GS2533/50

High Input Voltage / Low Quiescent Current / Fixed 3.3/5V Low Dropout Voltage Linear Regulator

Product Description

The GS2533/50 is a High Input Voltage and Low Quiescent Current linear regulator with Fixed 3.3/5V Output Voltage.

The GS2533/50 includes a voltage reference unit, an error amplifier, resistor net for voltage setting, a current limit circuit. These ICs perform with low dropout voltage.

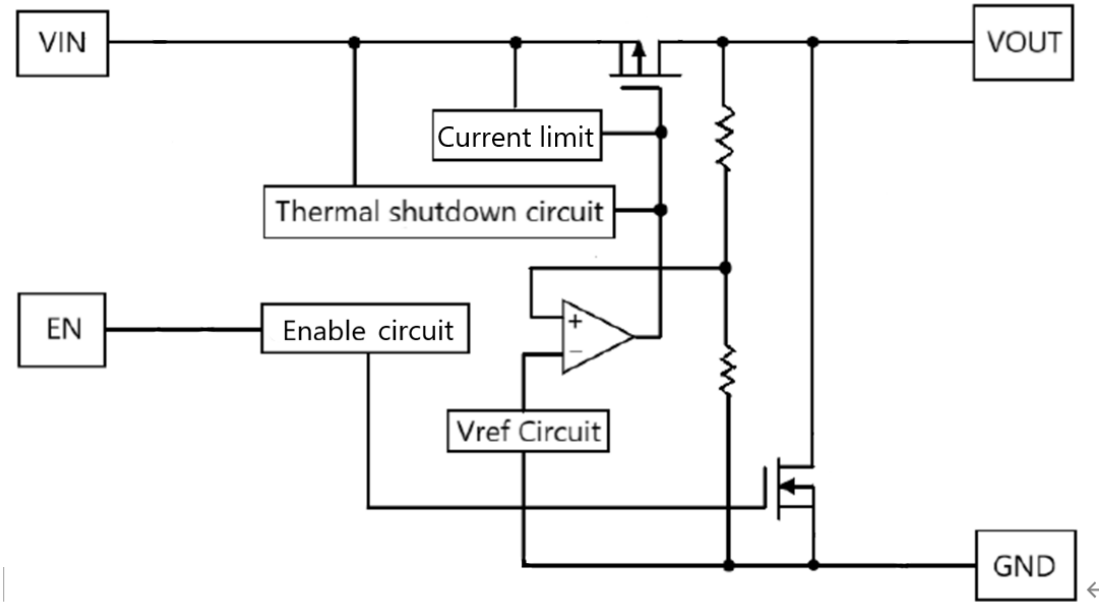
Features

- Input Voltage Range: V_{OUTNOM} +1 to 35V
- Output Voltage Accuracy: ±1.0%
- Low Supply Current: 1.5μA (Typ)
- Current Limit, Thermal Shutdown
- Fixed Output Voltage: 3.3V and 5.0V
- Miniature Packages:
  SOT-23、SOT89-3 and SOT-23-5L
- RoHS Compliant, 100%Pb & Halogen Free

Applications

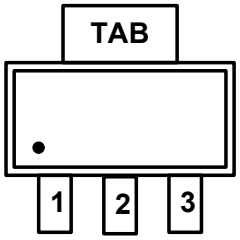
- Standby Power Source
- Networking
- Home Appliance
- MCU Application

Block Diagram



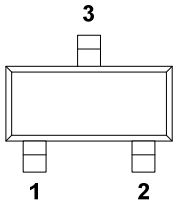
Packages & Pin Assignments

SOT-89



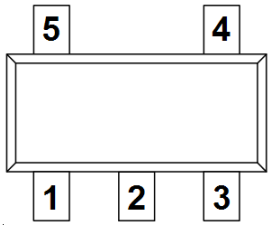
Pin	Pin Name
1	GND
2	V_{IN}
3	V_{OUT}
TAB	V_{IN}

SOT-23



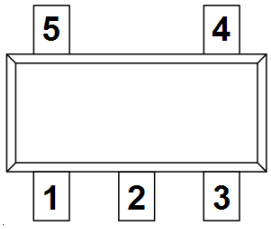
Pin	Pin Name
1	GND
2	V_{OUT}
3	V_{IN}

SOT-23-5LA



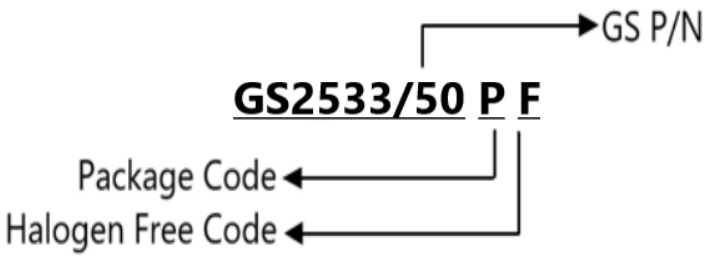
Pin	Pin Name
1	V_{IN}
2	GND
3	EN
4	NC
5	V_{OUT}

SOT-23-5LB



Pin	Pin Name
1	GND
2	V_{IN}
3	V_{OUT}
4	NC
5	NC

Ordering Information



SOT-23	SOT-23-5LA	SOT-23-5LB	SOT-89	Quantity
GS2533ZF	GS2533LAF	GS2533LBF	GS2533YF	3K/1K(SOT-89)
GS2550ZF	GS2550LAF	GS2550LBF	GS2550YF	3K/1K(SOT-89)

Marking Information

SOT-23	SOT-23-5LA	Marking	Output Voltage
GS2533ZF	GS2533LAF	X1XXX 33	3.3V
GS2550ZF	GS2550LAF	X1XXX 50	5.0V

SOT-23-5LB	Marking	SOT-89	Marking	Output Voltage
GS2533LBF	X1XXX Z33	GS2533YF	3201-33 XXXXXXX	3.3V
GS2550LBF	X1XXX Z50	GS2550YF	3201-50 XXXXXXX	5.0V

Note : X1 and 3201- = GS P/N
XXX and XXXXXXX = GS Code
33 and 50 = Voltage Code
Z = SOT-23-5LB Package

Absolute Maximum Ratings

(T_A=25°C unless otherwise specified)

Symbol	Parameter	Maximum		Unit
V_{IN}	Input Voltage	-0.3~40		V
V_{EN}	EN pin to GND Voltage	-0.3~40		V
V_{OUT}	V_{OUT} pin to GND Voltage	-0.3~6		V
I_C	Current Source	Internally limited		
T_A	Operating Ambient Temperature	-40 to 85		°C
T_J	Maximum Operating Junction Temperature	+125		°C
T_{STG}	Storage temperature Range	-50 to 125		°C
θ_{JA}	Thermal Resistance Junction to Ambient	SOT-89	130	°C/W
		SOT-23	260	°C/W
		SOT-23-5L	220	°C/W
P_D	Power Dissipation	SOT-89	0.8	W
		SOT-23	0.4	W
		SOT-23-5L	0.5	W
T_{LEAD}	Lead temperature (Soldering 10sec)	260		°C

Note:
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.

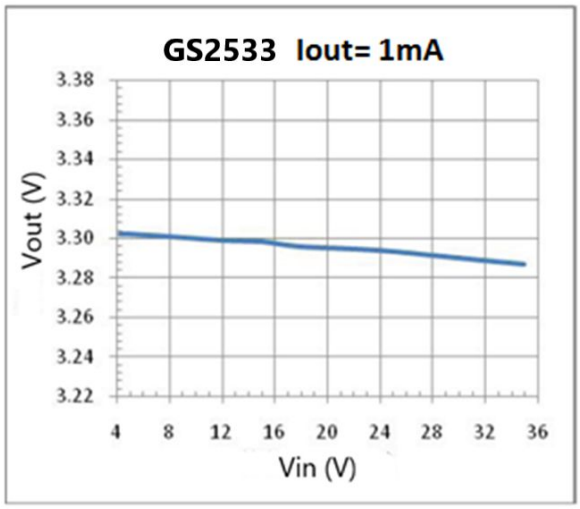
Electrical Characteristics

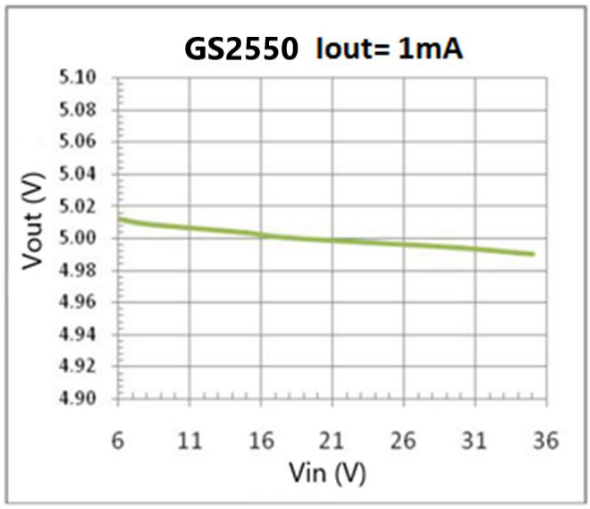
(V_{IN} =V_{OUTNOM} +1, Cin=1uF, C_{OUT}=10uF, T_A=+25 ºC unless otherwise specified.)

Symbol	Parameter	Conditions	MIN	TYP	MAX	Unit
V_{IN}	Input Voltage		3	-	35	V
I_Q	Quiescent Current	I_{LOAD} = 0mA	-	1.5	2.5	μA
V_{OUT}	Output Voltage	I_{LOAD} = 40mA	-1%	-	+1%	V_{OUT}
I_{OUT} Max	Maximum Output Current	Vin=Vout+3V	100	-	-	mA
V_{DROP}	Dropout Voltage	I_{LOAD} =40mA V_{OUT} = 5V	-	260		mV
ΔV_{LINE}	Line Regulation	I_{LOAD} =10mA, V_{IN} =(V_{OUTNOM} +1) to 18V	-	0.2	0.3	%/V
ΔV_{LOAD}	Load Regulation	1mA ≤ I_{LOADUT} ≤ 60mA	-	25	50	mV
V_{EN}(HI)	EN Input High Voltage	V_{IN} =V_{OUTNOM} +1 RL=1.0KΩ	1.5	-	-	V
V_{EN}(LO)	EN Input Low Voltage	V_{IN} =V_{OUTNOM} +1 RL=1.0KΩ	-	-	0.4	V
I_{LIMIT}	Current Limit	V_{OUT} = 0V		350		mA
PSRR	Power supply rejection	V_{IN} =V_{OUTNOM} +1 I_{LOAD} =10mA, f=100HZ		65		dB
T_{SD}	Thermal Shutdown			180		ºC
TC_{VOUT}	Temperature Coefficient	I_{LOAD} =40mA -40ºC~+85ºC		±0.7		mV/ºC
T_{HYS}	Thermal Hysteresis			20		ºC

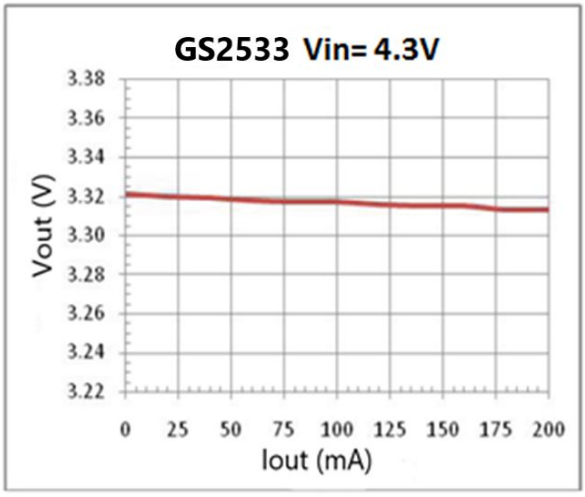
Typical Performance Characteristics

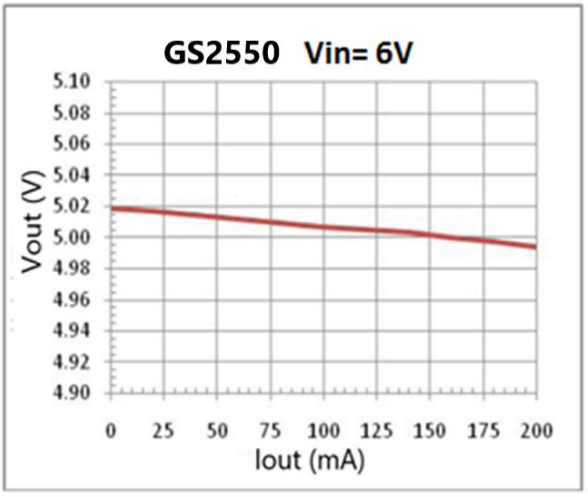
Output voltage vs. Input voltage



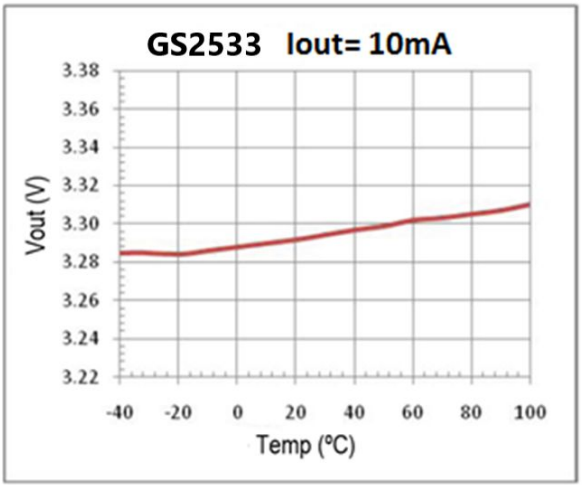


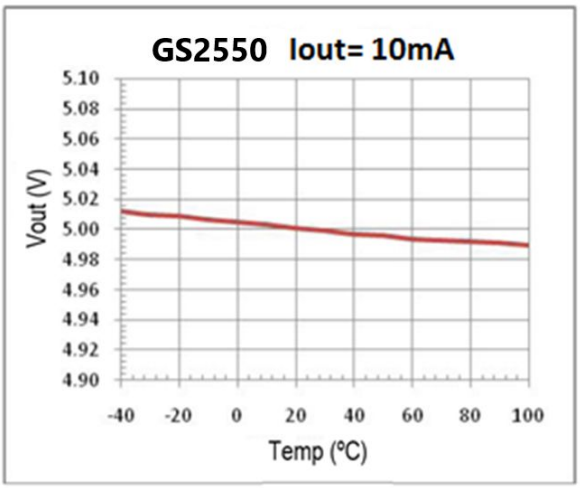
Output voltage vs. Output current



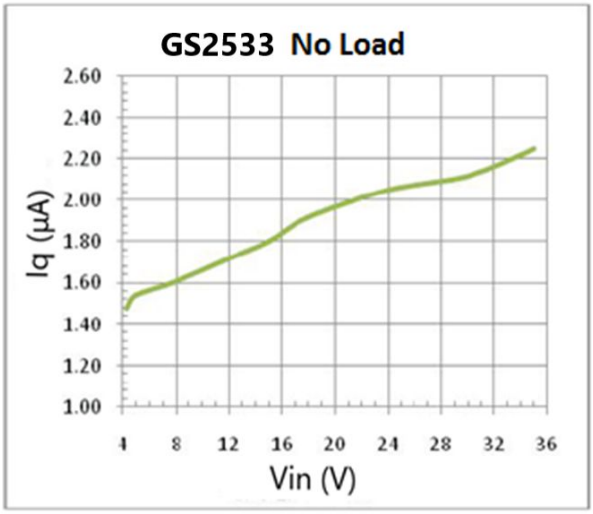


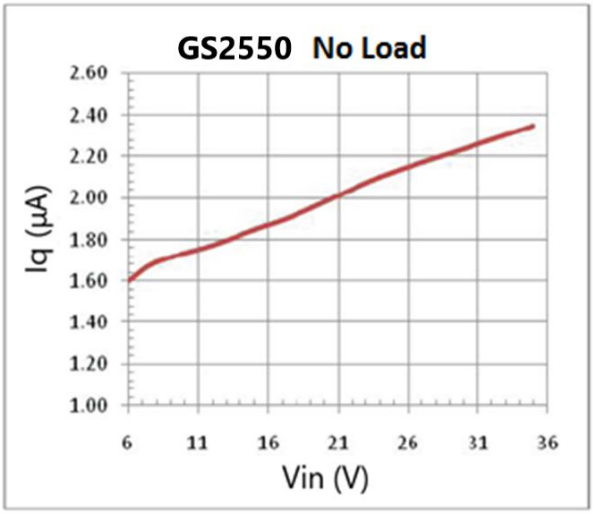
Output voltage vs. Temperature



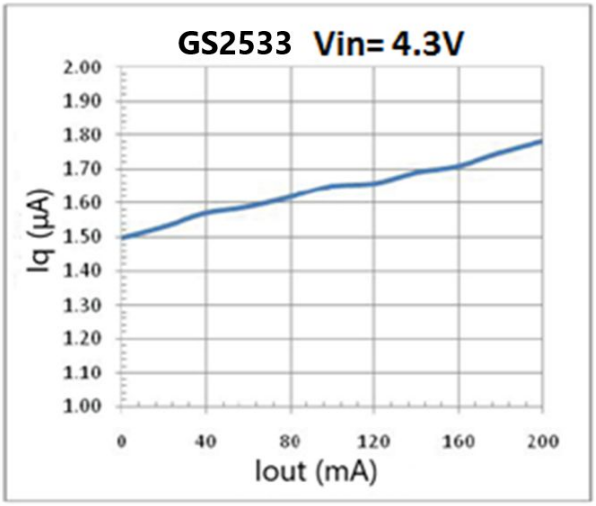


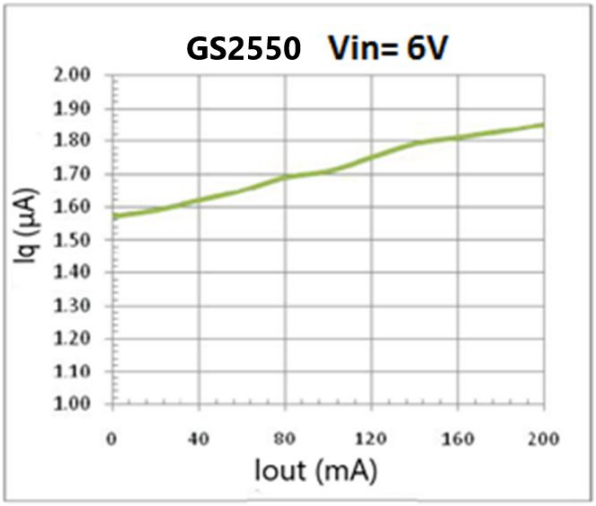
Current consumption vs. Input voltage



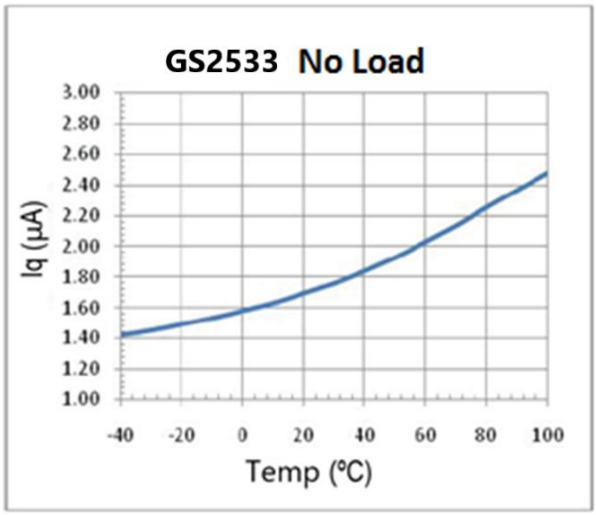


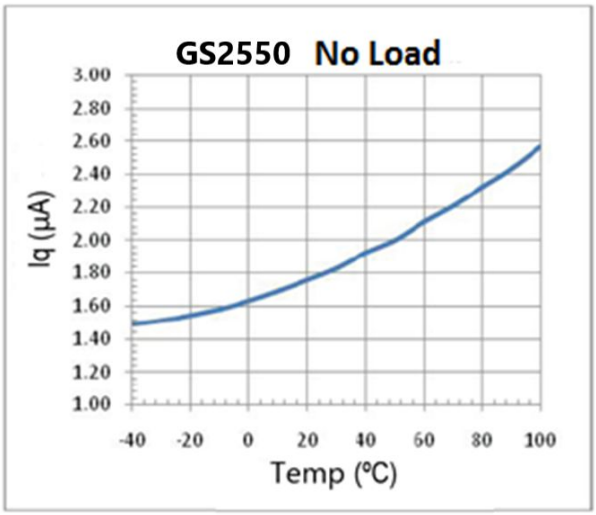
Current consumption vs. Output Current



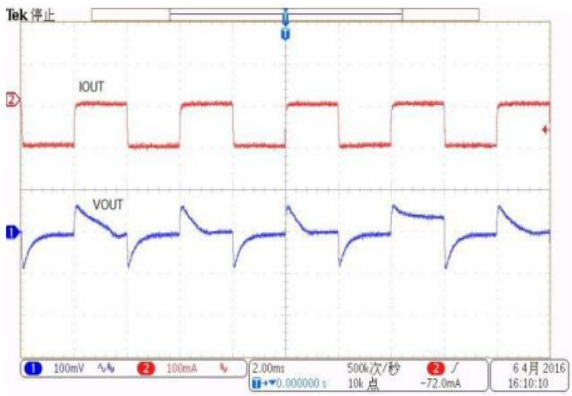


Current consumption vs. Temperature





Load Transient



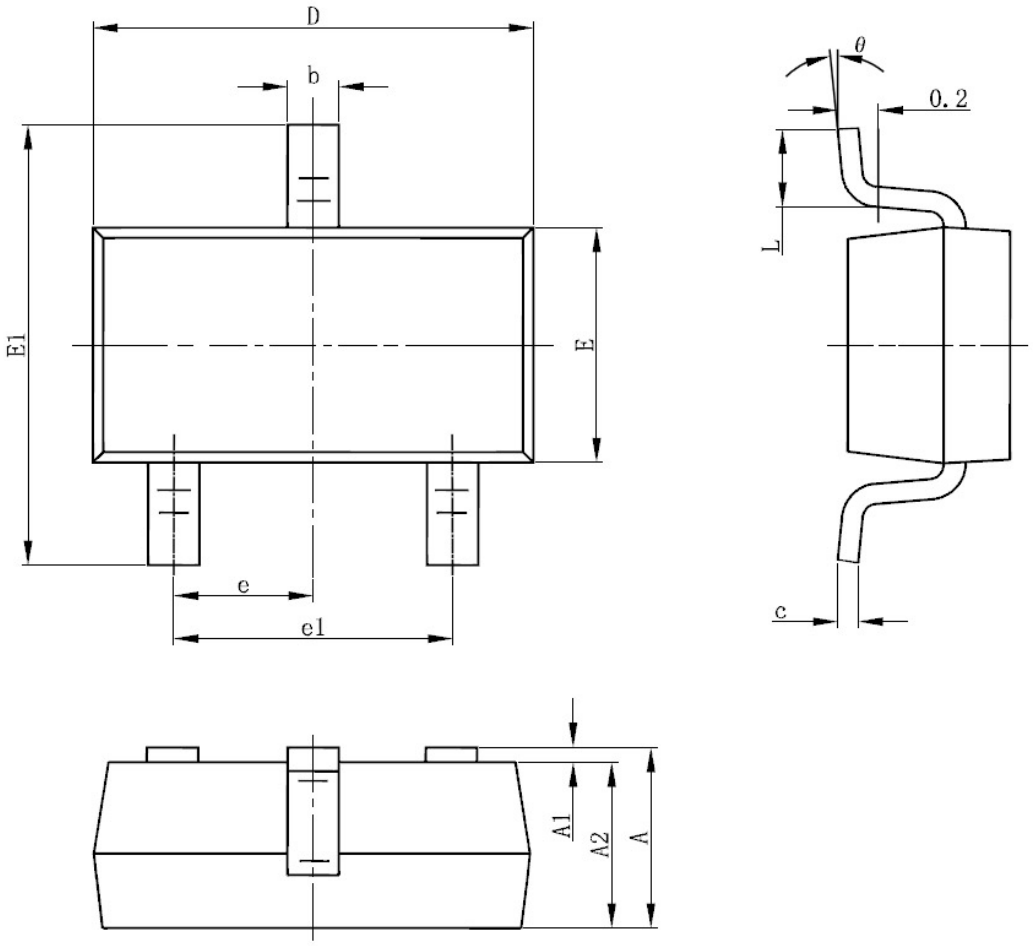
V_{IN}=12V, C_{OUT}=10uF, I_{OUT}=10mA to 100mA

Line Transient

V_{IN}=5.0V to 12.0V, C_{OUT}=10uF, I_{OUT}=1mA

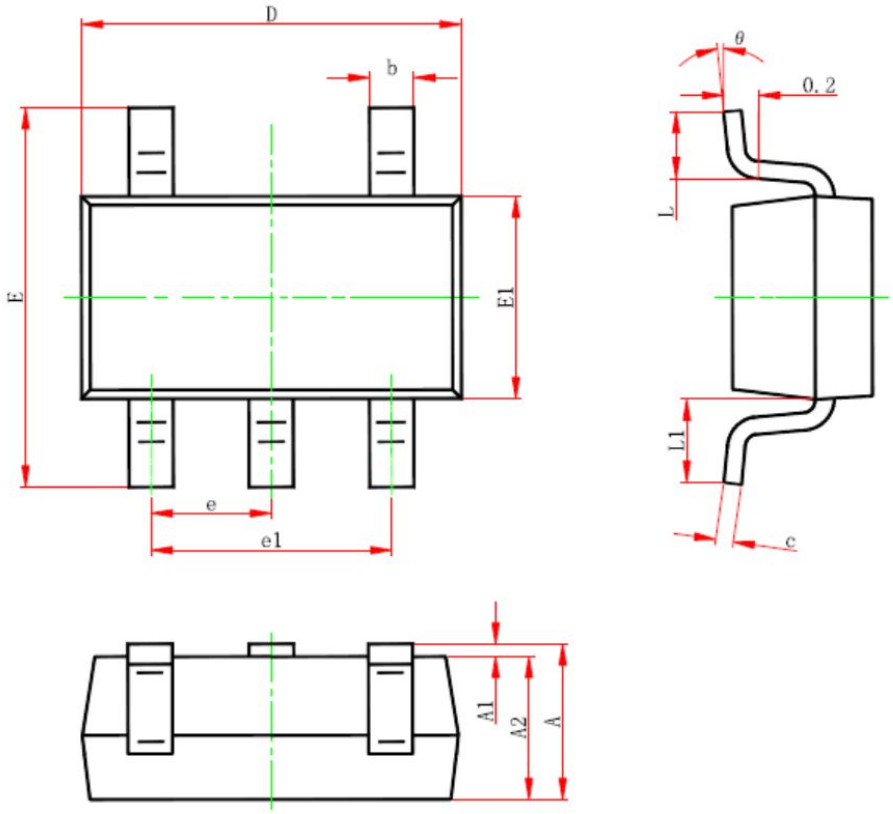
Package Dimension

SOT-23



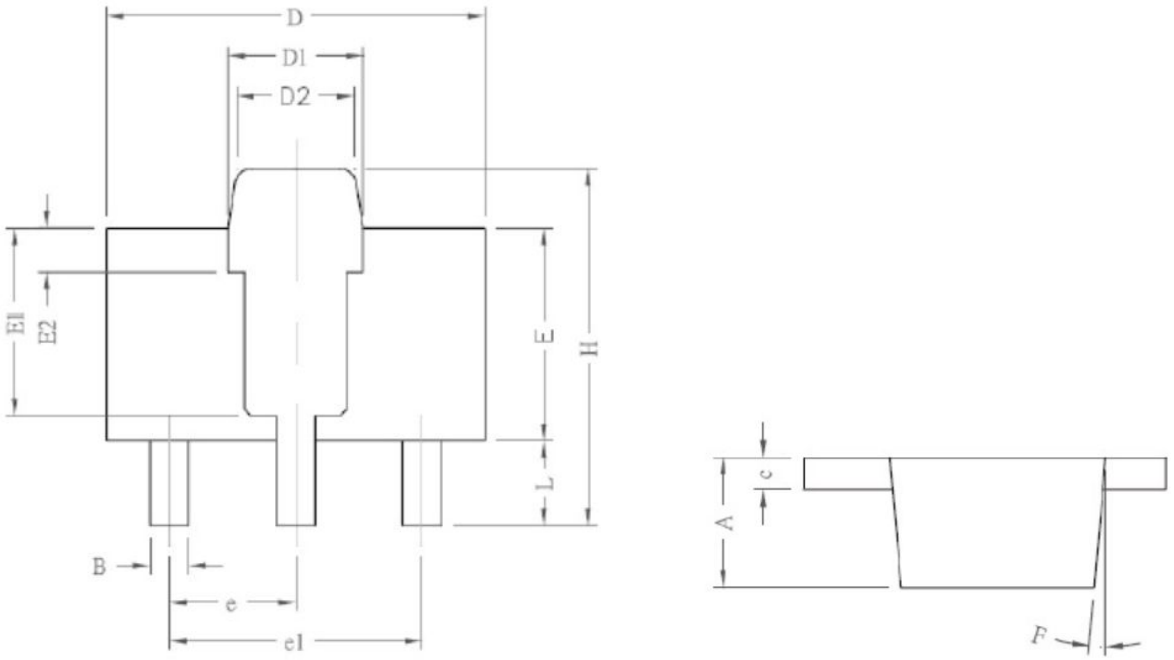
Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.5	0.012	0.020
c	0.1	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 (TYP)		0.037 (TYP)	
e1	1.8	2	0.071	0.079
L	0.3	0.6	0.012	0.024
Q	0°	8°	0°	8°

SOT-23-5L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	1.25	0.041	0.049
A1	0.00	0.10	0.000	0.004
A2	1.05	1.15	0.041	0.045
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.82	3.02	0.111	0.119
E	2.65	2.95	0.104	0.116
E1	1.50	1.70	0.059	0.067
e	0.95 (TYP)		0.037 (TYP)	
e1	1.90 (TYP)		0.075 (TYP)	
L	0.30	0.60	0.012	0.024
L1	0.60 (TYP)		0.024 (TYP)	
θ	0°	8°	0°	8°

SOT-89



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.40	1.60	.055	.063
B	0.40	0.52	.016	.020
C	0.35	0.41	.014	.017
D	4.40	4.60	.173	.181
D1	1.50	1.70	.059	.072
D2	1.30	1.50	.051	.059
E	2.40	2.60	.094	.102
E1	2.13	2.29	.084	.090
E2	0.52 (TYP)		.020 (TYP)	
e	1.50 (TYP)		.059 (TYP)	
e1	3.00 (TYP)		.118 (TYP)	
H	4.05	4.25	.159	.167
L	0.89	1.20	.035	.047
F	5° (TYP)		5° (TYP)	

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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

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