

## General Description

The TPS7B69 is a high voltage, low quiescent current, low dropout regulator with 200mA output driving capacity. The TPS7B69, which operates over an input range up to 40V, is stable with any capacitors, whose capacitance is larger than 1 $\mu$ F, and suitable for

powering battery-management ICs because of the virtue of its low quiescent current consumption and low dropout voltage.

The TPS7B69 is available in SOT23-5

## Features

- Up to 40V input voltage range
- 200mA output current driving capacity
- Ultra low quiescent current (typical 1.5 $\mu$ A)
- 400mV typical dropout at  $I_{OUT} = 100\text{ mA}$
- Thermal shutdown protection
- Short circuit protection
- Stable with 1 $\mu$ F output capacitor
- Pin to pin TPS7B6950DBVR and TPS7B6933DBVR

## Applications

- E-meters, Water Meters and Gas Meters
- Appliances and White Goods

## Ordering Information

### TPS7B6950DBVR-TP

TP: TECH PUBLIC

DBVR:SOT23-5

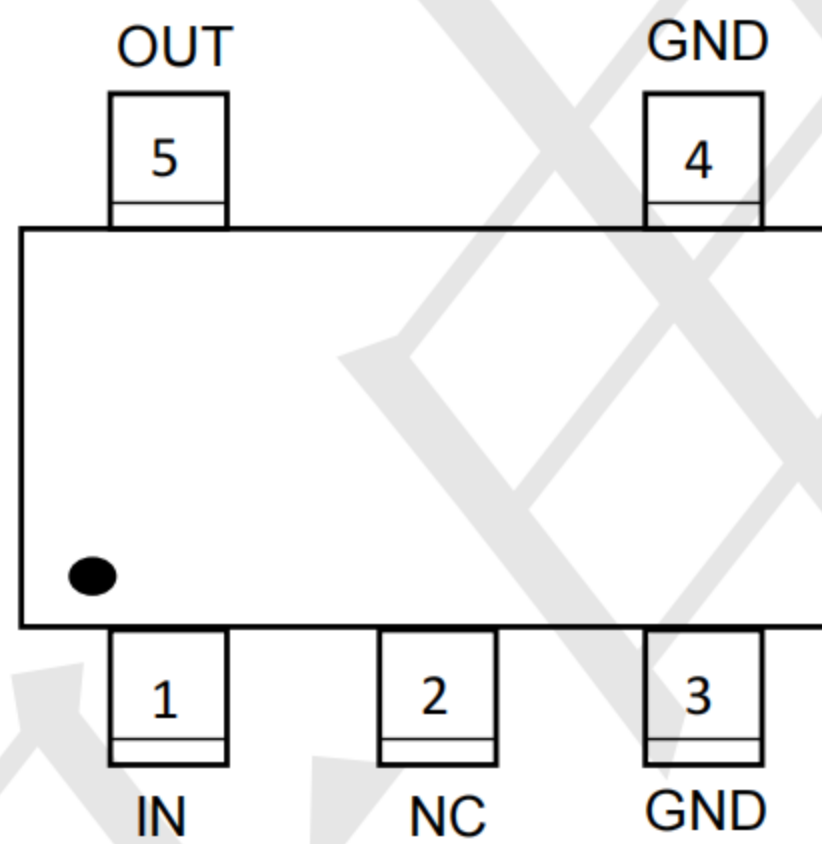
Output voltage: 3.3=3.3V  
5.0=5.0V



### Packaging Information

Product ID.	Package	Vout	Marking	Packing
TPS7B6933DBVR-TP	SOT23-5	3.3V	ZBFY	Tape & Reel
TPS7B6950DBVR-TP	SOT23-5	5.0V	ZAZT	3Kpcs

### Pin Configuration

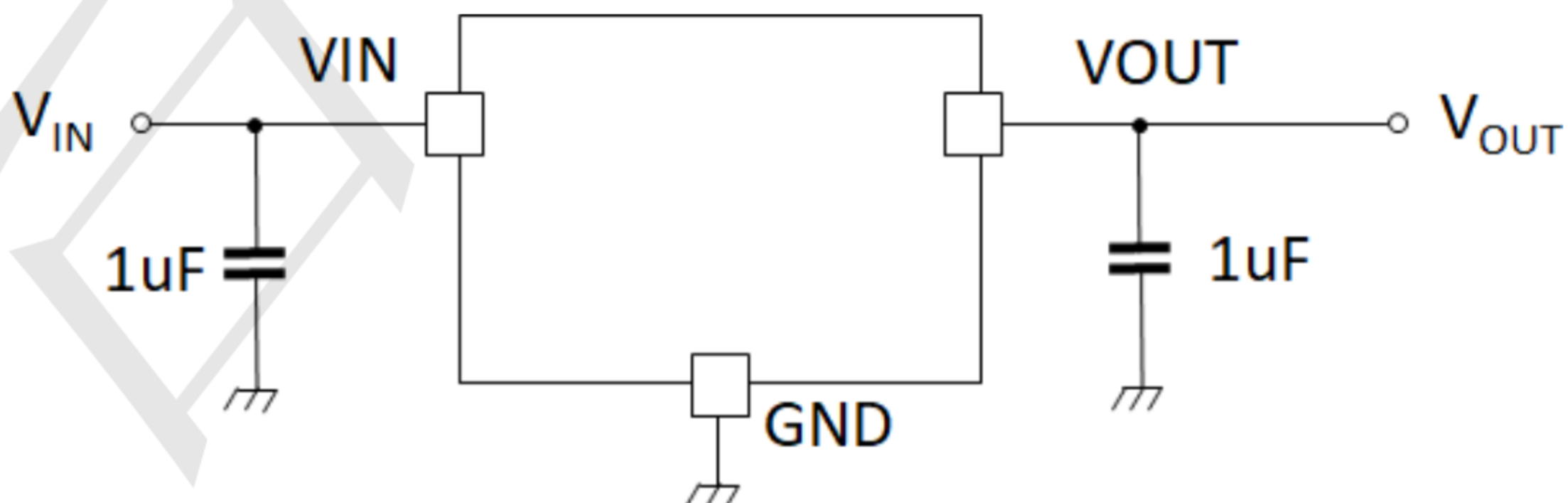


SOT-23-5

Pin Definition:

- 1. Input
- 2. Nc
- 3. Ground
- 4. Ground
- 5. Output

### Typical Application circuit



### Absolute Maximum Ratings

$V_{IN}$ , Range .....	-0.3V to 45V	Junction Temperature ( $T_J$ ) .....	125°C
Storage Temperature Range .....	-65°C to 150°C	Lead Temperature(Soldering, 10 sec.) .....	260°C
		ESD Rating	
		Human Body Model .....	2KV

### Recommended Operating Conditions (Note 1, 2)

Supply Voltage .....	2.7V to 40V	Operating Temperature Range .....	-40°C to 85°C
----------------------	-------------	-----------------------------------	---------------

### Electrical Characteristics

$V_{IN}=12V$ ,  $I_{OUT}=1mA$ ,  $C_{IN}=C_{OUT}=1\mu F$ ,  $T_a = 25^\circ C$ , unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Input Voltage	$V_{IN}$		2.7		40	V
Output Voltage	$V_{OUT}$		-2%		2%	V
Line Regulation	$\Delta V_{LINE}$	$V_{IN}=V_{OUT} + 1V$ to 40V,		0.1		%
Load Regulation	$\Delta V_{LOAD}$	$I_{OUT}= 1mA$ to 100mA		0.5		%
Dropout Voltage	$V_{DROP}$	$I_{OUT}=50mA$		220	380	mV
		$I_{OUT}=100mA$		400		mV
		$I_{OUT}=250mA$		1200		mV
Quiescent Current	$I_Q$	$T_a= 25^\circ C$		1.5	4.0	$\mu A$
Current Limit	$I_{CL}$		200	300		mA
Thermal Shutdown	$T_{SD}$			140		$^\circ C$
Thermal Shutdown Hysteresis	$T_{HY}$			20		$^\circ C$
Power-supply rejection ratio	PSRR	$f = 1kHz$		80		dB
		$f = 10kHz$		60		dB

**Note 1:** Absolute Maximum ratings indicate limits beyond which damage may occur. Electrical specifications do not apply when operating the device outside of its rated operating conditions.

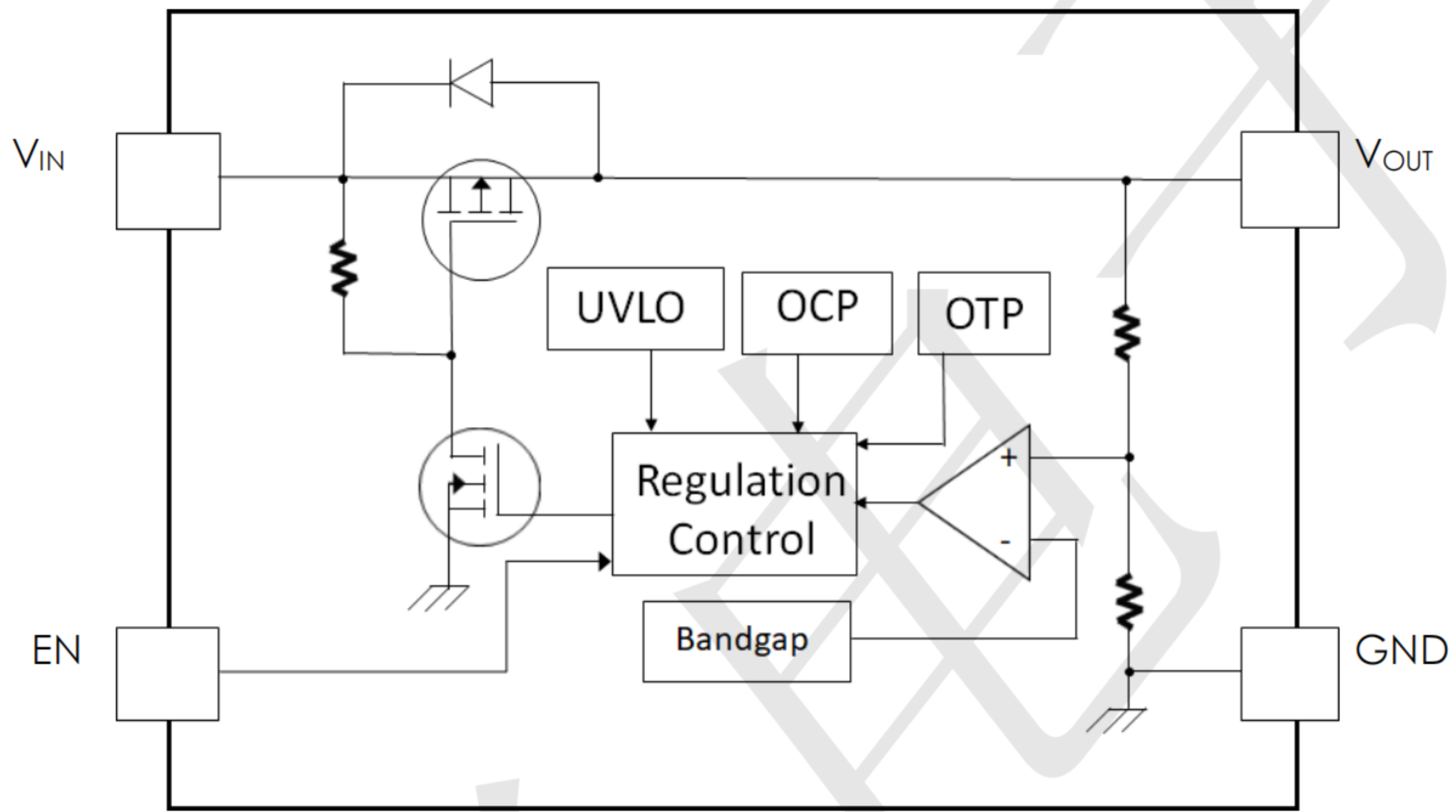
**Note 2:** All voltages are with respect to the potential at the ground pin.

**Note 3:**  $\theta_{JA}$  is measured in the natural convection at  $T_J=25^\circ C$  on a high effective thermal conductivity test board (2 layers, 2S0P).

**Note 4:**  $\theta_{JC}$  represents the resistance to the heat flows the chip to package top case.



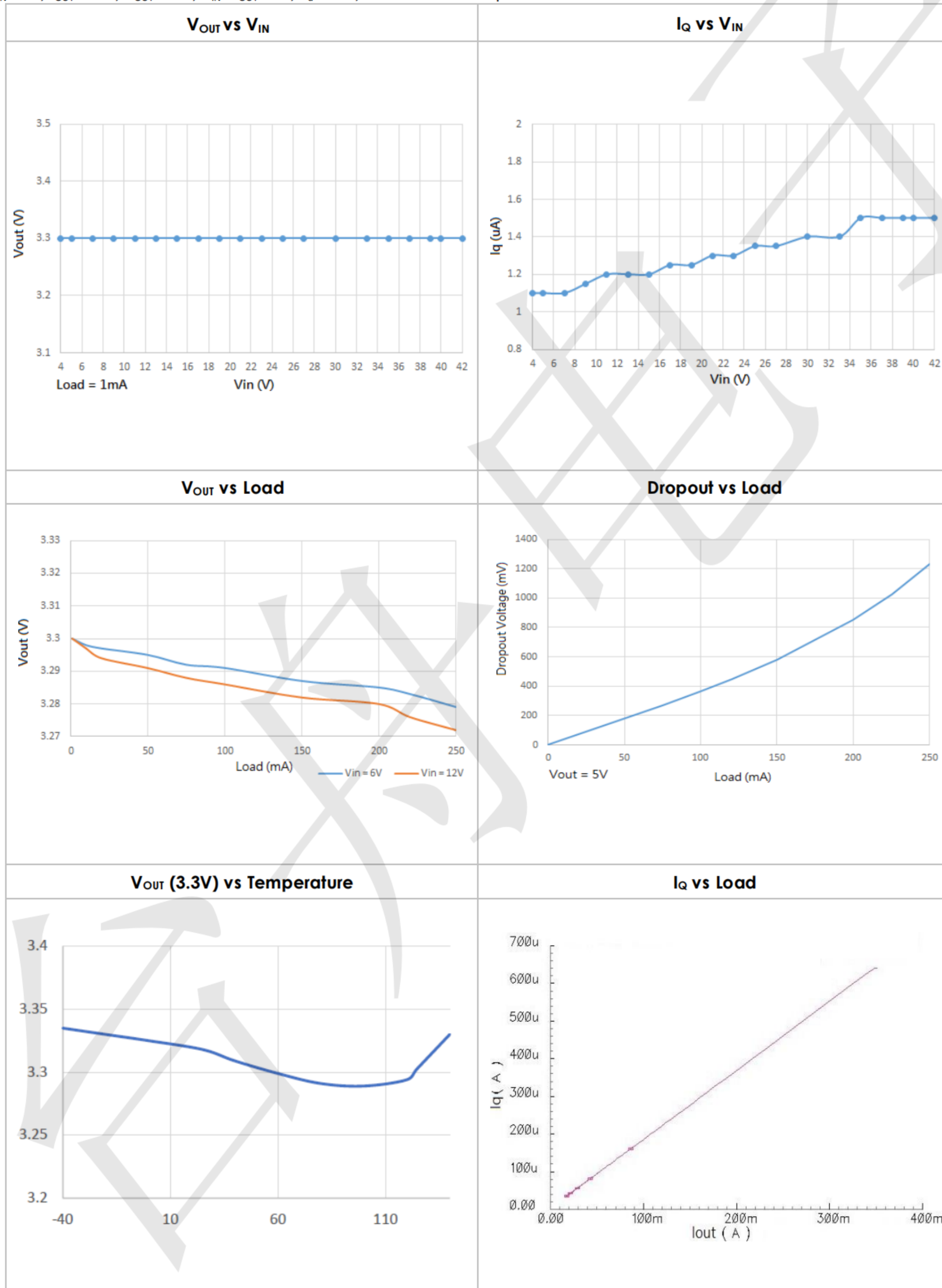
Functional Block Diagram





### Typical Performance Characteristics

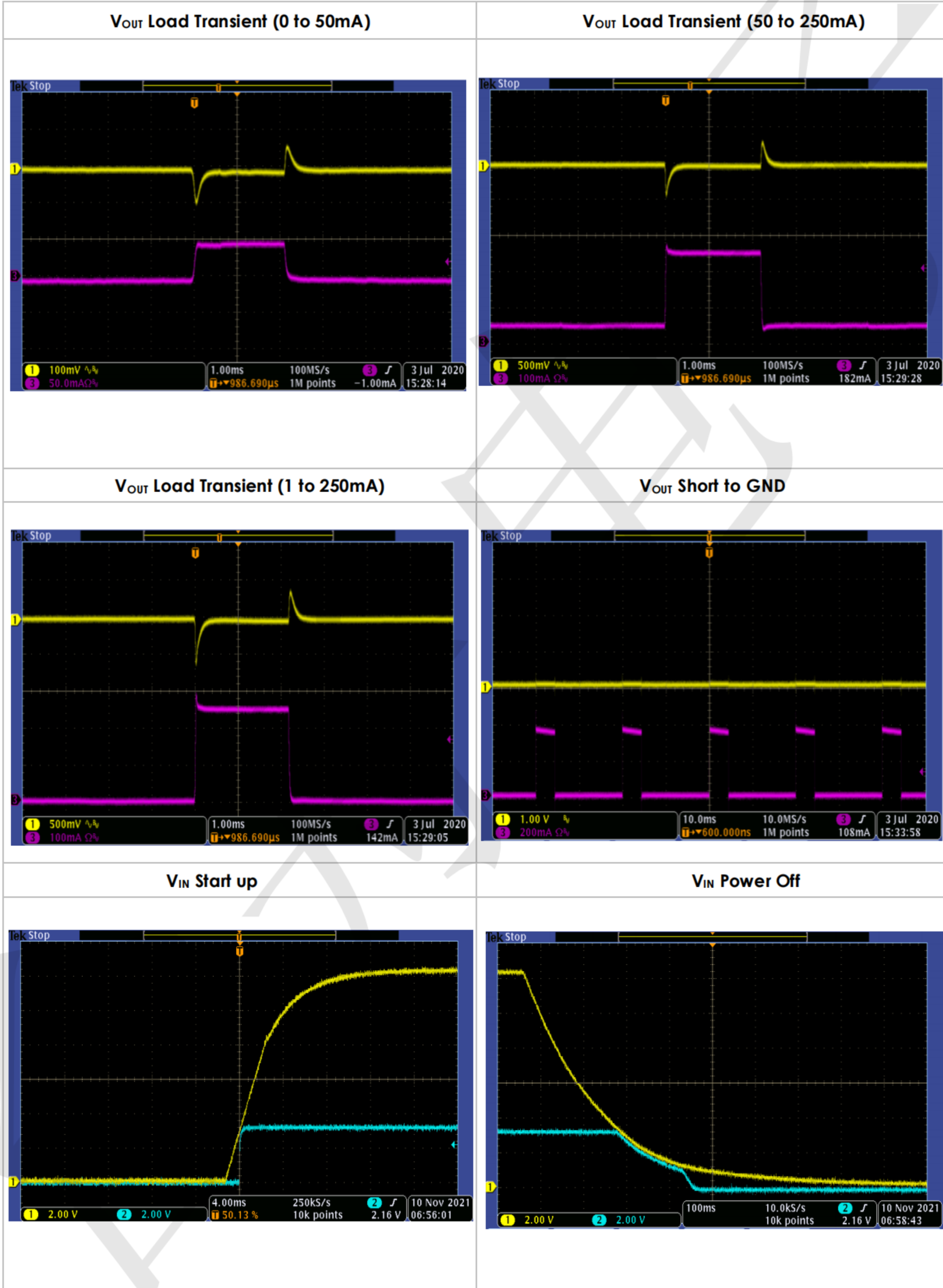
$V_{IN}=12V$ ,  $I_{OUT}=1mA$ ,  $V_{OUT}=3.3V$ ,  $C_{IN}=C_{OUT}=1\mu F$ ,  $T_a=25^\circ C$ , unless otherwise specified





Typical Performance Characteristics(cont.)

V<sub>IN</sub>=12V, I<sub>OUT</sub>=1mA, V<sub>OUT</sub>=3.3V, C<sub>IN</sub>=C<sub>OUT</sub>=1uF, T<sub>J</sub>=25°C, unless otherwise specified





**TECH PUBLIC**

—台丹电子—

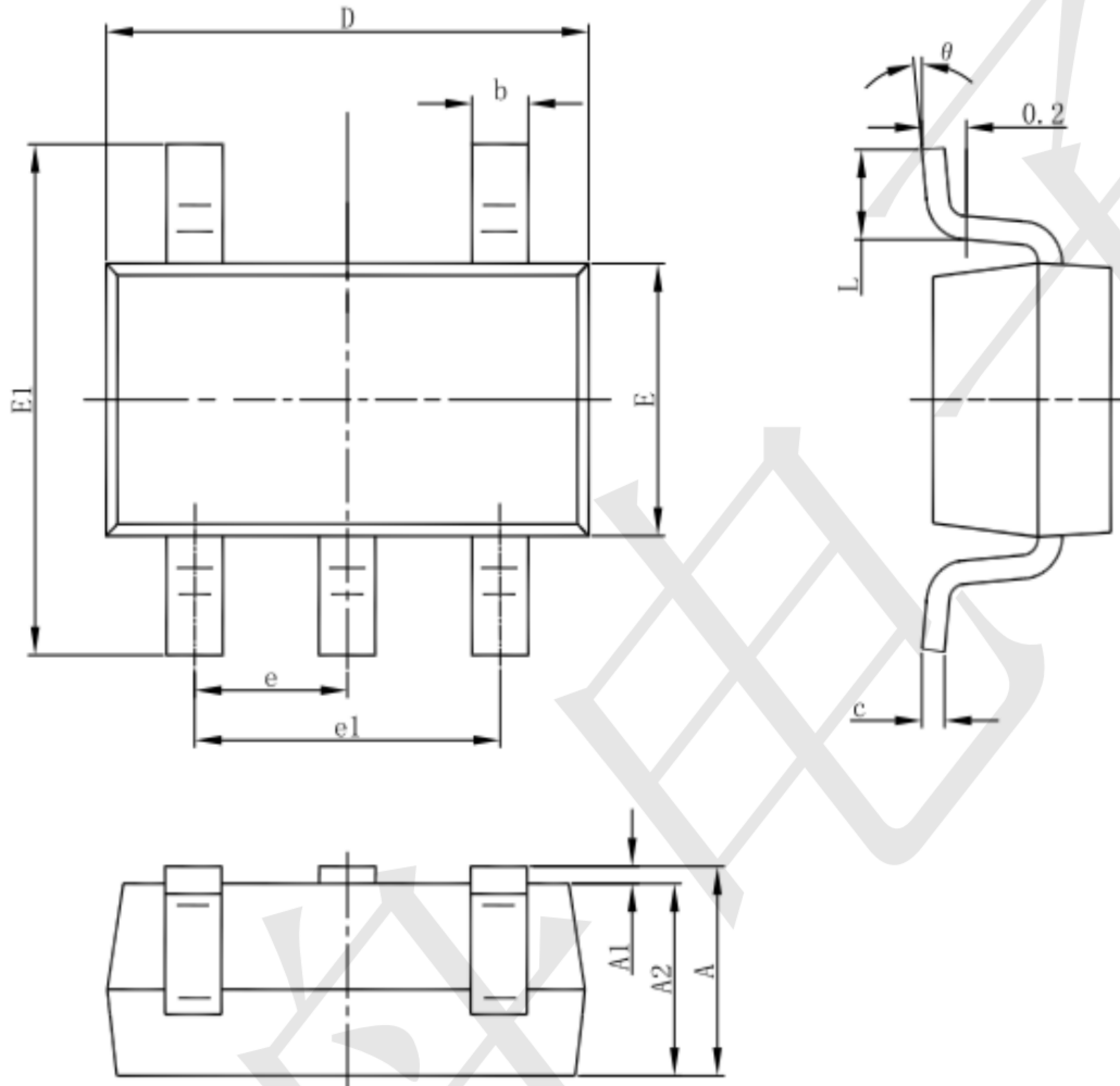
**TPS7B69 Series**

**200mA,40V Ultralo-Quiescent-Current LDO**

[www.sot23.com.tw](http://www.sot23.com.tw)

**Package information**

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
theta	0°	8°	0°	8°