

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.

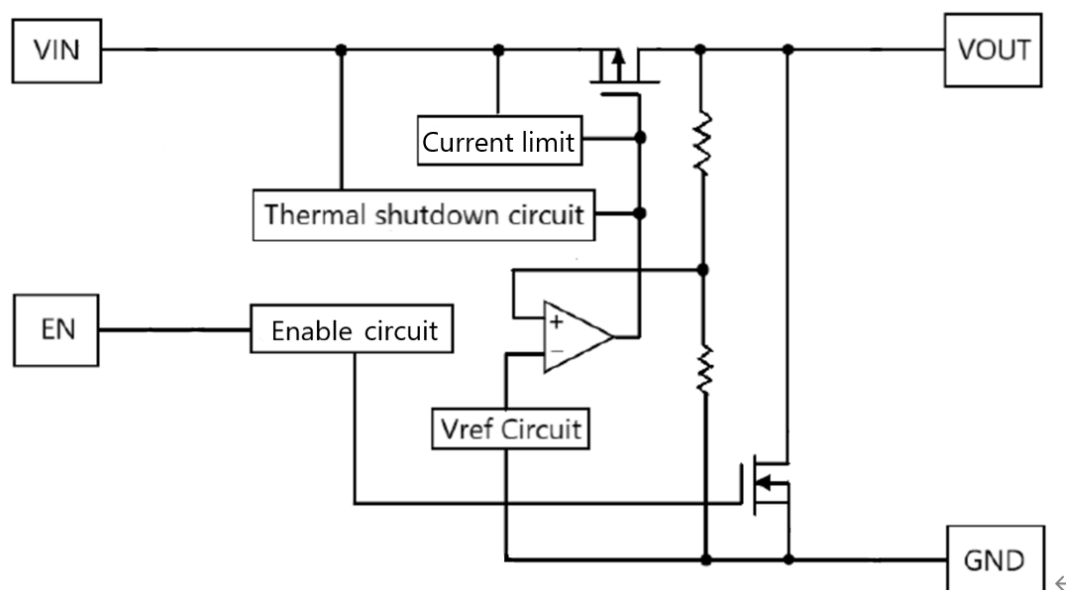
Features

- Input Voltage Range: $V_{OUTNOM} + 1$ to 35V
- Low Dropout Voltage: 260mV at 40mA/5V
700mV at 100mA/3.3V
- Output Voltage Accuracy: $\pm 1.0\%$
- Low Supply Current: 1.5 μ A (Typ)
- Current Limit, Thermal Shutdown
- Fixed Output Voltage: 3.3V and 5.0V
- Miniature Packages: SOT-23 and SOT89-3
SOT-23-5L
- RoHS Compliant, 100%Pb & Halogen Free

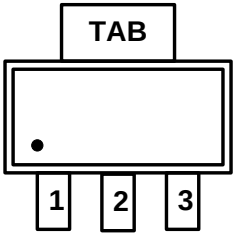
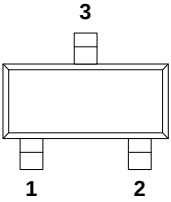
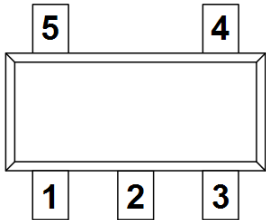
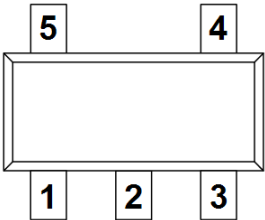
Applications

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

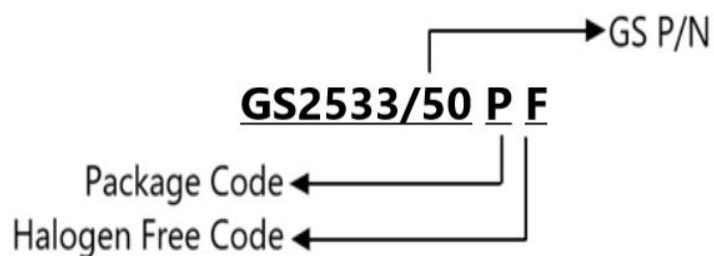
Block Diagram



Packages & Pin Assignments

SOT-89		SOT-23	
			
Pin	Pin Name	Pin	Pin Name
1	GND	1	GND
2	V _{IN}	2	V _{OUT}
3	V _{OUT}	3	V _{IN}
TAB	V _{IN}		
SOT-23-5LA		SOT-23-5LB	
			
Pin	Pin Name	Pin	Pin Name
1	V _{IN}	1	GND
2	GND	2	V _{IN}
3	EN	3	V _{OUT}
4	NC	4	NC
5	V _{OUT}	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
HBM	ESD Rating (Human Body Model)	2		KV
MM	ESD Rating (Machine Model)	200		V

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.

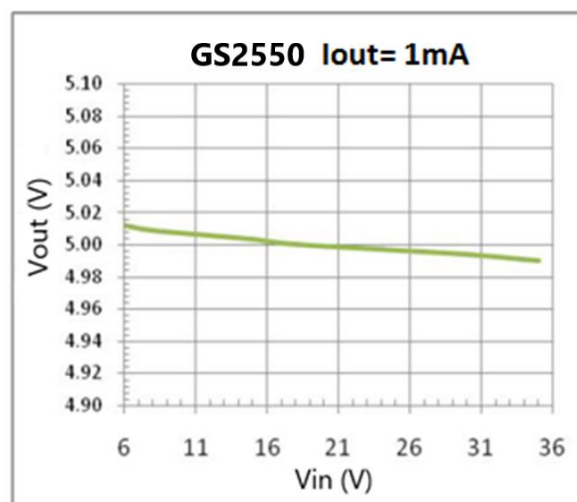
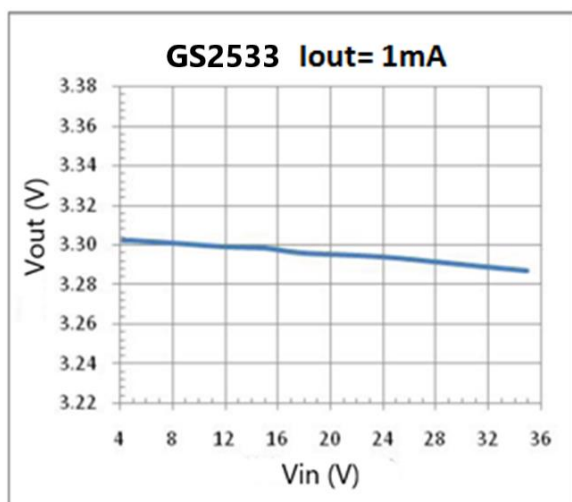
Electrical Characteristics

($V_{IN}=V_{OUTNOM}+1$, $C_{in}=1\mu F$, $C_{OUT}=10\mu F$, $T_A=+25^\circ C$ unless otherwise specified.)

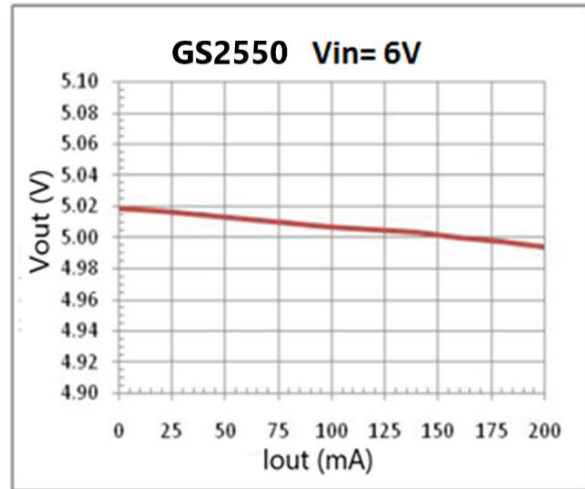
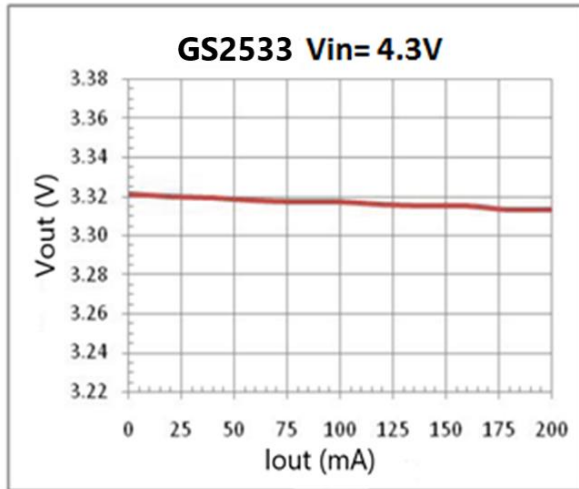
Symbol	Parameter	Conditions	MIN	TYP	MAX	Unit
V_{IN}	Input Voltage		3	-	35	V
I_Q	Quiescent Current	$I_{LOAD} = 0mA$	-	1.5	2.5	μA
V_{OUT}	Output Voltage	$I_{LOAD} = 40mA$	-1%	-	+1%	V_{OUT}
$I_{OUT\ Max}$	Maximum Output Current		100	-	-	mA
V_{DROP}	Dropout Voltage	$I_{LOAD} = 40mA$ $V_{OUT} = 5V$	-	260		mV
		$I_{LOAD} = 100mA$ $V_{OUT} = 3.3V$	-	700		mV
ΔV_{LINE}	Line Regulation	$I_{LOAD} = 40mA$, $V_{IN} = (V_{OUTNOM} + 1)$ to 24V	-	0.2	0.3	%/V
ΔV_{LOAD}	Load Regulation	$1mA \leq I_{LOADOUT} \leq 60mA$	-	25	50	mV
$V_{EN(HI)}$	EN Input High Voltage	$V_{IN} = V_{OUTNOM} + 1$ $R_L = 1.0K\Omega$	1.2	-	V_{IN}	V
$V_{EN(LO)}$	EN Input Low Voltage	$V_{IN} = V_{OUTNOM} + 1$ $R_L = 1.0K\Omega$	-	-	1.0	V
I_{LIMIT}	Current Limit	$V_{OUT} = 0V$		350		mA
PSRR	Power supply rejection	$V_{IN} = V_{OUTNOM} + 1$ $I_{LOAD} = 1mA$, $f=100HZ$		50		dB
T_{SD}	Thermal Shutdown			180		$^\circ C$
TC_{VOUT}	Temperature Coefficient	$I_{LOAD} = 40mA$ $-40^\circ C \sim +85^\circ C$		± 0.7		mV/ $^\circ C$
T_{HYS}	Thermal Hysteresis			20		$^\circ C$

Typical Performance Characteristics

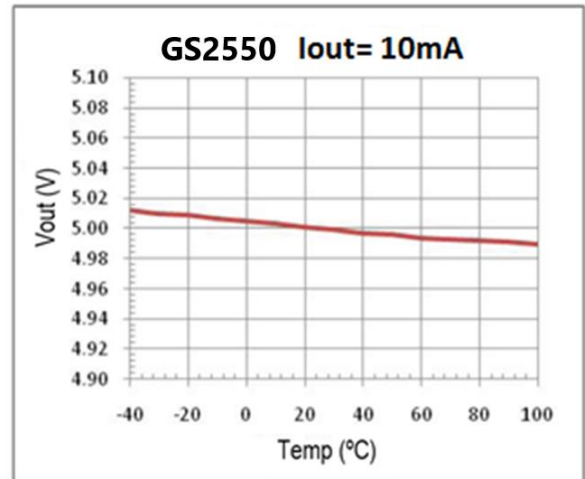
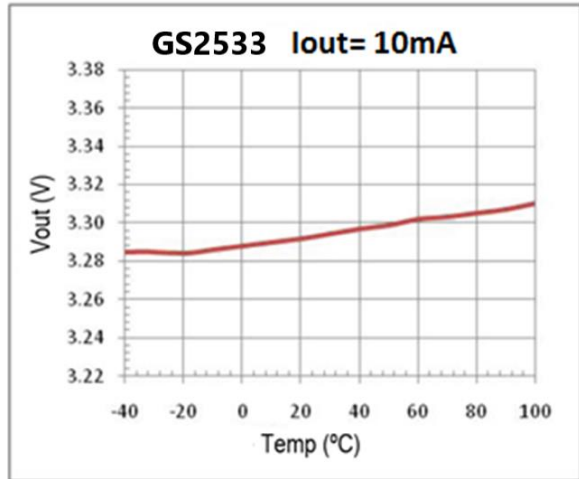
Output voltage vs. Input voltage



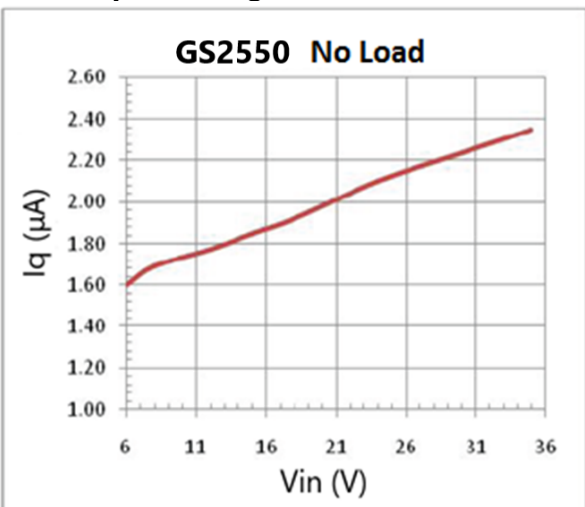
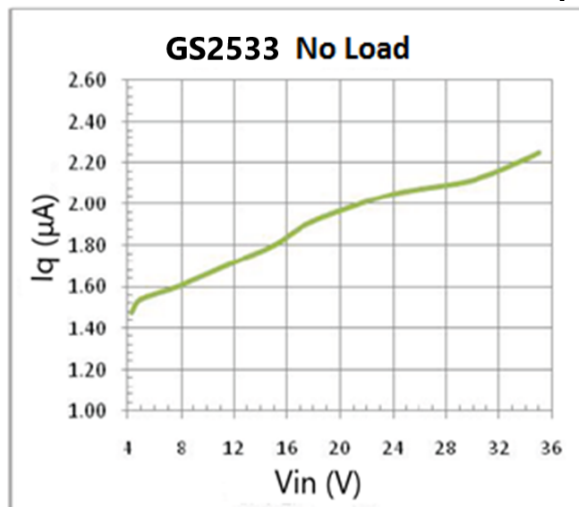
Output voltage vs. Output current



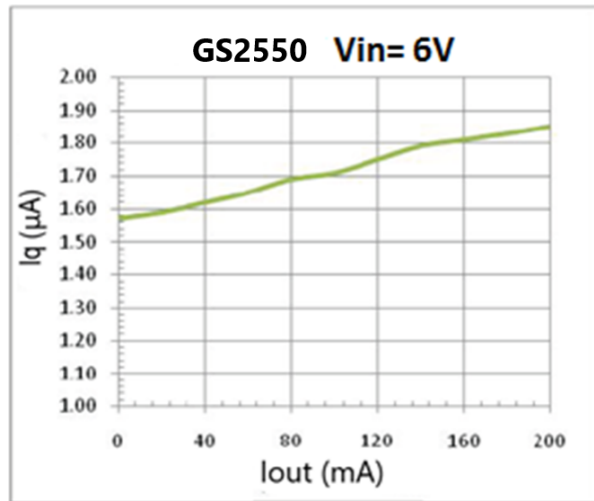
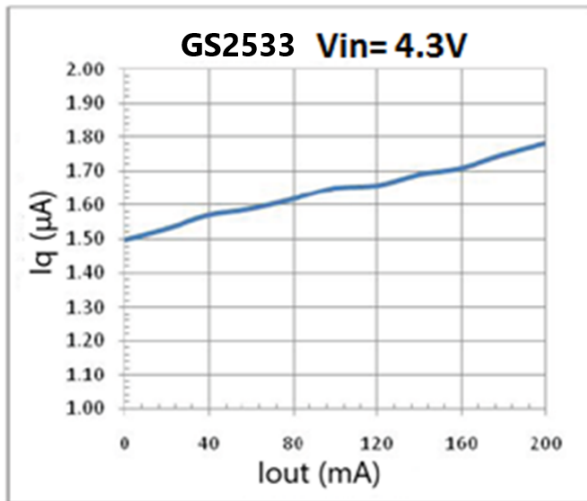
Output voltage vs. Temperature



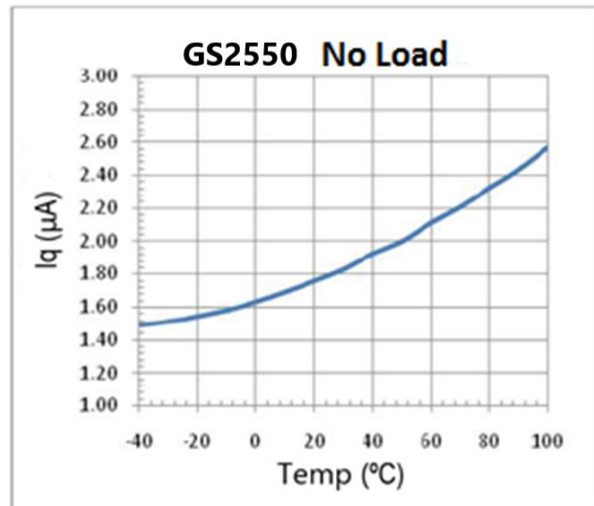
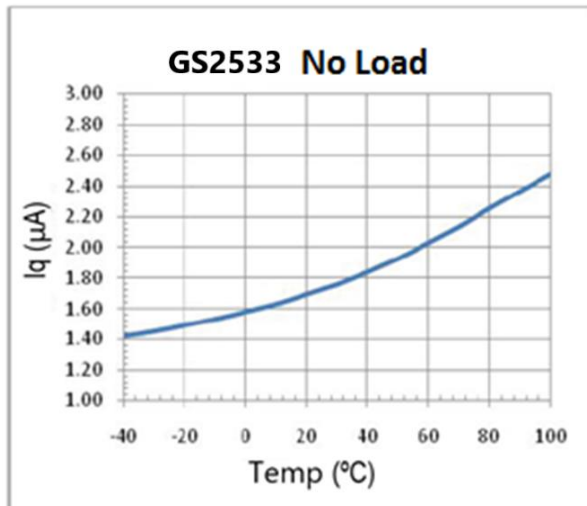
Current consumption vs. Input voltage



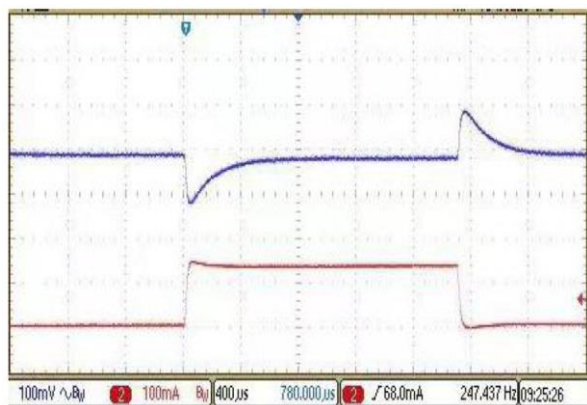
Current consumption vs. Output Current



Current consumption vs. Temperature



Load Transient



V_{IN}=12V, C_{OUT}=10µF, I_{OUT}=10mA to 150mA

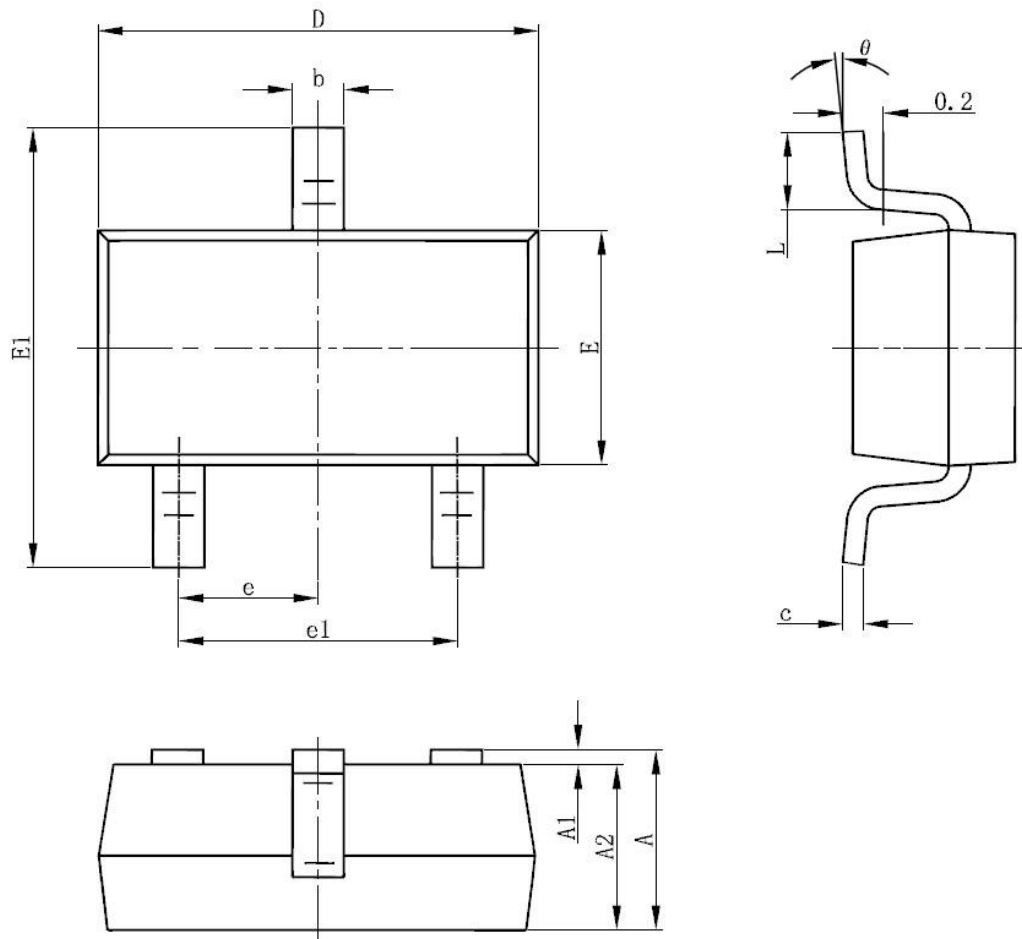
Line Transient



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

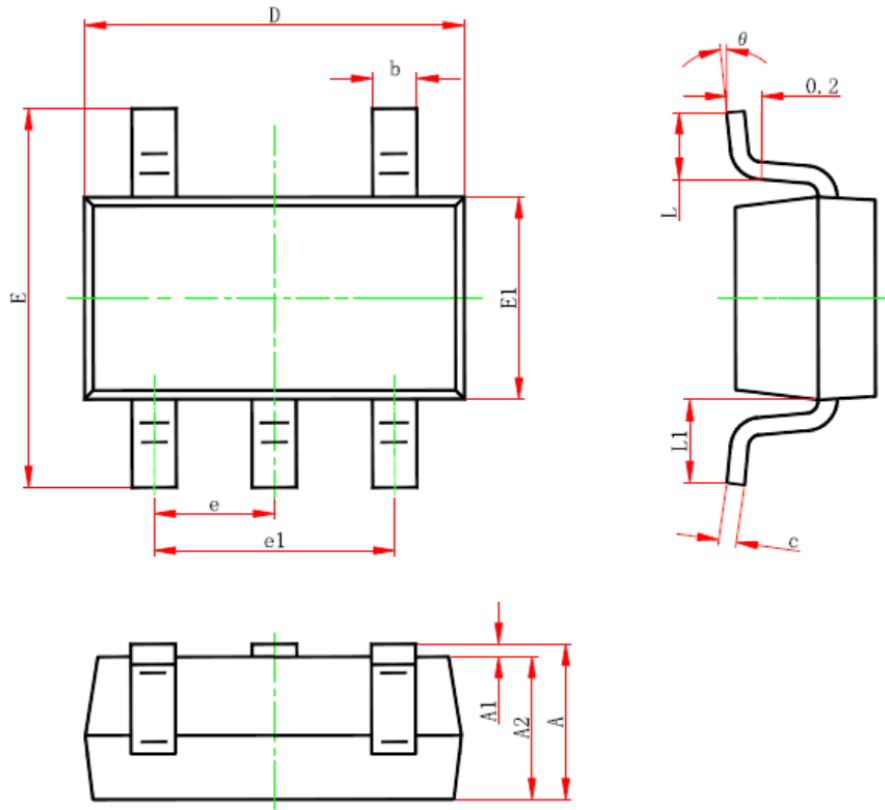
Package Dimension

SOT-23



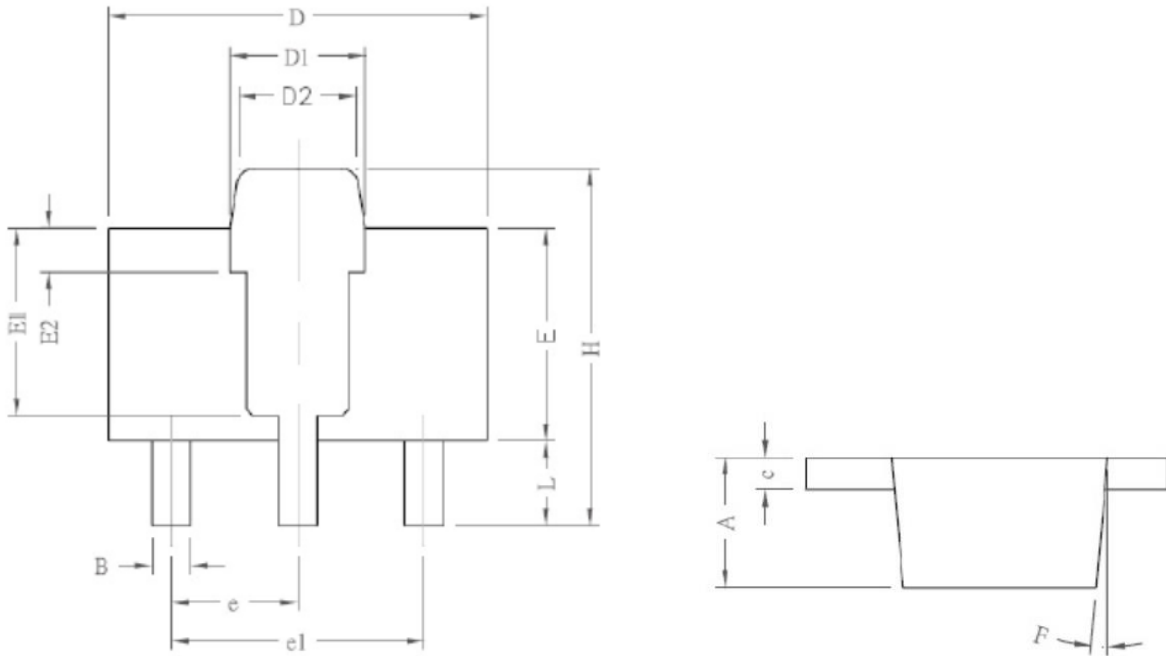
Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.5	0.012	0.020
c	0.1	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 (TYP)		0.037 (TYP)	
e1	1.8	2	0.071	0.079
L	0.3	0.6	0.012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