

GS1116

800mA Low Dropout Voltage Regulator

Product Description

The GS1116 is a low dropout three-terminal regulator with 800mA output current capability. In order to obtain lower dropout voltage and fast transient response, which is critical for low voltage applications.

The GS1116 has been optimized. The device is available in an adjustable version and fixed output voltage of 1.5V, 1.8V, 2.5V, 3.3V and 5V. Dropout voltage is guaranteed at a maximum of 1.3V at 800mA.

Current limit is trimmed to ensure specified output current and controlled short circuit current. On-chip thermal limiting provides protection against any combination of overload that would create excessive junction temperatures.

The GS1116 is available in the three leads SOT-89, SOT-223 and TO-252 surface mount packages.

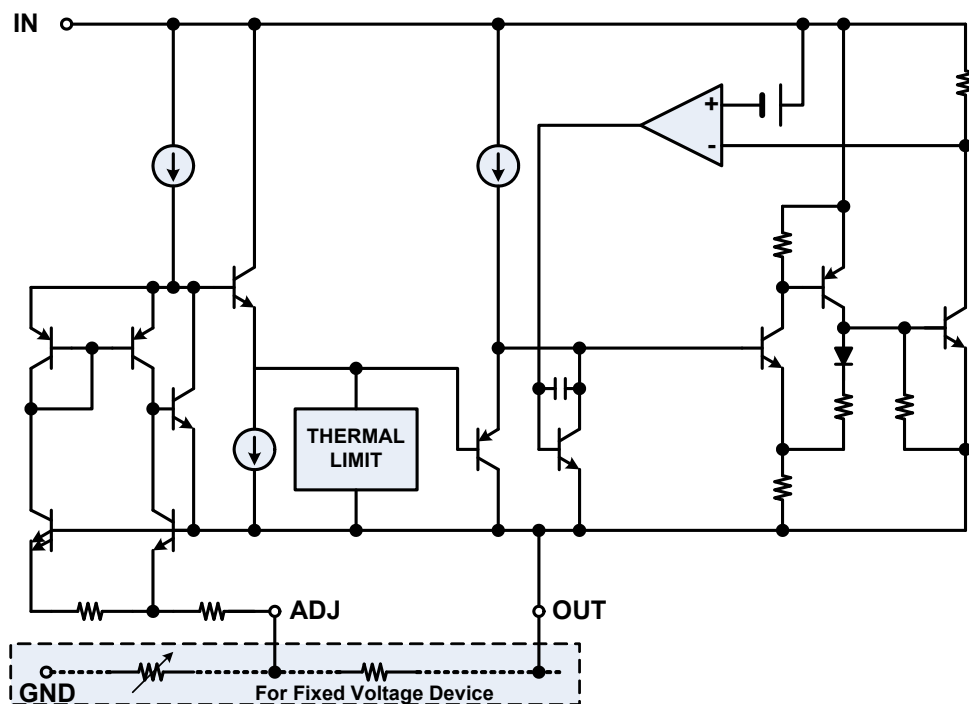
Features

- Adjustable or Fixed Output
- Current Limit and Thermal Protection
- Output Current of 800mA
- 1.3V Dropout Voltage
- Line Regulation typically at 0.04% Max.
- Load Regulation typically at 0.2% Max.
- SOT-89, SOT-223 and TO-252 packages available

Applications

- Battery-Power Circuitry
- Post Regulator for Switching Power Supply
- Low Voltage Logic Suppliers

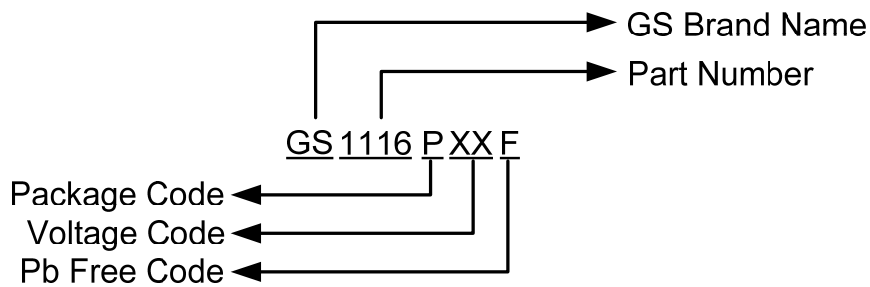
Block Diagram



Packages & Pin Assignments

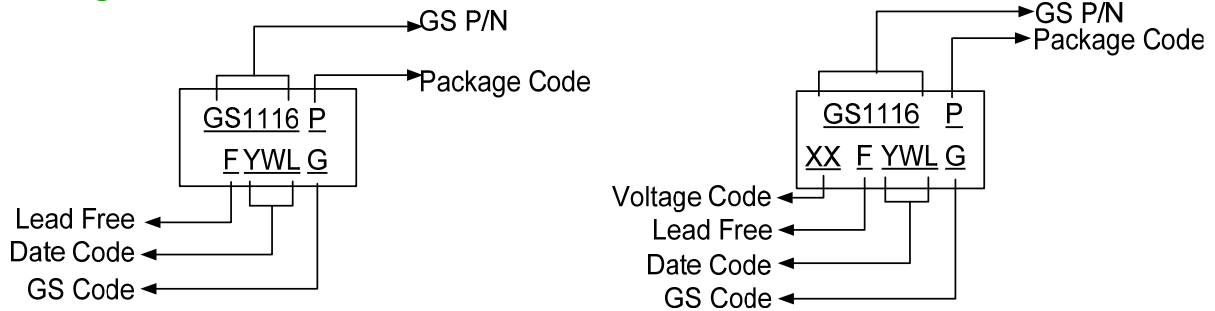
GS1116D (TO-252)		GS1116X (SOT-223)		GS1116Y (SOT-89)	
1	GND / ADJ	1	GND / ADJ	1	GND / ADJ
2	INPUT	2	INPUT	2	INPUT
3	OUTPUT	3	OUTPUT	3	OUTPUT

Ordering Information



TO-252	SOT-223	SOT-89	Output
GS1116DF	GS1116XF	GS1116YF	ADJ
GS1116D15F	GS1116X15F	GS1116Y15F	1.5V
GS1116D18F	GS1116X18F	GS1116Y18F	1.8V
GS1116D25F	GS1116X25F	GS1116Y25F	2.5V
GS1116D33F	GS1116X33F	GS1116Y33F	3.3V
GS1116D50F	GS1116X50F	GS1116Y50F	5.0V

Marking Information



Absolute Maximum Ratings

Symbol	Parameter	Max		Units
V_{IN}	Input Voltage	15		V
P_D	Power Dissipation(Internally Limited)	SOT-223	0.9	W
		TO-252	1.2	
		SOT-89	0.5	
θ_{JA}	Thermal Resistance Junction to Ambient ₍₁₎	SOT-223	138	°C/W
		TO-252	104	
		SOT-89	250	
T_A	Operating Ambient Temperature Range	0 to 125		°C
T_{STG}	Storage Temperature Range	-65 to 150		°C
T_{LEAD}	Lead Temperature (Soldering 10 Sec.)	300		°C

Caution:

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operation sections of the specifications is not implied.

Exposure to Absolute Maximum Ratings conditions for extended periods may affect device reliability.

Electrical Characteristics

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

Parameter	Device	Conditions	Min	Typ	Max	Unit
Reference Voltage (Note)	GS1116	$V_{IN}=2.75V, I_{LOAD}=10mA$	1.238	1.250	1.262	V
		* $V_{IN}=2.7V$ to $12V$, $I_{LOAD}=10mA$ to $800mA$	1.225	1.250	1.275	V
Output Voltage	GS1116-15	$V_{IN}=4.0V$	1.485	1.500	1.515	V
		* $V_{IN}=3.0V$, $I_{LOAD}=10mA$ to $800mA$	1.476	1.500	1.524	V
	GS1116-18	$V_{IN}=4.3V$	1.782	1.800	1.818	V
		* $V_{IN}=3.3V$, $I_{LOAD}=10mA$ to $800mA$	1.771	1.800	1.829	V
	GS1116-25	$V_{IN}=5.0V$	2.475	2.500	2.525	V
		* $V_{IN}=4.0V$, $I_{LOAD}=10mA$ to $800mA$	2.460	2.500	2.540	V
	GS1116-33	$V_{IN}=5.8V$	3.267	3.300	3.333	V
		* $V_{IN}=4.8V$, $I_{LOAD}=10mA$ to $800mA$	3.247	3.300	3.353	V
	GS1116-50	$V_{IN}=7.5V$	4.950	5.000	5.050	V
		* $V_{IN}=6.5V$, $I_{LOAD}=10mA$ to $800mA$	4.900	5.000	5.100	V
Line Regulation (Note1)	All	* $I_{LOAD}=10mA$, $(1.5V+V_{OUT})\leq V\leq 12V$		0.04	0.2	%
Load Regulation (Note1)	All	* $V_{IN}=V_{OUT}+1.5V$, $I_{LOAD}=10mA$ to $800mA$		0.2	0.4	%
Minimum Load Current	GS1116	* $V_{IN}=5V, V_{ADJ}=0V$		3	7	mA
Ground Pin Current	GS1116-XX	* $V_{IN}=V_{OUT}+1.5V$, $I_{LOAD}=10mA$ to $800mA$		7	13	mA
Adjust Pin Current	GS1116	* $V_{IN}=2.65V$ to $12V$, $I_{LOAD}=10mA$		55	90	μA
Current Limit	All	* $V_{IN}-V_{OUT}=1.5V$	1			A
Ripple Rejection (Note 2)	All	$V_{IN}=V_{OUT}+1.5V$,	60	72		dB
Dropout Voltage (Note 1,3)	All	$I_{LOAD}=10mA$		1.00	1.15	V
		* $V_{IN}\geq 2.65V, I_{LOAD}=800mA$		1.15	1.3	V
Temperature Coefficient	All	* $V_{IN}=V_{OUT}=1.5V, I_{LOAD}=10mA$		0.005		$\%/^{\circ}C$

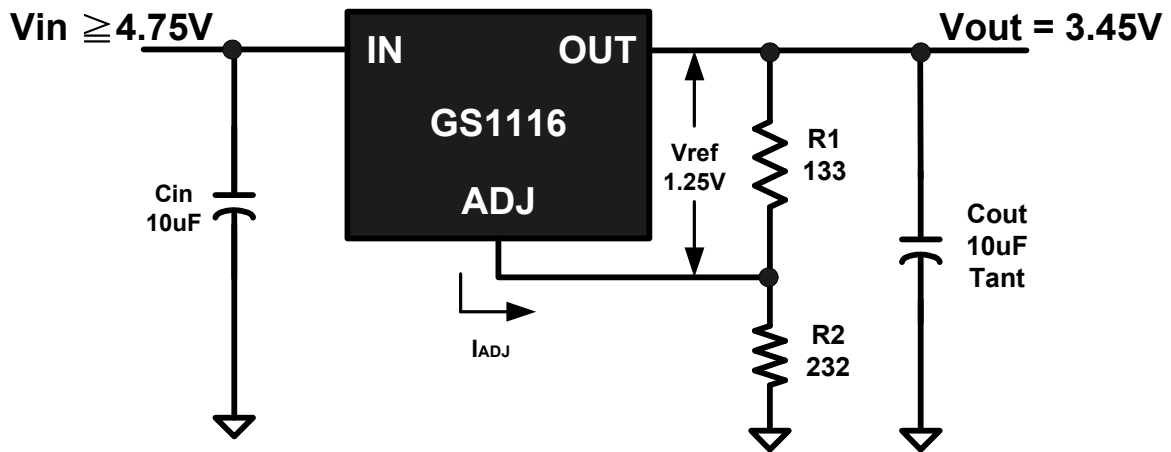
The * denotes the specifications which apply over the full temperature range.

Note 1: Low duty pulse testing with Kelvin connections required.

Note 2: 120Hz input ripple (C_{ADJ} for $ADJ=25\mu F$)

Note 3: $\Delta V_{OUT}, \Delta V_{REF}=1\%$

Typical Application Circuits



$$V_{OUT} = V_{REF} (1 + R2/R1) + I_{ADJ} R2$$
 Figure1. Adjustable Voltage Regulator

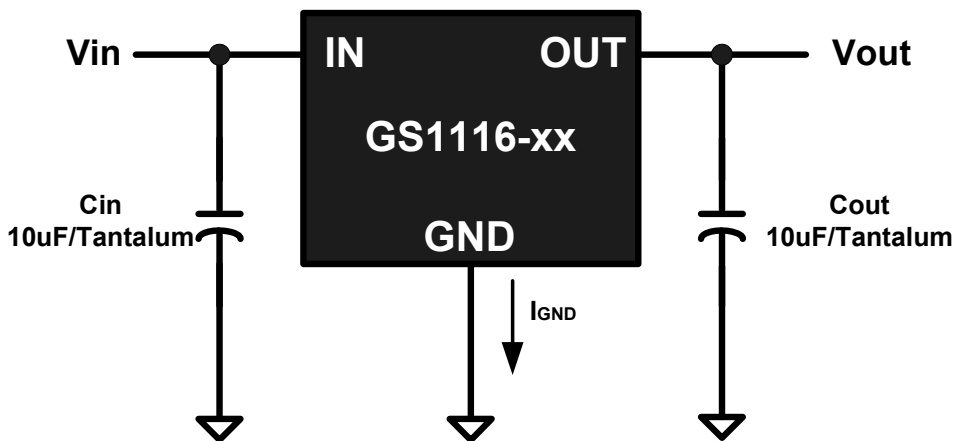
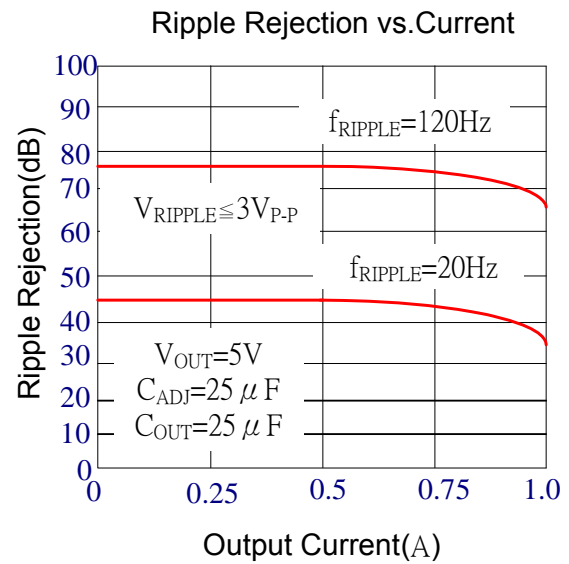
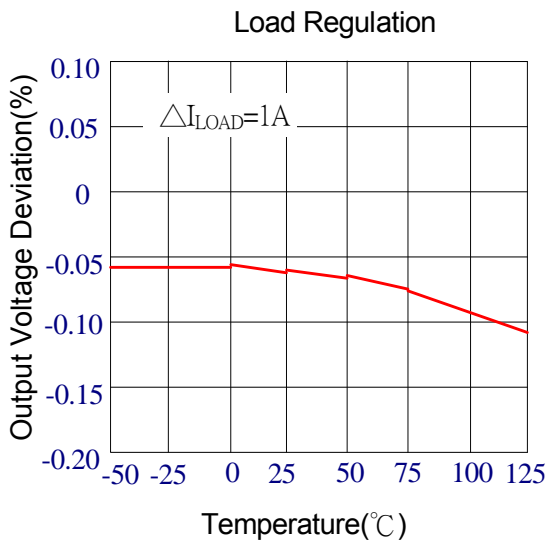
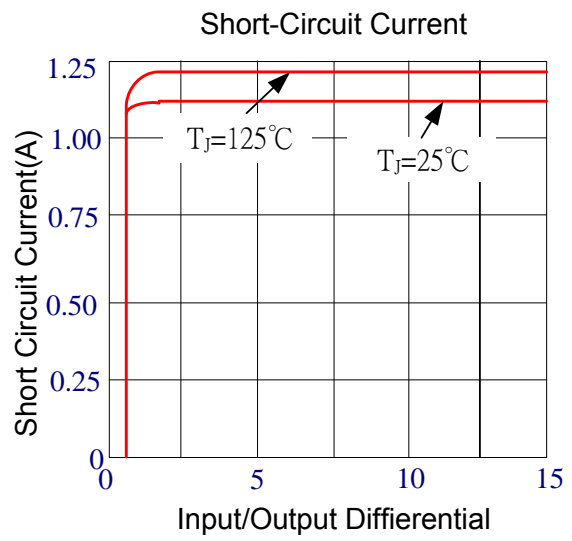
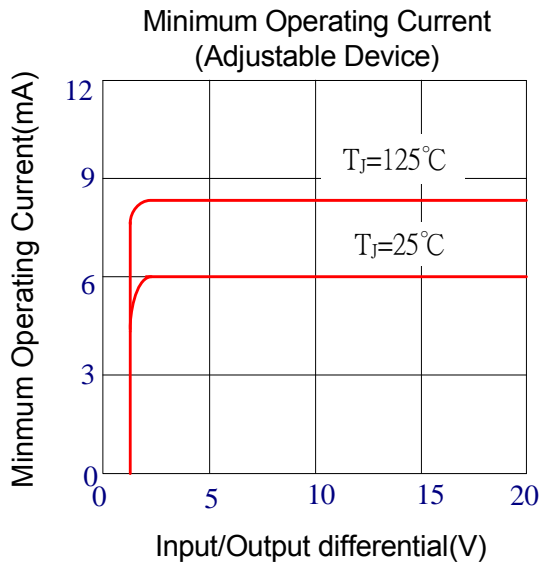


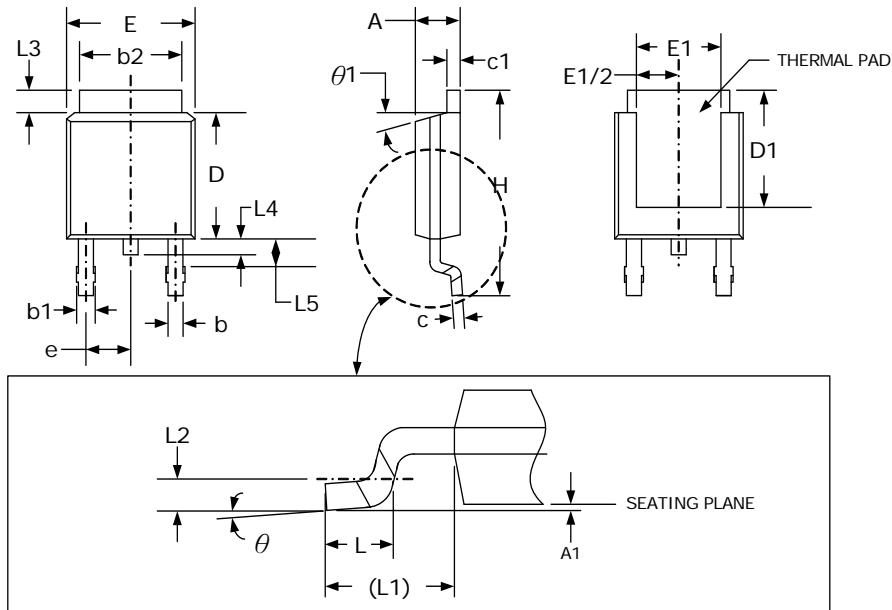
Figure2. Fixed Voltage Regulator

Typical Performance Characteristics



Package Dimension

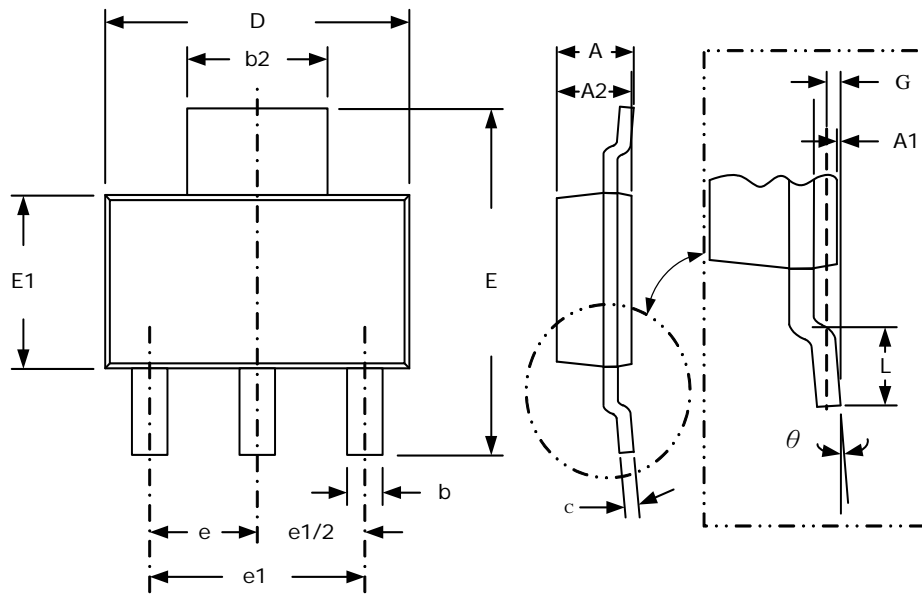
TO-252 PLASTIC PACKAGE



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°
θ_1	0°	15°	0°	15°

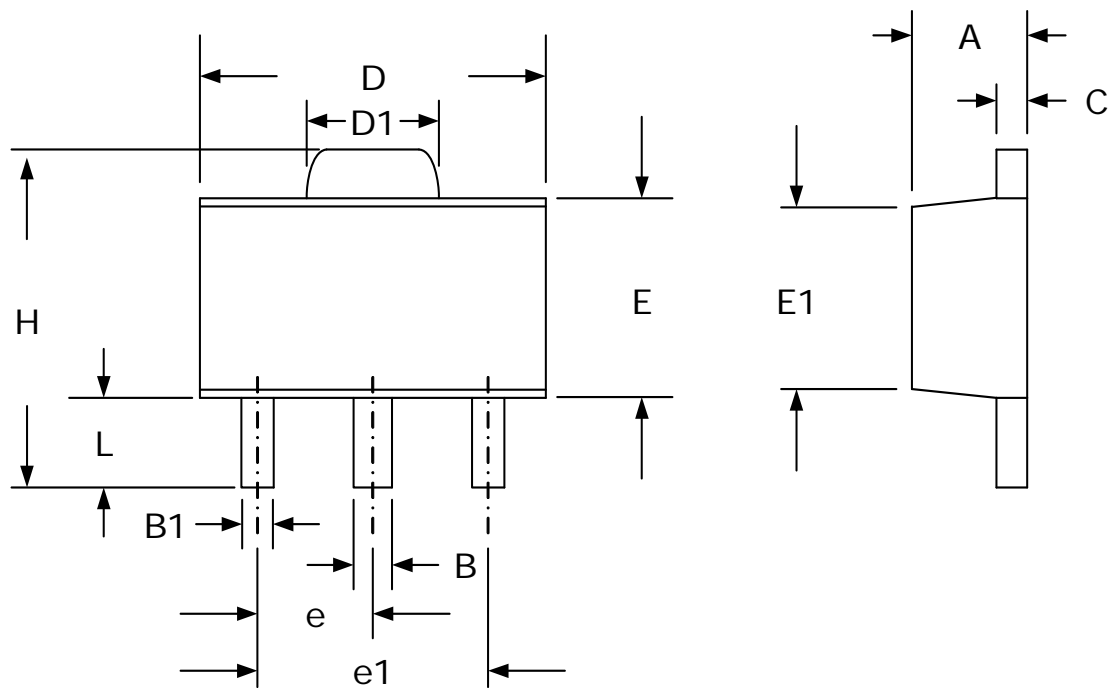
SOT-223 PLASTIC PACKAGE



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°

SOT-89 PLASTIC PACKAGE







Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.40	1.60	.055	.063
B	0.44	0.56	.017	.022
B1	0.36	0.48	.014	.019
C	0.35	0.44	.014	.017
D	4.40	4.60	.173	.181
D1	1.62	1.83	.064	.072
E	2.29	2.60	.090	.102
E1	2.13	2.29	.084	.090
e	1.50 (TYP)		.059 (TYP)	
e1	3.00 (TYP)		.118 (TYP)	
H	3.94	4.25	.155	.167
L	0.89	1.20	.035	.047



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