

GS2906B

500mA Ultra Low Dropout Regulator

Product Description

The GS2906B is a high performance positive voltage regulator designed for use in applications requiring very low input voltage and very low dropout voltage at 600mA amps. It operates with a V_{IN} as low as 2.5V, with output voltage programmable as low as 0.8V. GS2906B has an enable pin to further reduce power dissipation while shut down. The enable pin may be tied to V_{IN} if it is not required for ON/OFF control. The GS2906B provides excellent regulation over variations in line, load and temperature. V_{out} can be programmed from 0.8V to 5V with two external resistors. The optimum thermal condition has to consider the layout placement and application to achieve its satisfied high output current requirement.

The GS2906B is SOT-23-5L packages.

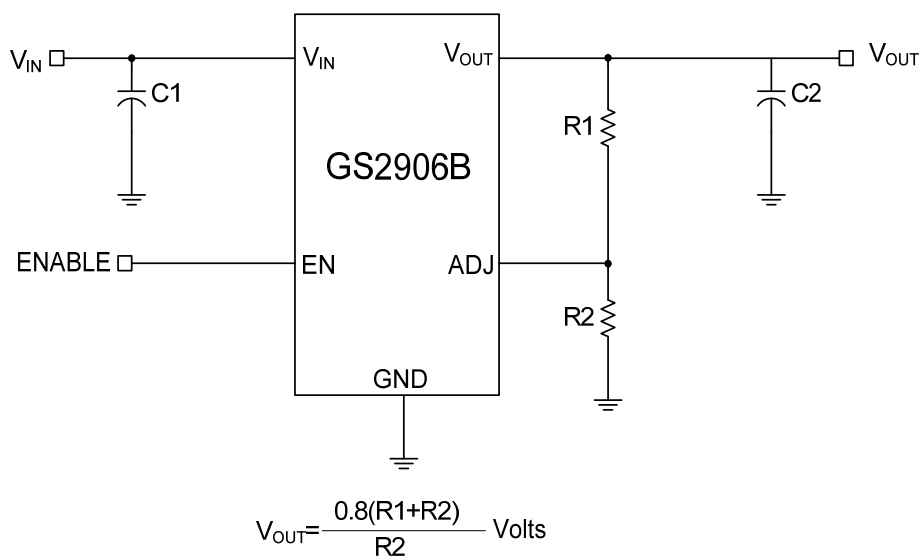
Features

- Typically 370mV Dropout @500mA
- Input Voltage Range: 2.5V to 6V
- Enable Function
- Over Current and Over Temperature Protection
- 40 μ A Quiescent Current in Shutdown
- Shut down current < 1 μ A
- P-CH Design to Reduce the Operation Current
- Adjustable Output Voltage Range 0.8V to 5V
- Output Voltage Accuracy $\pm 2\%$
- Built-In Short Circuit Protection

Applications

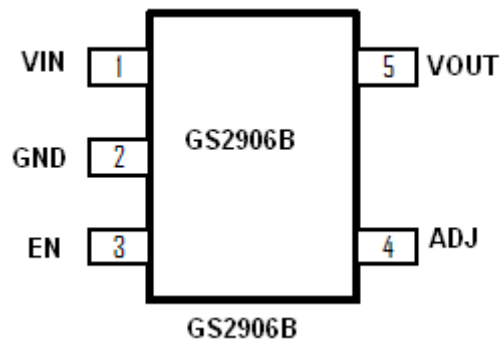
- Battery Powered Systems
- Telecom/Networking Cards
- Industrial Applications
- Camera Module

Typical Application Circuit



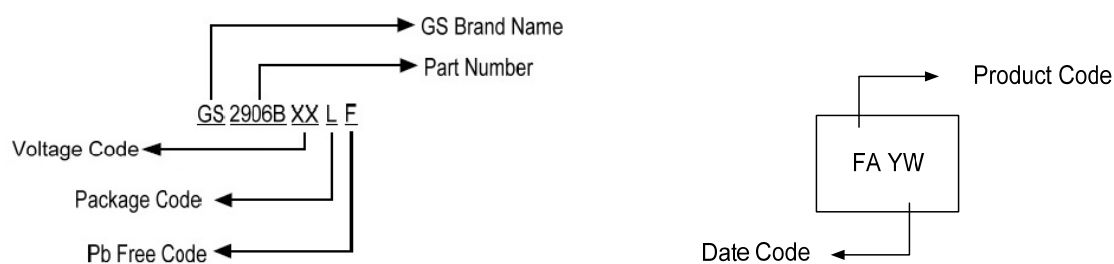
* When $V_{out} \leq 1.2V$, Recommend $C2 = 10\mu F$

Packages & Pin Assignments



Pin Name	Pin Description
V _{IN}	Input Voltage. 1uF capacitance should be placed closely to Vin
GND	Reference Ground.
EN	Enable Input. Pulling this pin to “High” turn on the IC, pulling this pin to “Low” turn off the IC.
ADJ	This is the input to the error amplifier. The ADJ reference voltage is 0.8Vreferenced to ground. $V_{OUT} = \frac{0.8(R1+R2)}{R2} = \text{Volts}$
V _{OUT}	The pin is the power output of the device, connect 2.2uF capacitor to GND. V _{out} ≤ 1.2V, Recommend using 10pF capacitor.

Ordering & Marking Information



Part Number	Package	Top Marking (Product Code)	Output Voltage
GS2906BLF	SOT-23-5L	FAYW	Adjustable
GS2906B12LF	SOT-23-5L	12_YW	1.2V
GS2906B18LF	SOT-23-5L	18_YW	1.8V
GS2906B28LF	SOT-23-5L	28_YW	2.8V
GS2906B33LF	SOT-23-5L	33_YW	3.3V

Absolute Maximum Ratings (Note1)

Symbol	Parameter	Range	Unit
V_{IN}	Supply Voltage	-0.3~8	V
Other Pin Voltage	Control Voltage	$V_{in}-0.3 \sim V_{in}+0.3$	V
T_J	Junction Temperature	125	°C
T_{LEAD}	Lead Temperature(Soldering) 5 Sec.	260	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C
P_D	Power Dissipation, P_D @ $T_A=25^{\circ}C$	300	mW
θ_{JA}	Thermal Resistance Junction to Ambient	333	°C/W
θ_{JC}	Thermal Resistance Junction to Case	106.6	°C/W

Recommended Operating Conditions

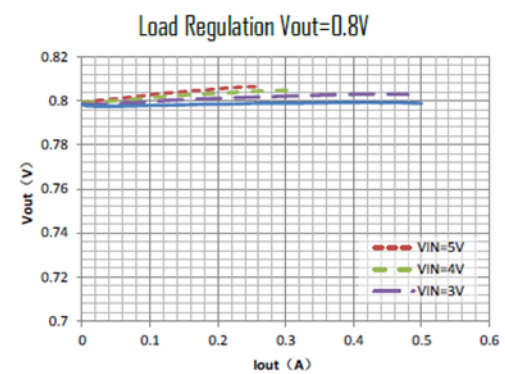
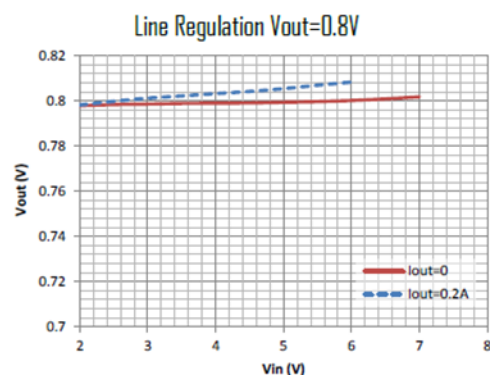
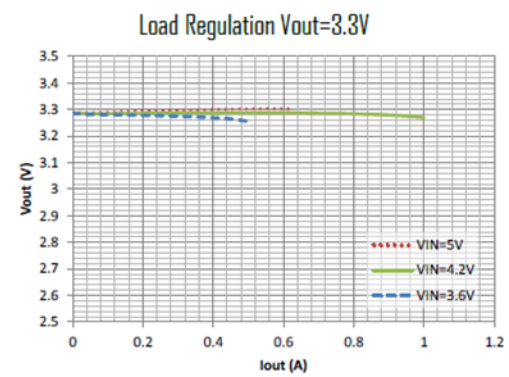
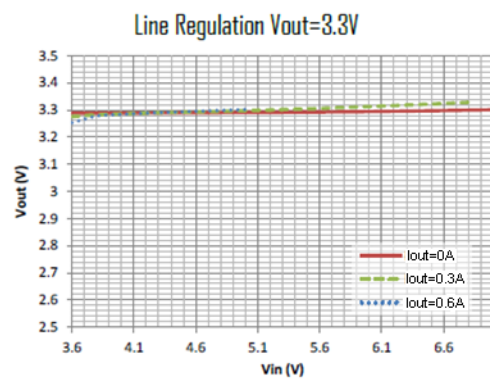
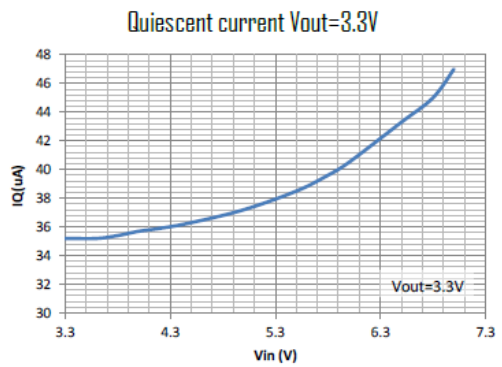
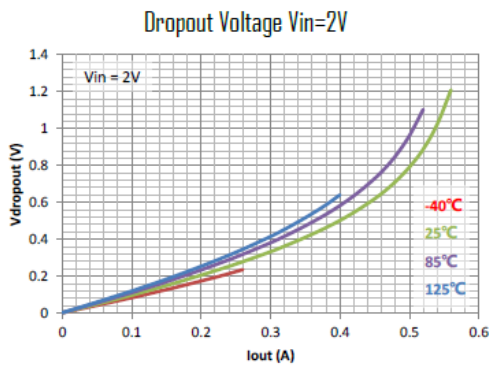
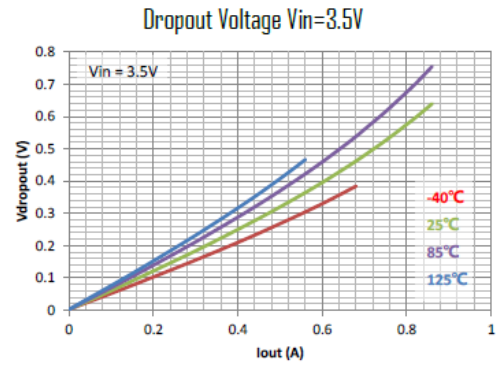
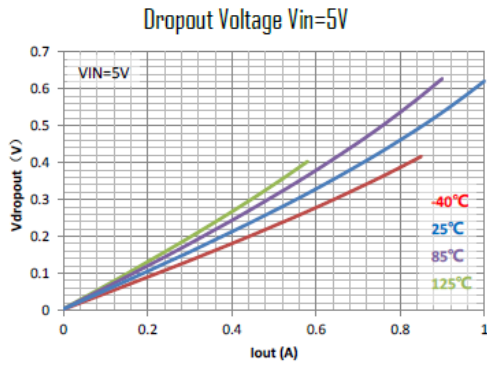
V_{IN}	Supply Voltage	6	V
T_J	Operating Junction Temperature Range	-40 to +125	°C
T_A	Operating Ambient Temperature Range	-40 to +85	°C

Electrical Characteristics

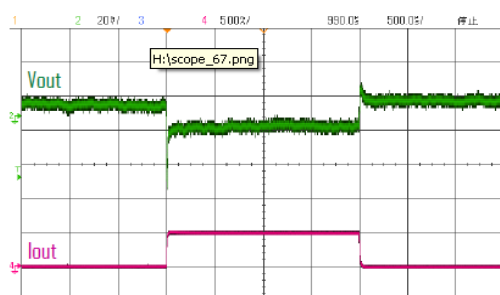
($V_{in}=5V$, unless otherwise specified Typical values are at $T_A=T_J=25^{\circ}C$.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{IN}	Supply Voltage Range		2.5		6	V
I _{OUT}	Supply Current			500		mA
I _Q	Quiescent Current	V _{adj} =1V		40		uA
V _{adj}	Reference Voltage		0.775	0.8	0.825	
V _{OUT}	Output Voltage	V _{IN} =V _{OUT} +0.8V, I _{LOAD} =10mA	-2.0	V _{OUT}	2.0	%
Reg_line	Line Regulation	2.5V< Vin < 5.5V		0.075		%/V
Reg_load	Load Regulation	0mA < I _{out} < 500mA		0.6		%/A
V _{DROP}	Dropout Voltage	I _{out} =100 mA I _{out} =300 mA I _{out} =500 mA		75		mV
				225		
				370		
I _{CL}	Current Limit			1050		mA
Softstart Time				30	60	uS
V _{ADJ}	Adjust Pin Current	V _{ADJ} =V _{REF}		80	200	nA
EN						
V _{IH}	Enable Pin Threshold		1.5			V
V _{IL}					0.5	V
Over Temperature Protection						
T _{HI}	High Trip Level			150		°C

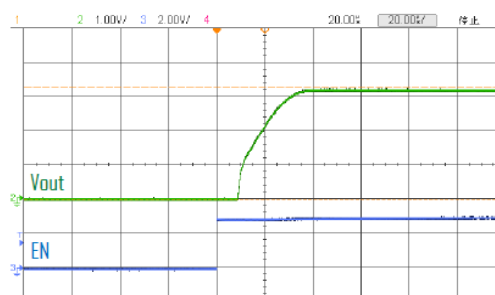
Typical Performance Characteristics



Load Transient Response at Iout=600mA, Vout= 3.3V

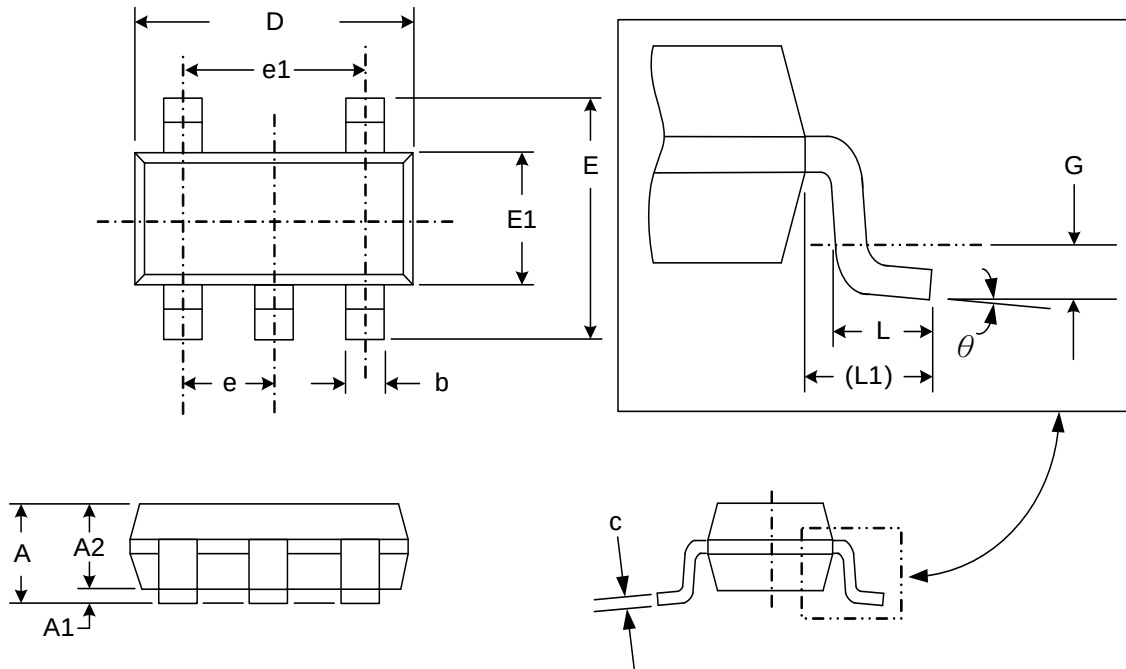


Startup Waveform at Iout=200mA, Vout=3.3V



Package Dimension

SOT-23-5L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.95	1.45	.037	.057
A1	0.05	0.15	.002	.006
A2	0.90	1.30	.035	.051
b	0.30	0.50	.012	.020
c	0.08	0.20	.003	.008
D	2.70	3.10	.106	.122
E	2.50	3.10	.0984	.122
E1	1.50	1.80	.059	.0071
e	0.95 (TYP)		.037 (TYP)	
e1	1.90 (TYP)		.075 (TYP)	
L	0.35	0.55	.014	.022
L1	0.60 (TYP)		.024 (TYP)	
G	0.25 (TYP)		.010 (TYP)	
θ	0°	8°	0°	8°

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