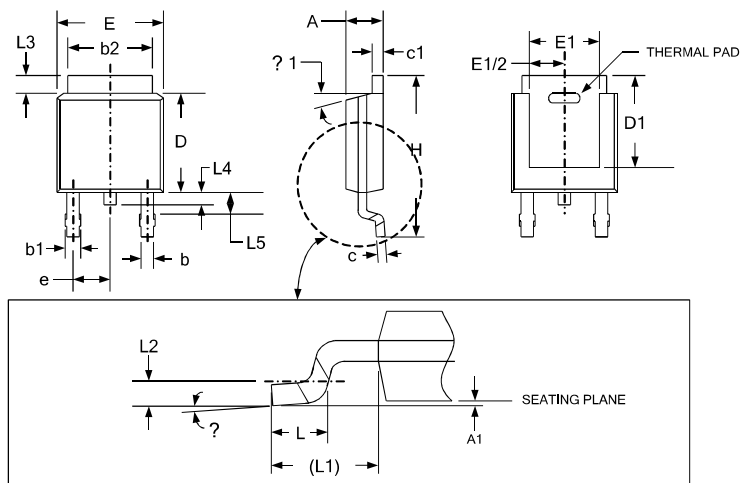
TO-263 PLASTIC PACKAGE



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	4.06	4.83	.160	.190
A1	0	0.25	.000	.010
b	0.51	0.99	.020	.039
b1	1.14	1.78	.045	.070
c	0.38	0.74	.015	.029
c1	1.14	1.65	.045	.065
D	8.38	9.65	.330	.380
D1	6.86	-	.270	-
E	9.65	10.67	.380	.420
E1	6.22	-	.245	-
e	2.54 (TYP)		.100 (TYP)	
H	14.61	15.88	.575	.625
L	1.78	2.79	.070	.110
L1	-	1.68	-	.066
L2	-	1.78	-	.070
L3	0.25 (TYP)		.010 (TYP)	
θ	0°	8°	0°	8°

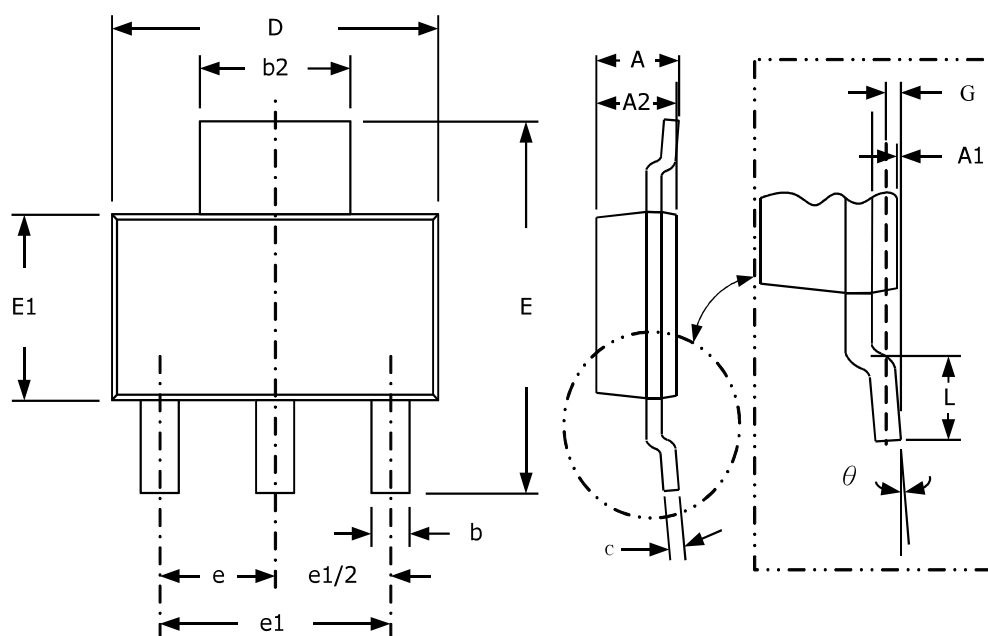
TO-252 PLASTIC PACKAGE



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.18	2.39	.086	.094
A1	-	0.13	-	.005
b	0.64	0.89	.025	.035
b1	0.76	1.14	.030	.045
b2	4.95	5.46	.195	.215
C	0.46	0.61	.018	.024
C1	0.46	0.89	.018	.035
D	5.97	6.22	.235	.245
D1	5.21	-	.205	-
E	6.35	6.73	.250	.265
E1	4.32	-	.170	-
e	2.29 (TYP)		.090 (TYP)	
H	9.40	10.41	.370	.410
L	1.40	1.78	.055	.070
L1	2.74 (TYP)		.108 (TYP)	
L2	0.51 (TYP)		.020 (TYP)	
L3	0.89	1.27	.035	.050
L4	-	1.02	-	.040
L5	1.14	1.52	.045	.060
θ	0°	10°	0°	10°
θ1	0°	15°	0°	15°

SOT-223-3L PLASTIC PACKAGE



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	-	1.80	-	.071
A1	0.02	0.10	.001	.004
A2	1.55	1.65	.061	.065
b	0.66	0.84	.026	.033
b2	2.90	3.10	.114	.122
c	0.23	0.33	.009	.013
D	6.30	6.70	.248	.264
E	6.70	7.30	.264	.288
E1	3.30	3.70	.130	.146
e	2.30 (TYP)		.091 (TYP)	
e1	4.60 (TYP)		.181 (TYP)	
L	0.90	-	.035	-
G	0.25 (TYP)		.010 (TYP)	
θ	0°	8°	0°	8°

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihs District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587