GS2810

1A Low Noise CMOS LDO Regulator With Enable

Product Description

The GS2810 is CMOS process low dropout linear regulator with enable function, the regulator delivers a guaranteed 1A (Min.) continuous load current.

The GS2810 is available in 1.2V, 1.5V, 1.8V, 2.5V and 3.3V regulator output, and 0.8V to 5V adjustable output, and available in excellent output accuracy ±1.5%, it is also available in an excellent load regulation and line regulation performance.

The GS2810 is available in standard packages of TO-252, SOT-223 and PSOP-8.

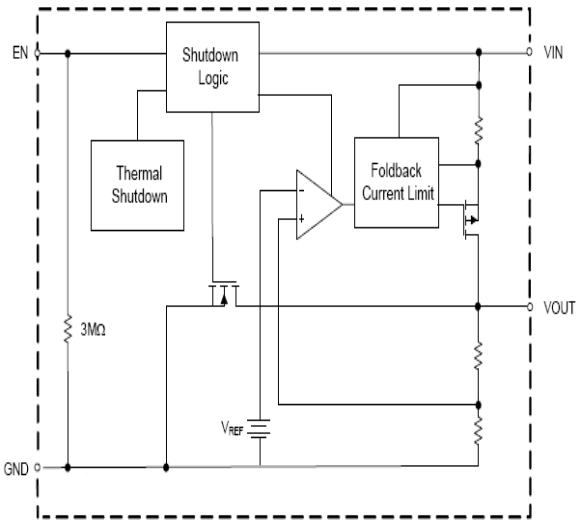
Features

- Output Voltage Accuracy : ±1.5%.
- Fold-back Short Current Protection : 50mA.
- Low Dropout Voltage (3.3V) : 450mV (Typ.) @ I_{OUT}=1A.
- Stable with 4.7μF Flexible Cap : Ceramic, Tantalum and Aluminum Electrolytic.
- Output current limit.
- Thermal overload shutdown protection.
- Low Quiescent Current : 60μA
- Low Output Noise : 30μV_{RMS}
- PSRR : 68dB @ Freq=1KHz
- RoHS Compliant, 100%Pb & Halogen Free

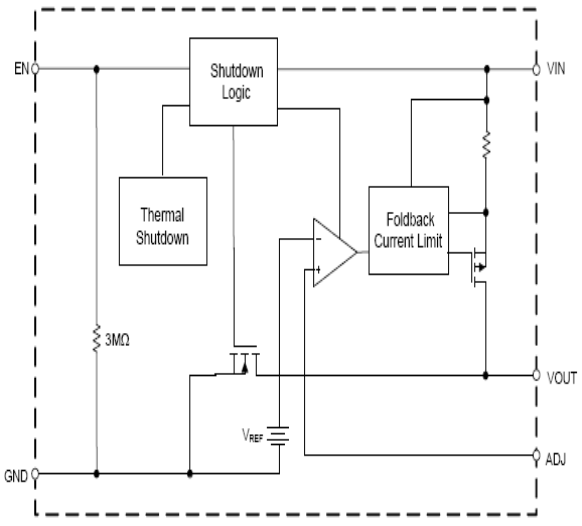
Applications

- LCD TV & STB.
- High Efficiency Linear Regulators.
- Monitor Microprocessors.
- Low Voltage Micro-Controllers.
- Post Regulator for Switching Power.

Block Diagram

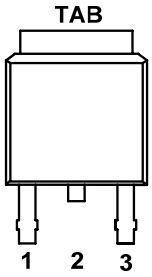
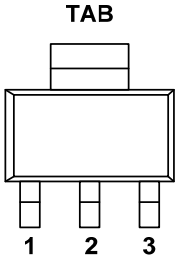
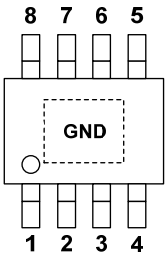


Fixed Voltage Type



Adjustable Voltage Type

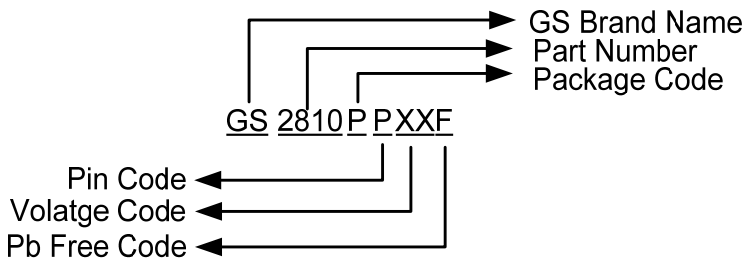
Pin Assignments

TO-252	SOT-223	PSOP-8
		

Pin	GS2810D (Fixed)	GS2810DR (Fixed)	Pin	GS2810X (Fixed)	GS2810XR (Fixed)	Pin	GS2810PS (Fixed)	GS2810PS (ADJ)
1	GND	V_{IN}	1	GND	V_{IN}	1	GND	V_{IN}
2	V_{OUT}	GND	2	V_{OUT}	GND	2	V_{OUT}	GND
3	V_{IN}	V_{OUT}	3	V_{IN}	V_{OUT}	3	GND	GND
-	-	-	-	-	-	4	V_{IN}	EN
-	-	-	-	-	-	5	GND	GND
-	-	-	-	-	-	6	GND	ADJ
-	-	-	-	-	-	7	GND	GND
-	-	-	-	-	-	8	EN	V_{OUT}

Pin Name	Pin Description
V_{IN}	Input Voltage. A large bulk capacitance should be placed closely to this pin to ensure that the input supply does not sag below 2.5V.
V_{OUT}	The pin is the power output of the device.
GND	Ground Pin.
ADJ	For the adjustable versions of the GS2810. This is the input to the error amplifier. The addition reference voltage is 0.8Vreferenced to ground. The output range is 0.8V to 5V.
EN	Enable Input. Pulling this pin below 0.4V turn the regulator off, reducing the quiescent current to a fraction of its operating value. The device will be enabled if this pin is left open. Connect to V_{IN} if not being used.
Thermal PAD	Pad for heat sinking purposes. Connect to ground plane using multiple vias. Not electrically connected internally.

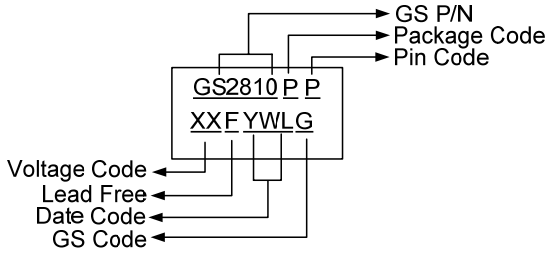
Ordering Information



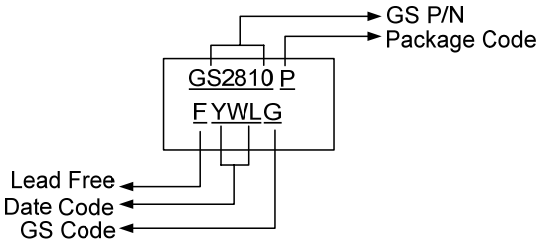
Ordering Information (continue)

Part Number						V_{OUT}
TO-252 (Fixed)		SOT-223 (Fixed)		PSOP-8 (Fixed / ADJ)		
-	-	-	-	-	GS2810PSF	ADJ
GS2810D12F	GS2810DR12F	GS2810X12F	GS2810XR12F	GS2810PS12F	-	1.2V
GS2810D15F	GS2810DR15F	GS2810X15F	GS2810XR15F	GS2810PS15F	-	1.5V
GS2810D18F	GS2810DR18F	GS2810X18F	GS2810XR18F	GS2810PS18F	-	1.8V
GS2810D25F	GS2810DR25F	GS2810X25F	GS2810XR25F	GS2810PS25F	-	2.5V
GS2810D33F	GS2810DR33F	GS2810X33F	GS2810XR33F	GS2810PS33F	-	3.3V

Marking Information



Fixed Voltage



ADJ Voltage

Absolute Maximum Ratings

Symbol	Parameter	Max		Units
V_{IN}	Input Voltage	6.5		V
T_J	Junction Temperature	150		°C
T_{STG}	Storage Temperature Range	-65 to 150		°C
T_A	Operating Ambient Temperature Range	-40 to 85		°C
T_{LEAD}	Lead Temperature (Soldering, 10sec)	260		°C
θ_{JA}	Thermal Resistance (Junction to Ambient)	TO-252 SOT-223 PSOP-8	83 111 138	°C/W
θ_{JC}	Thermal Resistance (Junction to Case)	TO-252 SOT-223 PSOP-8	35 51 44	°C/W
ESD	Machine Model	400		V
	Human Body Model	4000		V

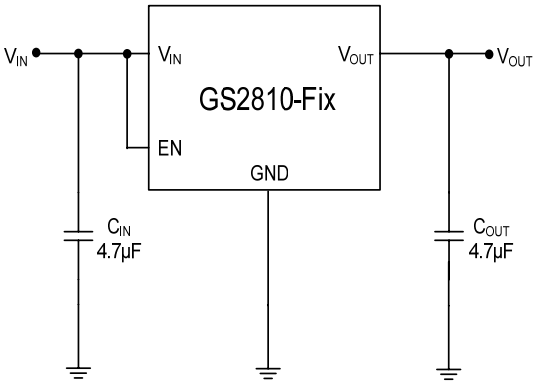
Note : Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Electrical Characteristics

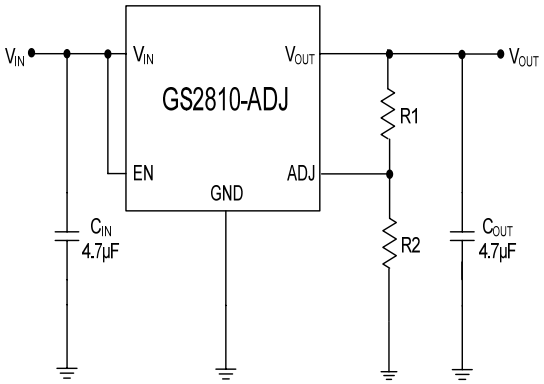
(T_A=25ºC unless otherwise noted)

Symbol	Parameter	Test Conditions		Min	Typ	Max	Unit
V_{IN}	Input Voltage	-		2.5		6.0	V
V_{OUT}	Output Voltage Range	1mA≤I_{OUT}≤30mA		V_{OUT} X98.5%	V_{OUT}	V_{OUT} X101.5%	V
V_{REF}	Reference Voltage Range			V_{REF} X98.5%	0.8	V_{REF} X101.5%	V
I_{OUT}	Maximum Output Current	-		1.0			A
I_{SC}	Short-Circuit Current	V_{OUT}=0V			50		mA
I_Q	Quiescent Current	I_{OUT}=0mA			60	90	μA
V_{DROP}	Dropout Voltage	I_{OUT}=1.0A	V_{OUT}=1.2V		1200	1300	mV
			V_{OUT}=1.5V		800	1000	
			V_{OUT}=1.8V		500	700	
			V_{OUT}=2.5V & 3.3V		450	750	
ΔV_{LINE}	Line Regulation	I_{OUT}=30mA		-0.1	0.02	0.1	%/V
ΔV_{LOAD}	Load Regulation	1mA≤I_{OUT}≤1A			0.2	1.0	%/A
PSRR	Power Supply Rejection Ratio	F=1KHz, C_{OUT}=4.7μF			68		dB
$\triangle V_{OUT}/\triangle T$	Output Voltage Temperature Coefficient	I_{OUT}=30mA, -40°C≤T_J≤85°C			±30		ppm/°C
eN	Output Noise	10Hz≤f≤100KHz (No Load)			30		μV_{RMS}
V_{EH}	EN Input Threshold	-		1.5			V
V_{EL}		-				0.4	
I_{STD}	Standby Current	V_{IN}=5V, V_{EN} in OFF mode			0.01	1.0	μA
Ts	Start-up Time	I_{OUT}=0mA			20		μs
R_{PD}	EN Pull Down Resistor	-			3.0		MΩ
R_{DCHG}	V_{OUT} Discharge Resistor	Set EN pin at Low			60		Ω
T_{SD}	Thermal Shutdown Temperature	-			160		ºC
T_{HYS}	Thermal Shutdown Hysteresis	-			25		ºC

Typical Applications



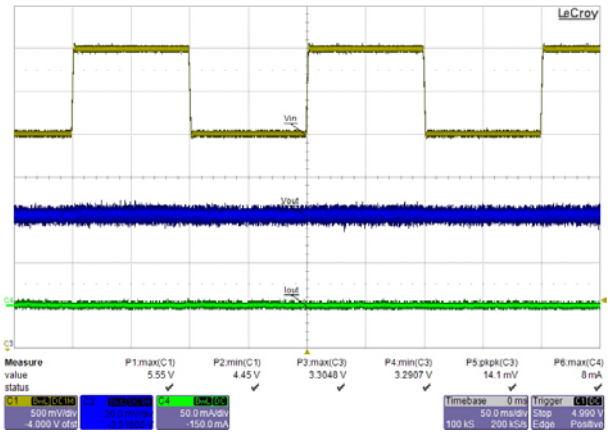
Fixed Voltage Operation



V_{OUT}=0.8(1+R1/R2)
Adjustable Voltage Regulator

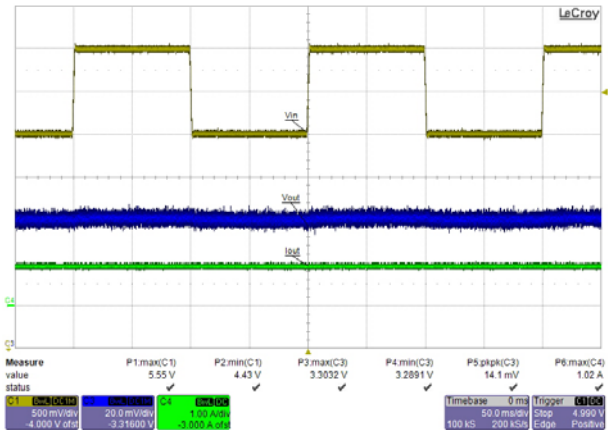
Typical Performance Characteristics

Line Transient Response



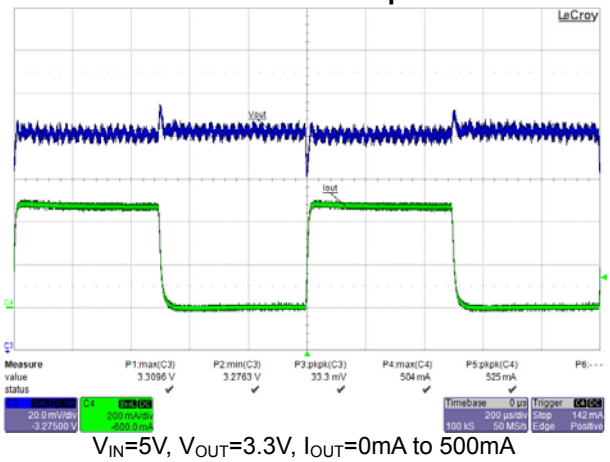
V_{IN}=4.5V~5.5V, V_{OUT}=3.3V, I_{OUT}=0mA
CH1:V_{IN}, CH3:V_{OUT}, CH4:I_{OUT}

Line Transient Response



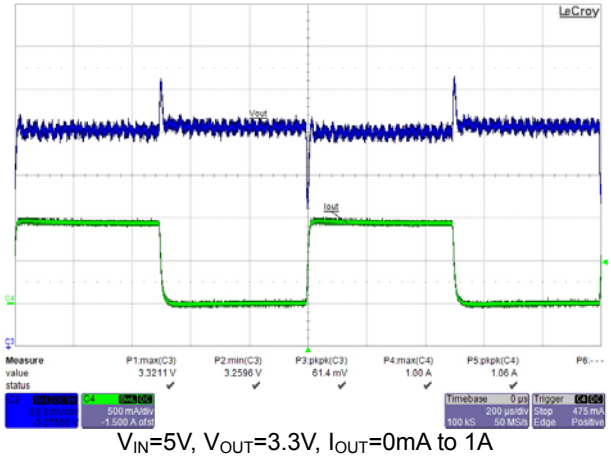
V_{IN}=4.5V~5.5V, V_{OUT}=3.3V, I_{OUT}=1A
CH1:V_{IN}, CH3:V_{OUT}, CH4:I_{OUT}

Load Transient Response



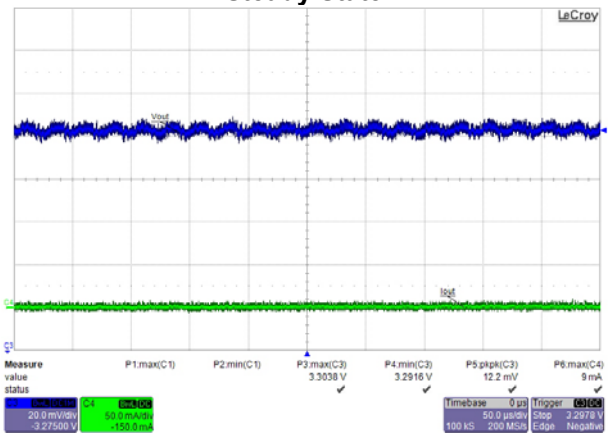
V_{IN}=5V, V_{OUT}=3.3V, I_{OUT}=0mA to 500mA
CH3:V_{OUT}, CH4:I_{OUT}

Load Transient Response



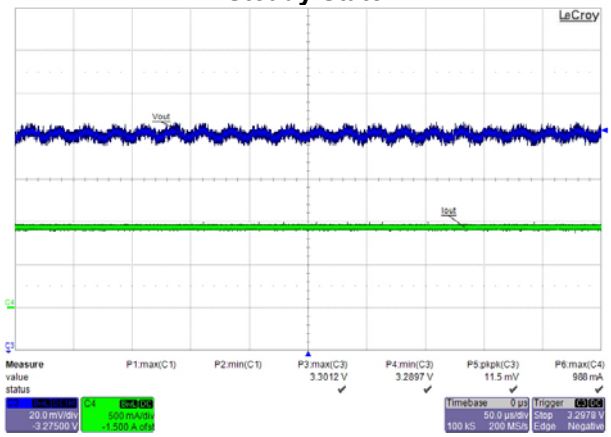
V_{IN}=5V, V_{OUT}=3.3V, I_{OUT}=0mA to 1A
CH3:V_{OUT}, CH4:I_{OUT}

Steady State



V_{IN}=5V, V_{OUT}=3.3V, I_{OUT}=0mA
CH3:V_{OUT}, CH4:I_{OUT}

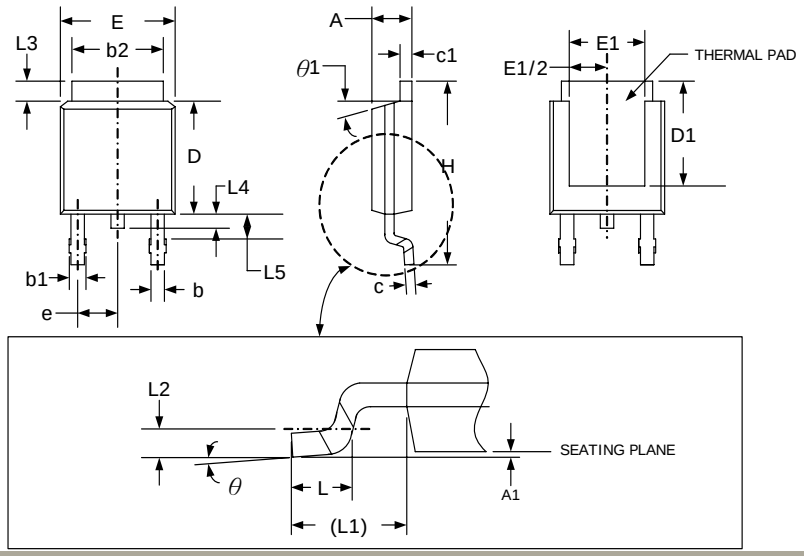
Steady State



V_{IN}=5V, V_{OUT}=3.3V, I_{OUT}=1A
CH3:V_{OUT}, CH4:I_{OUT}

Package Dimension

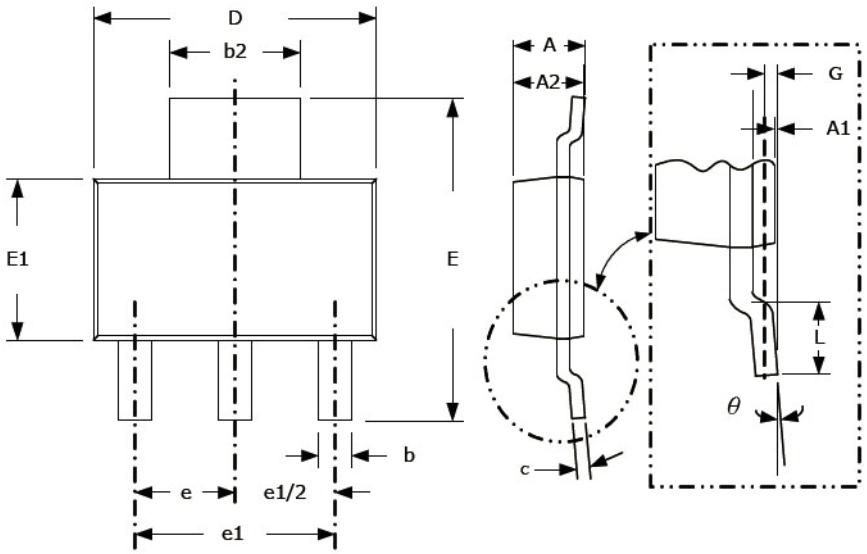
TO-252 PLASTIC PACKAGE



Dimensions

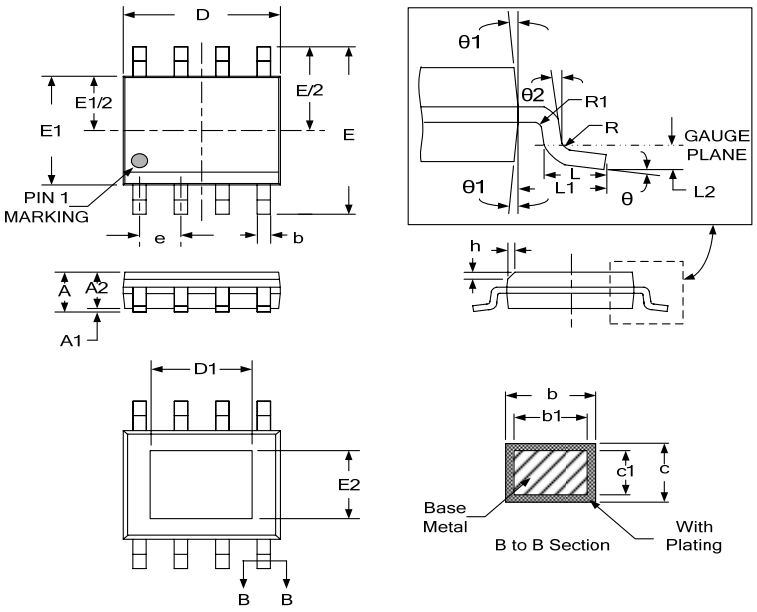
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.18	2.39	.086	.094
A1	-	0.13	-	.005
b	0.64	0.89	.025	.035
b1	0.76	1.14	.030	.045
b2	4.95	5.46	.195	.215
C	0.46	0.61	.018	.024
C1	0.46	0.89	.018	.035
D	5.97	6.22	.235	.245
D1	5.21	-	.205	-
E	6.35	6.73	.250	.265
E1	4.32	-	.170	-
e	2.29 (TYP)		.090 (TYP)	
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°
θ1	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°

PSOP-8 PLASTIC PACKAGE



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	-	1.77	-	.070
A1	0.08	0.28	.031	.011
A2	1.20	1.60	.047	.063
b	0.39	0.48	.015	.019
b1	0.38	0.43	.015	.017
c	0.21	0.26	.008	.010
c1	0.19	0.21	.007	.008
D	4.70	5.10	.185	.201
D1	3.30 (TYP)		.130 (TYP)	
E	5.80	6.20	.228	.244
E1	3.70	4.10	.145	.161
E2	2.40 (TYP)		.094 (TYP)	
e	1.27 (TYP)		.050 (TYP)	
L	0.40	1.27	.019	.005
L1	1.05 (TYP)		.041 (TYP)	
R	0.07	-	.003	-
R1	0.07	-	.003	-
h	0.25	0.50	.010	.020
θ	0°	8°	0°	8°
θ1	5°	15°	5°	15°
θ2	0°	-	0°	-

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor (Asia) 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 (Asia). 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 (Asia).

CONTACT US

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

Wu-Xi Branch	
	No.21 Changjiang Rd., WND, Wuxi, Jiangsu, China (INFO. &. TECH. Science Park Building A 210 Room)
	86-510-85217051
	86-510-85211238
@	sales_cn@gs-power.com

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