

Packages & Pin Assignments

SOT-23		SOT-23-5L		DFN1x1-4L	
Pin Name	Description				
GND	Ground Pin				
V _{OUT}	Output				
V _{IN}	Power Supply Input				
EN	Chip Enable. High enable.				
NC	Not Connect				
E-PAD	It is electrically connected to the GND node.				

* EN pin must NOT be left floating.

Ordering and Marking Information

Ordering Information						
Vout	SOT-23		SOT-23-5L		DFN1x1-4L	
	P/N	Marking	P/N	Marking	P/N	Marking
1.2V	*GS2858JZ12F	5812□□	GS2858L12F	LW5812 □□□□	*GS2858F12F	58C
1.8V	*GS2858JZ18F	5818□□	GS2858L18F	LW5818 □□□□	GS2858F18F	58G
2.8V	*GS2858JZ28F	5828□□	GS2858L28F	LW5828 □□□□	GS2858F28F	58J
3.3V	GS2858JZ33F	5833□□	GS2858L33F	LW5833 □□□□	GS2858F33F	58M
5.0V	*GS2858JZ50F	5850□□	GS2858L50F	LW5850 □□□□	*GS2858F50F	58T
NOTE: Please check the availability of the one marked * with sales representative.						
Quantity/Reel						
SOT-23		SOT-23-5L		DFN1x1-4L		
3,000 PCS		3,000 PCS		10,000 PCS		

GS2858 1 1 2 2 F

Product Code:

GS2858

Package Code:

- 1 1 is JZ, L and F
- JZ is SOT-23
 - L is SOT-23-5L
 - F is DFN1x1-4L

Voltage Code:

- 2 2 is 12, 18, 33 and so on.
- 12 for 1.2V, 18 for 1.8V, 33 for 3.3V and so on.

Green Level:

F stands for RoHS Compliant and Halogen Free

Marking Information

Package	Marking
SOT-23	58 1 1 2 2
SOT-23-5L	LW58 1 1 2 2 2 2 2
DFN1x1-4L	58 3

Product Code:

- 58 or LW58

Voltage Code:

- 1 1 is 12, 18, 33 and so on.
- 3 is C, G and J etc.
- 12 or C for 1.2V
 - 18 or G for 1.8V
 - 28 or J for 2.8V
 - 33 or M for 3.3V
 - 50 or T for 5.0V

GS Code:

2 digits are GS Code

Absolute Maximum Ratings ¹ (T_A=25°C, unless otherwise specified)

Symbol	Parameter	Rating	Units
V _{IN}	Supply Voltage	7	V
V _{EN}	Enable Pin Voltage	7	V
P _D	Maximum Power Dissipation ³	SOT-23	490
		SOT-23-5L	540
		DFN1x1-4L	550
R _{θJA}	Thermal Resistance, Junction to Ambient ³	SOT-23	255
		SOT-23-5L	230
		DFN1x1-4L	226
T _J	Maximum Junction Temperature	-40 - 150	°C
T _{STG}	Storage Temperature Range	-40 - 150	°C
T _{LEAD}	Lead Temperature (Soldering 10sec)	260	°C

NOTE:

- Stresses beyond 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-rated conditions for extended periods may affect device reliability
- Per ANSI/ESDA/JEDEC JS-001
- Device mounted on FR-4 PCB

Recommended Operating Range

Symbol	Parameter	Value	Units
V _{IN}	Max V _{IN} Supply Voltage	6	V
V _{EN}	EN Pin Voltage	0 - 6	V
I _{OUT}	Output Current	0 - 500	mA
T _J	Operating Junction Temperature Range	-40 - 125	°C

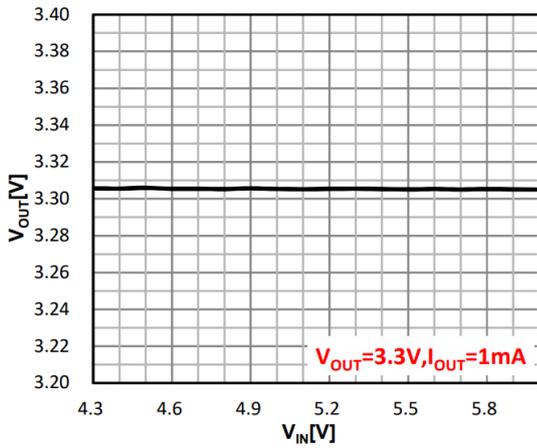
Electrical Characteristics (T_A =25°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{IN}	Input Voltage		-	-	6	V
V _{OUT}	Output Accuracy	I _{OUT} = 1mA	-1.5	-	+1.5	%
I _{LIM}	Current Limit ⁴	V _{IN} =4.3V, V _{OUT} =3.3V	530	750	-	mA
I _Q	Quiescent Current	V _{IN} =V _{EN} =V _{OUT} +1V, No Load	-	0.7	1	μA
I _{SHD}	Shutdown Current	V _{IN} =6V, V _{EN} =0V	-	-	0.1	μA
V _{DROP} ⁵	Dropout Voltage	I _{OUT} =500mA, V _{OUT} =1.2V	-	1200	-	mV
		I _{OUT} =500mA, V _{OUT} =2.8V	-	530	-	
		I _{OUT} =500mA, V _{OUT} =3.3V	-	450	-	
R _{LINE}	Line Regulation	V _{IN} = V _{OUT} +1V to 6V, I _{OUT} =1mA	-	0.2	0.5	%/V
R _{LOAD}	Load Regulation	I _{OUT} =1mA to 500mA	-	0.004	0.01	%/mA
PSRR	Power Supply Rejection Ratio	C _{IN} None, I _{OUT} =10mA, f=1KHz	-	80	-	dB
t _{st}	Startup Time	From V _{EN} 'L'→'H' to 95%*V _{OUT} , C _{OUT} =1μF, No Load	-	0.4	-	ms
I _{SHORT}	Short Current	V _{IN} > 3V, V _{OUT} =0V	-	80	-	mA
V _{ENH}	EN High Voltage	V _{IN} =6V	1.5	-	-	V
V _{ENL}	EN Low Voltage		-	-	0.5	V
T _{SD}	Thermal Shutdown	Temperature rising	-	165	-	°C
ΔT _{SD}	T _{SD} Hysteresis	Temperature falling	-	30	-	°C
R _{DSG}	R _{ON} of Discharge MOSFET	V _{IN} = 6V, V _{EN} =0V	-	100	-	Ω

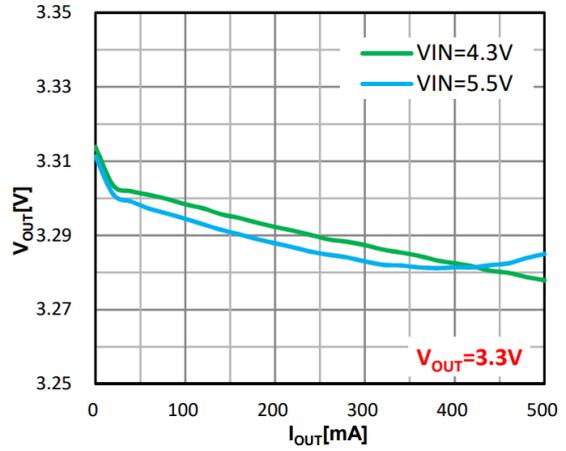
NOTE:

- Guaranteed by design
- The dropout voltage is defined as V_{IN} - V_{OUT}, when V_{OUT} =95% x V_{OUT(NOM)}

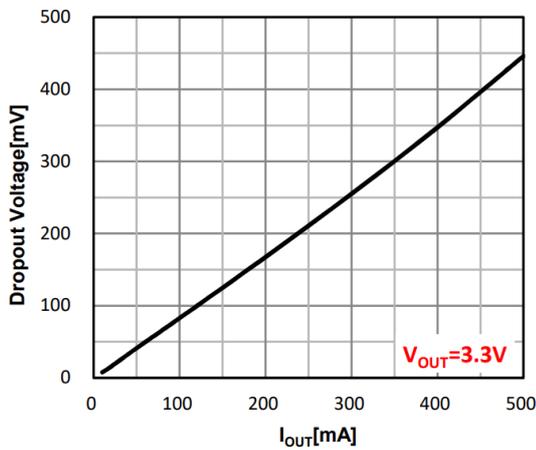
Performance Characteristics ($T_A = 25^\circ\text{C}$, unless otherwise specified.)



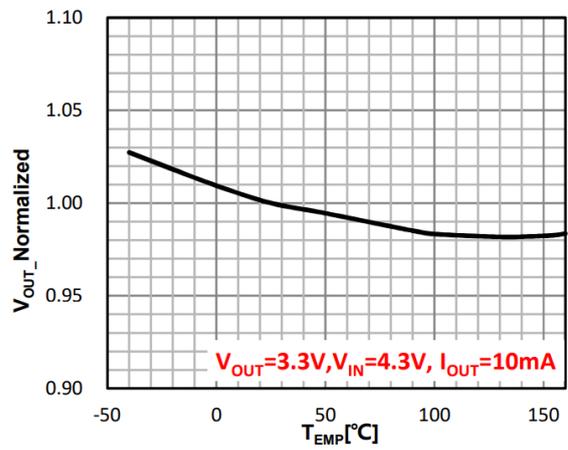
Line Regulation



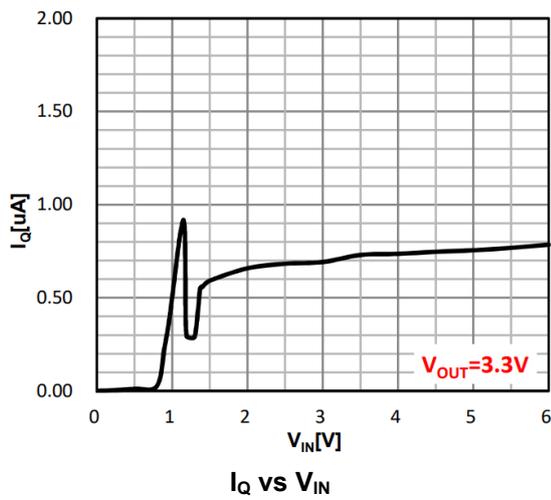
Load Regulation



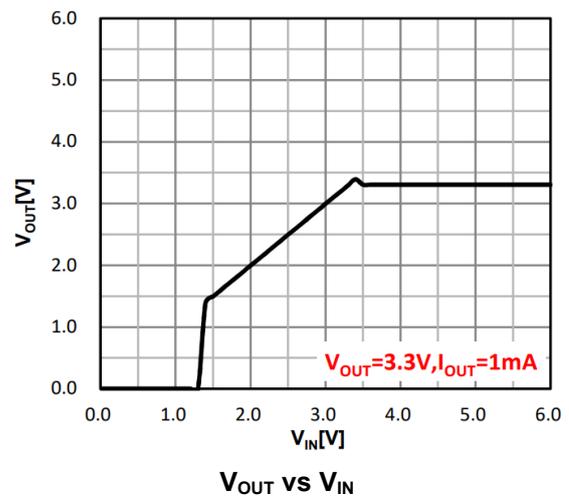
Dropout Voltage



V_{OUT} vs. Temperature

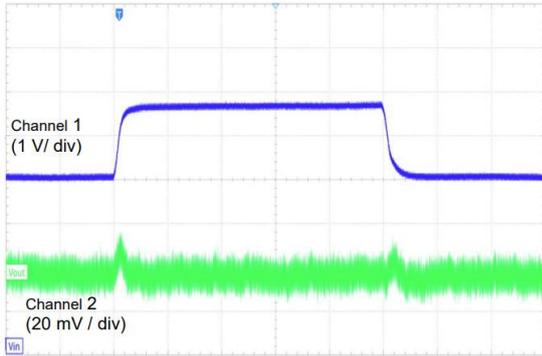


I_Q vs V_{IN}



V_{OUT} vs V_{IN}

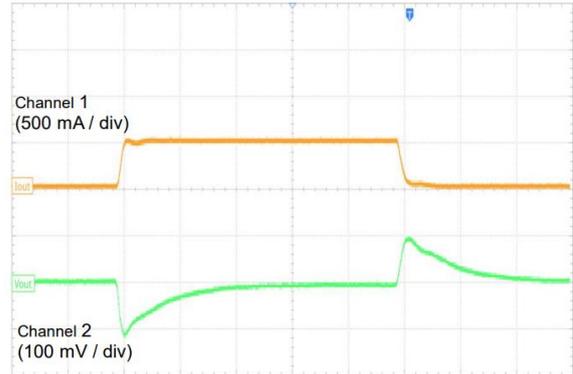
Performance Characteristics



Time (10 us / div)

Channel 1 = V_{IN} , Channel 2 = V_{OUT} , $V_{IN}=4.3V \rightarrow 6.0V$,
 $T_r=T_f=1\mu s$, $V_{OUT}=3.3V$, $I_{OUT}=10mA$

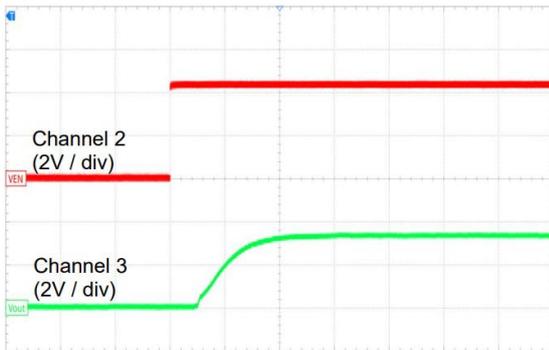
Line Transient



Time (100 us / div)

Channel 1 = I_{OUT} , Channel 2 = V_{OUT} , $V_{IN}=4.3V$, $V_{OUT}=3.3V$

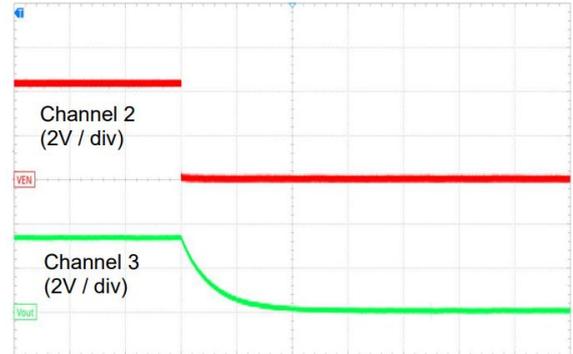
Load Transient



Time (200 us / div)

Channel 2 = EN, Channel 3 = V_{OUT} , $V_{IN}=4.3V$, EN=0→4.3V,
 $V_{OUT}=3.3V$, No Load

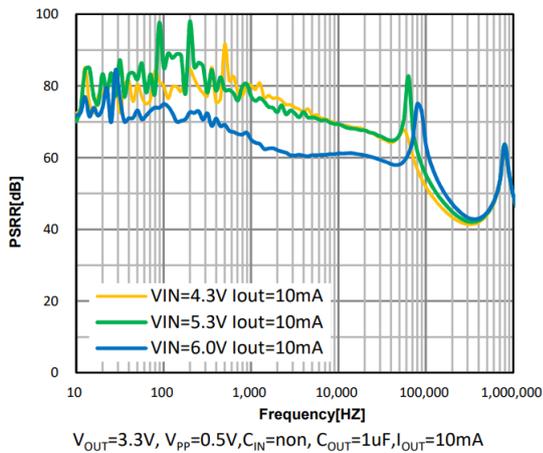
Start Up



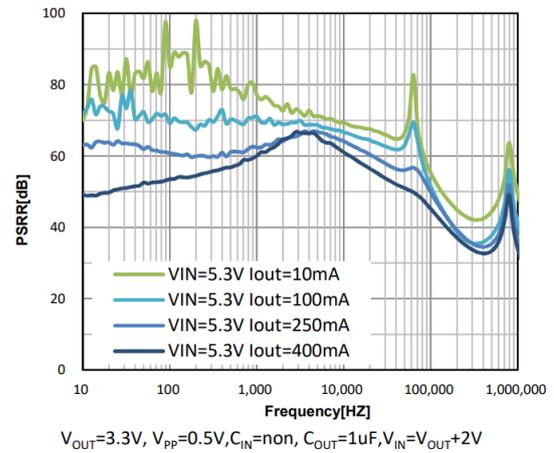
Time (200 us / div)

Channel 2 = EN, Channel 3 = V_{OUT} , $V_{IN}=4.3V$, EN=4.3→0V,
 $V_{OUT}=3.3V$, No Load

Shut-Down

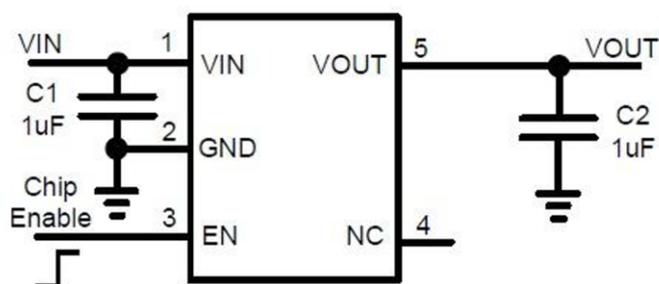


PSRR



PSRR

Typical Application Circuit



Input Capacitor Selection

Like any low-dropout regulator, the external capacitors used with the GS2858 Series must be carefully selected for regulator stability and performance. Using a capacitor whose value is $\geq 1\mu\text{F}$ on the GS2858 Series input and the amount of capacitance can be increased without limit. An at least $10\mu\text{F}$ input capacitor is needed if input ripple voltage $V_{PP} > 1\text{V}$. The input capacitor must be located a distance less than 0.5 inch from the input pin of the IC and returned to a clean analog ground. Any good quality ceramic or tantalum can be used for this capacitor. The capacitor with larger value and lower ESR (equivalent series resistance) provides better PSRR and line-transient response.

Output Capacitor Selection

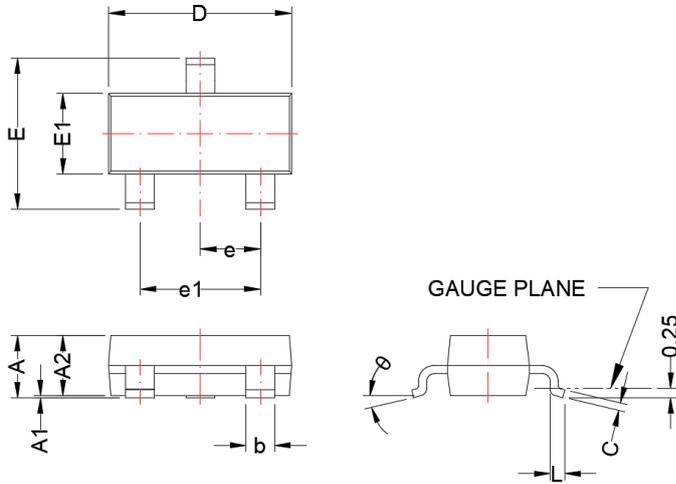
The output capacitor must meet both requirements for minimum amount of capacitance and ESR in all LDOs application. The GS2858 Series is designed specifically to work with low ESR ceramic output capacitor in space-saving and performance consideration. Using a ceramic capacitor whose value is at least $1\mu\text{F}$ on the GS2858 Series output ensures stability. An appropriate output capacitor can reduce noise and improve load transient response and PSRR. The output capacitor should be located not more than 0.5 inch from the V_{OUT} pin of the GS2858 Series and returned to a clean analog ground.

Layout Recommendation

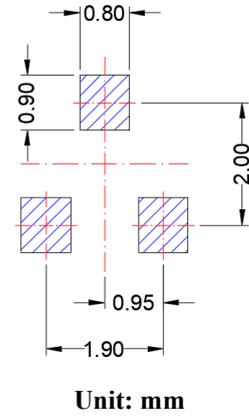
To improve ac performance such as PSRR, output noise, and transient response, it is recommended that the PCB be designed with separate ground planes for V_{IN} and V_{OUT} , with each ground plane connected only at the GND pin of the device.

SOT-23

Package Dimension



Recommended Land Pattern

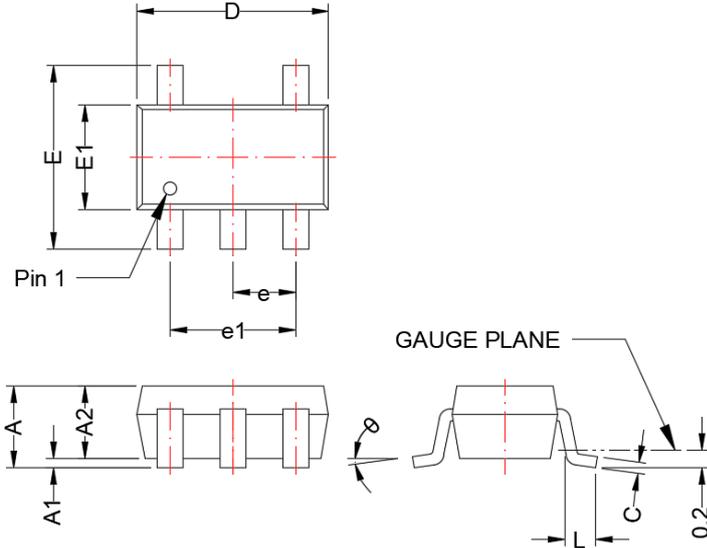


Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.75	1.17	0.030	0.046
A1	0.01	0.15	0.000	0.006
A2	0.70	1.02	0.028	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

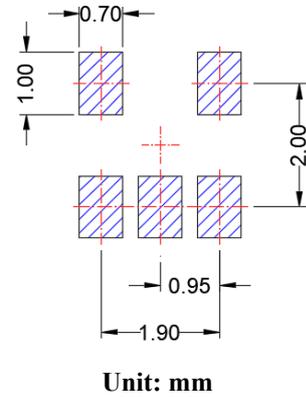
NOTE:
Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

SOT-23-5L

Package Dimension



Recommended Land Pattern



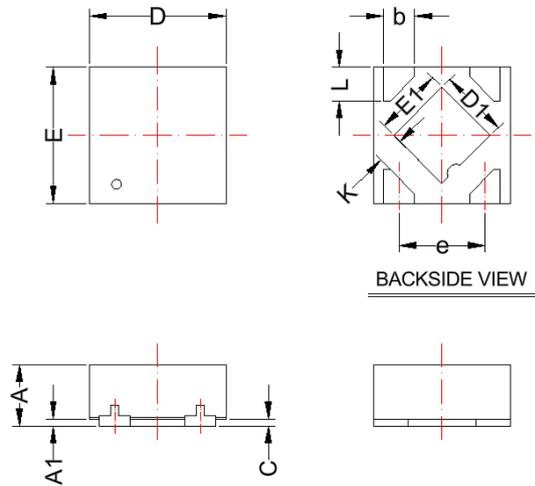
Dimensions

Symbol	Millimeters		Inches	
	MIN	MAX	Min	MIN
A	0.90	1.45	0.035	0.057
A1	0.00	0.15	0.000	0.006
A2	0.90	1.30	0.035	0.051
b	0.30	0.50	0.012	0.020
c	0.08	0.26	0.003	0.010
D	2.70	3.10	0.106	0.122
E	2.20	3.00	0.087	0.118
E1	1.30	1.75	0.051	0.069
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.3	0.6	0.012	0.024
θ	0°	8°	0°	8°

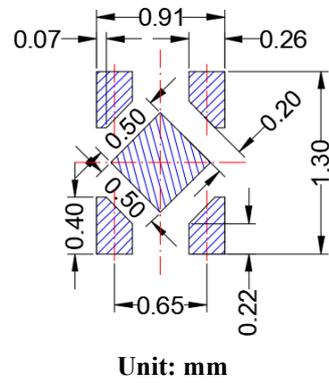
NOTE:
Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

DFN1x1-4L

Package Dimension



Recommended Land Pattern



Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.335	0.405	0.013	0.016
A1	0.000	0.050	0.000	0.002
b	0.175	0.275	0.007	0.011
c	0.127 REF		0.005 REF	
D	0.950	1.050	0.037	0.041
D1	0.450	0.550	0.018	0.022
E	0.950	1.050	0.037	0.041
E1	0.450	0.550	0.018	0.022
K	0.195 REF		0.0077 REF	
e	0.575	0.675	0.023	0.027
L	0.200	0.300	0.008	0.012

NOTE:
Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

NOTICE

- Globaltech Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Globaltech Semiconductor products described or contained herein. Globaltech Semiconductor products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Globaltech Semiconductor makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- 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, Lane 11, Sec. 6, Minquan E. Rd Neihu District, Taipei City 114761, 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