

LP2980IM5X-2.5

16V, 50mA, 10 μ A, High PSRR Voltage Regulator

Features

- 10 μ A Ground Current at no Load
- $\pm 2\%$ Output Accuracy
- 50mA Output Current
- Wide Operating Input Voltage Range: 2V to 16V
- Dropout Voltage: 0.17V at 50mA ($V_{OUT}=5V$)
- Support Fixed Output Voltage 2.5V, 3.0V, 3.3V, 5V,
- Stable with Ceramic or Tantalum Capacitor
- Current Limit Protection
- Over-Temperature Protection
- SOT-23-5 Package

Applications

- Portable, Battery Powered Equipment
- Low Power Microcontrollers
- Laptop, Palmtops and PDAs
- Wireless Communication Equipment
- Audio/Video Equipment
- Car Navigation Systems
- Industrial Controls
- Weighting Scales
- Meters
- Home Automation

General Description

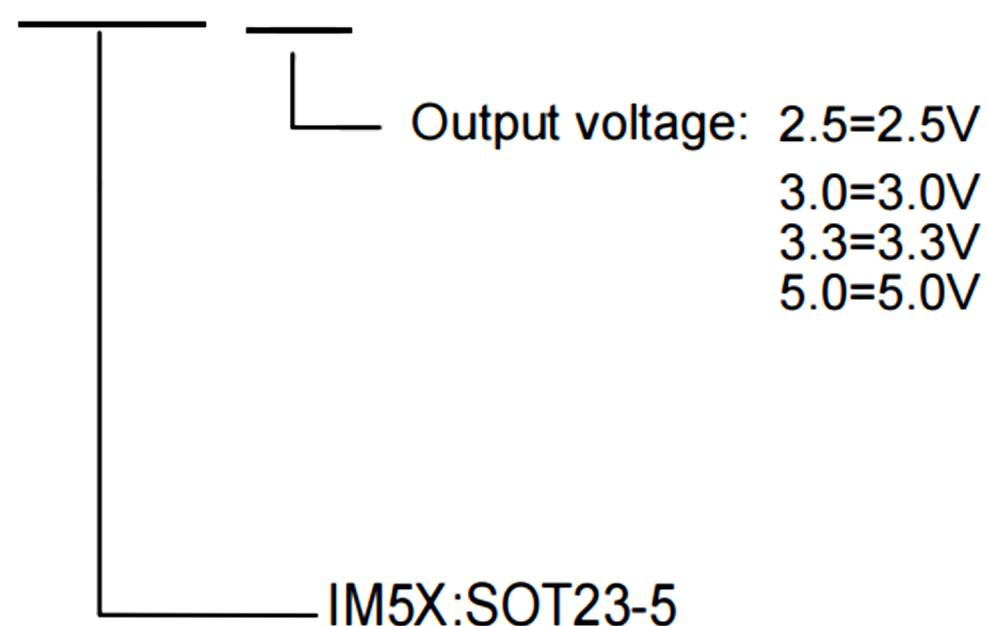
The Device is a low-dropout (LDO) voltage regulator with enable function offering the benefits of high input voltage, low-dropout voltage, low-power consumption, and miniaturized packaging.

The features of low quiescent current as low as 10 μ A and zero disable current is ideal for powering the battery equipment to a longer service life. The Device

is stable with the ceramic output capacitor over its wide input range from 2V to 16V and the entire range of output load current.

Ordering Information

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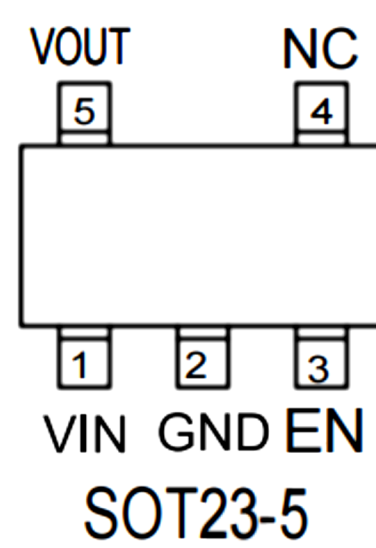
Marking

LP2980IM5X-2.5 Marking: L0NB
LP2980IM5X-3.0 Marking: L02B
LP2980IM5X-3.3 Marking: L00B
LP2980IM5X-5.0 Marking: L01B

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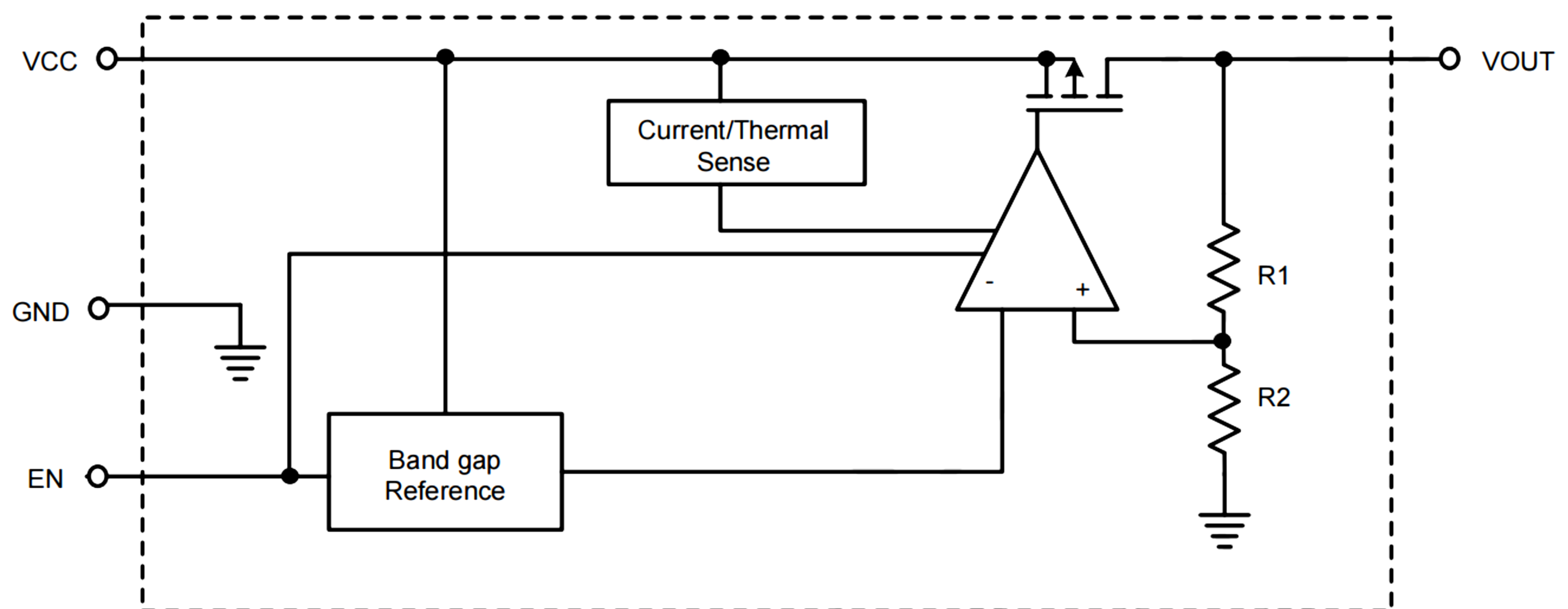
16 V,50mA, 10uA, Higt PSRR Voltage Reaulator

PIN CONFIGURATION



Pin No	Pin Name	Pin Function
1	VIN	Input of Supply Voltage.
2	GND	Ground
3	EN	Enable Control Input.
4	NC	No Internal Connection.
5	VOUT	Output of the Regulator

BLOCK DIAGRAM



Absolute Maximum Ratings

VIN Pin to GND Pin Voltage	-0.3V to 20V
VOUT Pin to GND Pin Voltage	-0.3V to 6.0V
VOUT Pin to VIN Pin Voltage	-20V to 0.3V
Package Thermal Resistance (Note 2)	
SOT-23-5, SOT-23-3, θ_{JA}	200 °C /W
Lead Temperature (Soldering, 10 sec.)	260 °C
Junction Temperature	150 °C
Storage Temperature Range	-40 °C to 150 °C
ESD Susceptibility	
HBM	2KV
MM	200V

Recommended Operating Conditions

Supply Input Voltage	-2.0V to 16V
Junction Temperature Range	-40°C to 125°C
Ambient Temperature Range	-40°C to 85°C

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Electrical Characteristics

($V_{IN}=15V$, $V_{EN}=5V$, $T_A=25^{\circ}C$, unless otherwise specified) (Note 1)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{IN}		2	--	16	V
DC Output Voltage Accuracy		$I_{LOAD} = 0.1mA$	-2		2	%
Dropout Voltage ($I_{LOAD} = 50mA$)	V_{DROP}	$V_{OUT} \geq 5V$	--	0.17		V
	$V_{DROP_3.3V}$	$V_{OUT} = 3.3V$		0.22		
	$V_{DROP_1.8V}$	$V_{OUT} = 1.8V$		0.25		
Ground Current ($I_{LOAD} = 0mA$)	I_Q	$V_{OUT} \leq 5V$		10	15	μA
Shutdown Ground Current	I_{SD}	$V_{EN} = 0V$, $V_{OUT} = 0V$		0.01	0.5	μA
V_{OUT} Shutdown Leakage Current	I_{LEAK}			0.01	0.5	μA
Enable Threshold Voltage	V_{IH}	EN Rising	1.1			V
	V_{IL}	EN Falling			0.4	
EN Input Current	I_{EN}	$V_{EN} = 16V$		10	100	nA
Line Regulation	$\Delta LINE$	$I_{LOAD} = 1mA$, $10 \leq V_{IN} \leq 16V$	--	0.3		%
Load Regulation	$\Delta LOAD$	$10mA \leq I_{LOAD} \leq 0.2A$		0.3		%
Output Current Limit	I_{LIM}	$V_{OUT} = 0$	50	100		mA
Power Supply Rejection Ratio	PSRR	$V_{OUT} = 5V$, $I_{LOAD} = 30mA$, $V_{IN} = 12V$, $f = 1kHz$		70		dB
Thermal Shutdown Temperature	T_{SD}	$I_{LOAD} = 10mA$	--	160	--	$^{\circ}C$
Thermal Shutdown Hysteresis	ΔT_{SD}			15		$^{\circ}C$

Typical Application Circuit

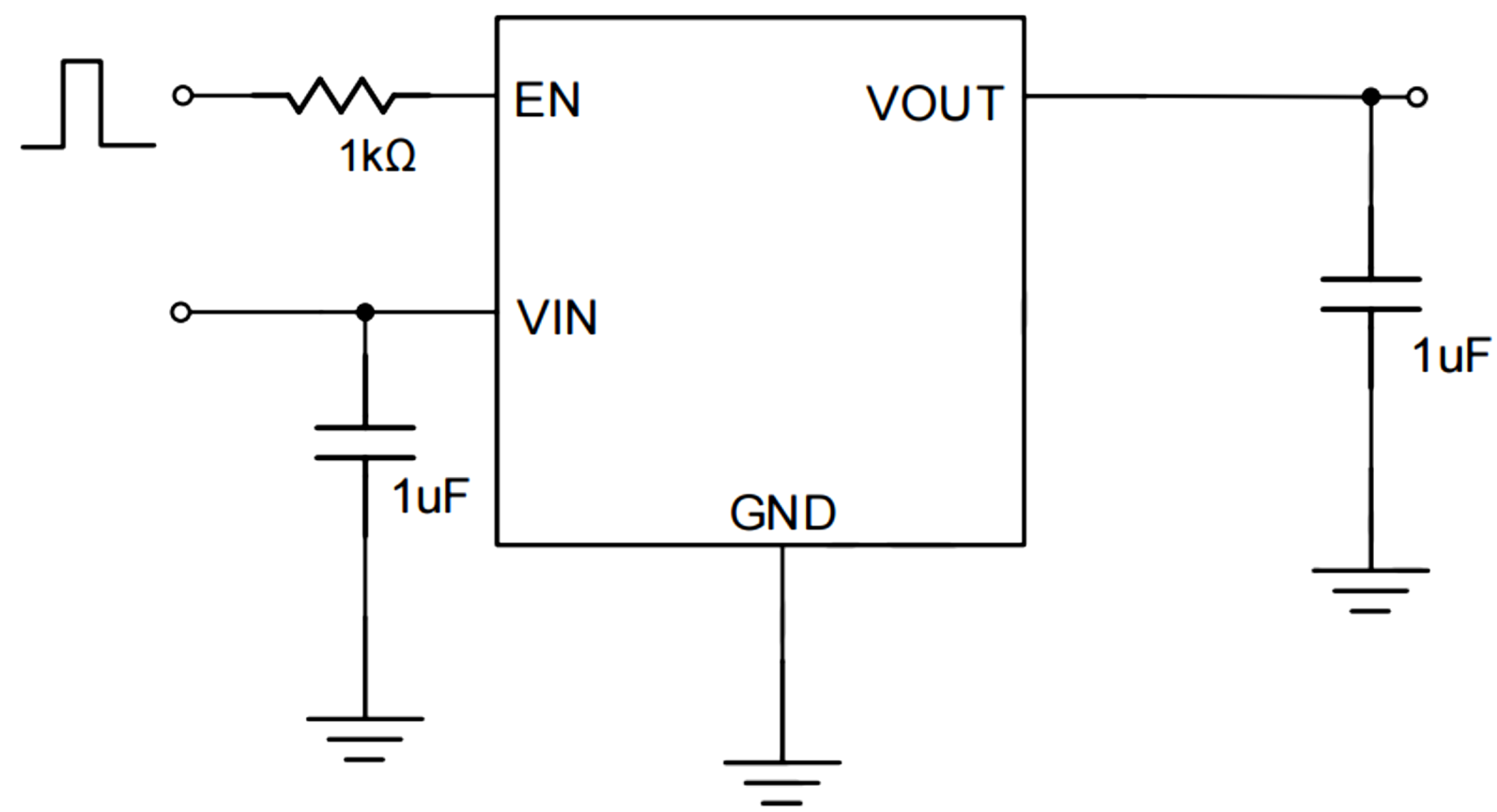


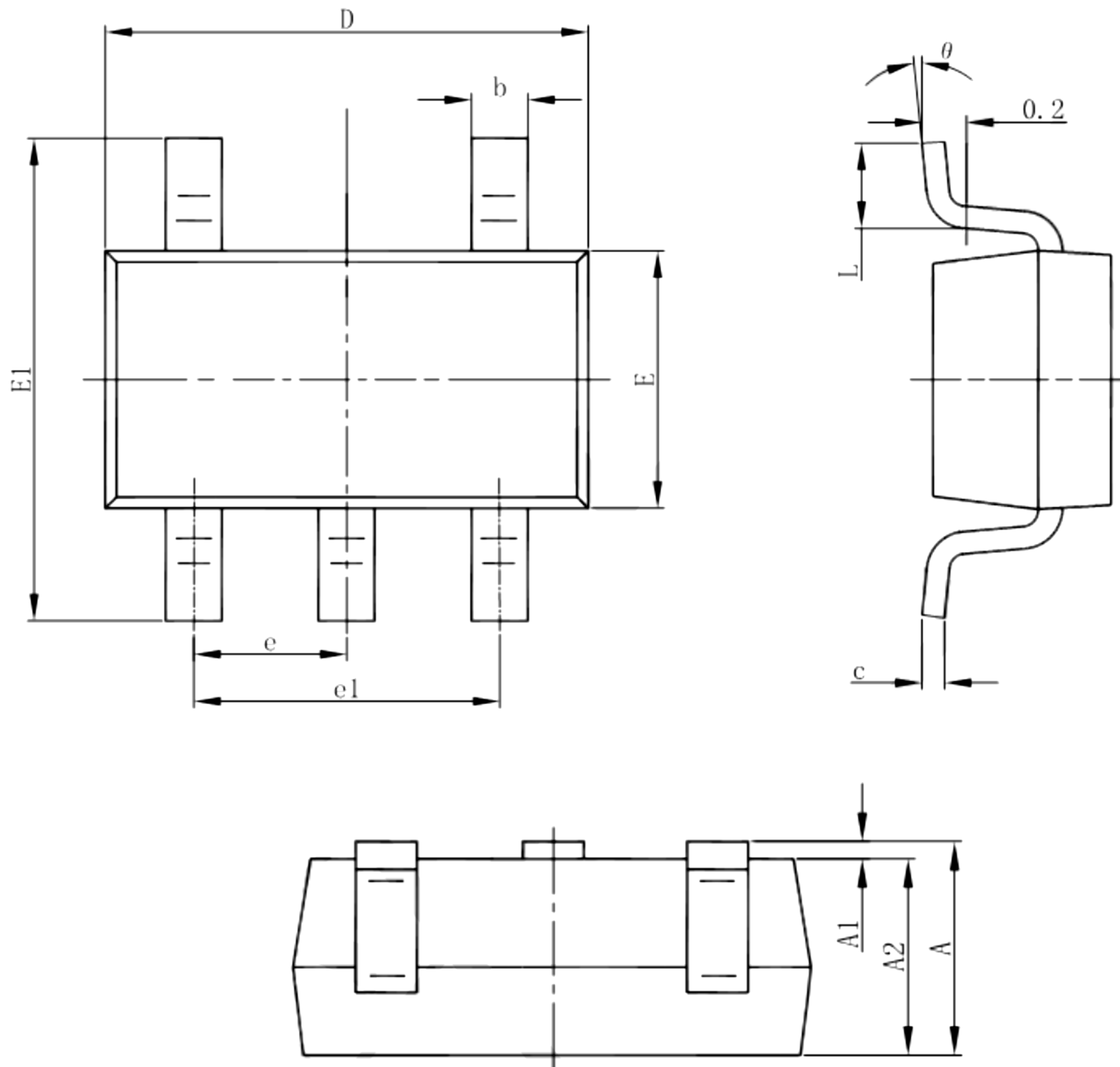
Figure 1: Application circuit of Fixed VOUT LDO with enable function

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Package informantion

SOT23-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°