

## General Description

The TPS715 is a high voltage, low quiescent current, low dropout regulator with 50mA output driving capacity. The TPS715, 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 TPS715 is available in SC70-5

## Features

- Up to 24V input voltage range
- 50mA output current driving capacity
- Ultra low quiescent current (typical 1.5 $\mu$ A)
- 400mV typical dropout at I<sub>OUT</sub> = 50 mA
- Thermal shutdown protection
- Short circuit protection
- Stable with 1 $\mu$ F output capacitor
- Pin to pin TPS71533DCKR and TPS71550DCKR

## Applications

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

## Ordering Information

### TPS71550DCKR-TP

TP: TECH PUBLIC

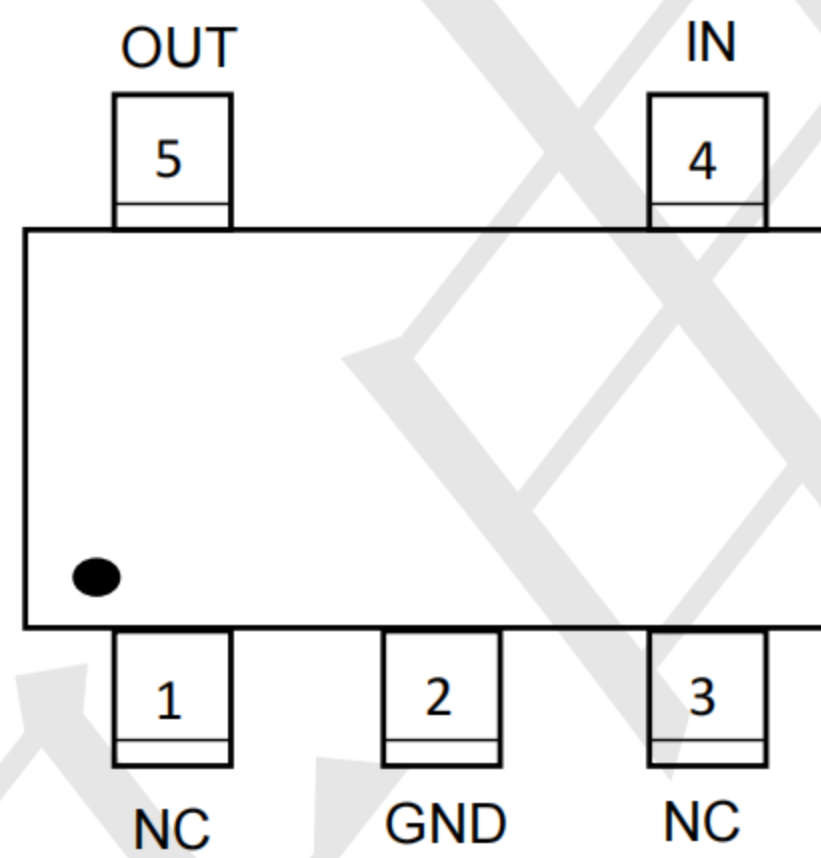
DCKR:SC70-5

Output voltage: 3.3=3.3V  
5.0=5.0V

## Packaging Information

Product ID.	Package	Vout	Marking	Packing
TPS71533DCKR-TP	SC70-5	3.3V	AQI	Tape & Reel
TPS71550DCKR-TP	SC70-5	5.0V	T48	3Kpcs

## Pin Configuration

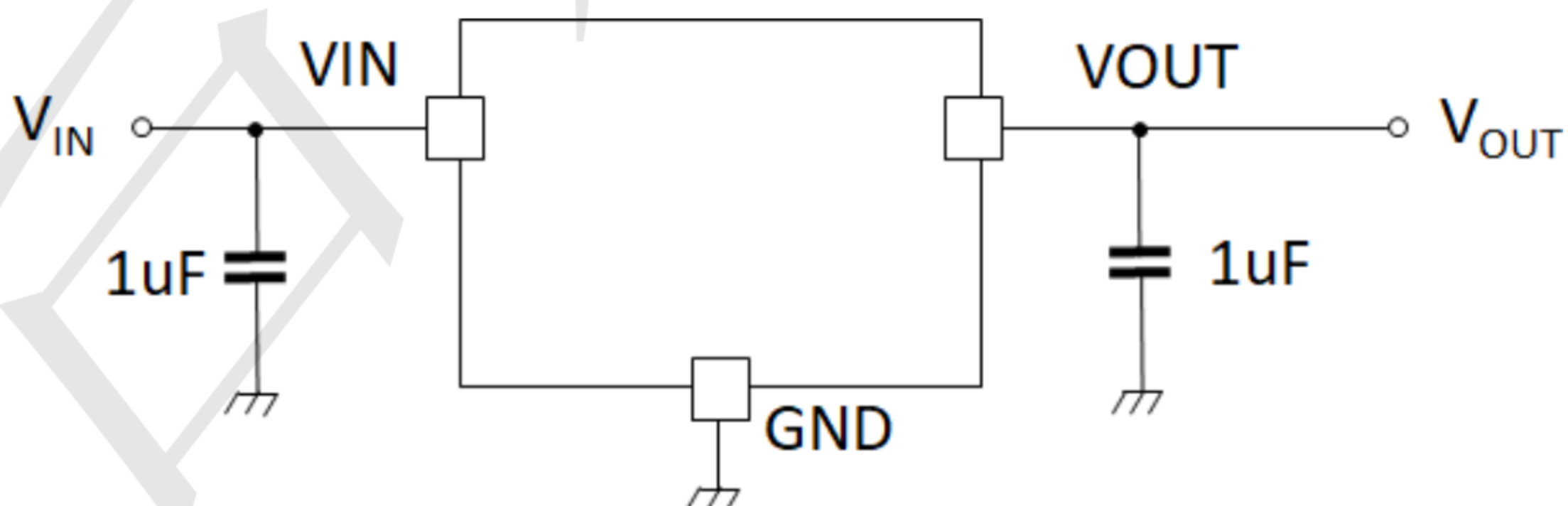


SC70-5

**Pin Definition:**

- 1. NC
- 2. Ground
- 3. NC
- 4. IN
- 5. Output

## Typical Application circuit



### Absolute Maximum Ratings

$V_{IN}$ , Range .....	-0.3V to 28V	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 24V	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		24	V
Output Voltage	$V_{OUT}$		-2%		2%	V
Line Regulation	$\Delta V_{LINE}$	$V_{IN}=V_{OUT}+2V$ to 24V,		2	50	mV
Load Regulation	$\Delta V_{LOAD}$	$I_{OUT} = 1mA$ to 150mA		0.15	1.5	%
Dropout Voltage	$V_{DROP}$	$I_{OUT}=50mA$		400		mV
		$I_{OUT}=80mA$		600		mV
		$I_{OUT}=100mA$		650		mV
Quiescent Current	$I_Q$	$T_a=25^\circ C$		1.5	4.0	$\mu A$
Current Limit	$I_{CL}$		50	150		mA
Thermal Shutdown	$T_{SD}$			160		$^\circ C$
Thermal Shutdown Hysteresis	$T_{HY}$			20		$^\circ C$
Power-supply ripple rejection	PSRR	$f = 100 kHz$ , $C_{OUT} = 10\mu f$		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.

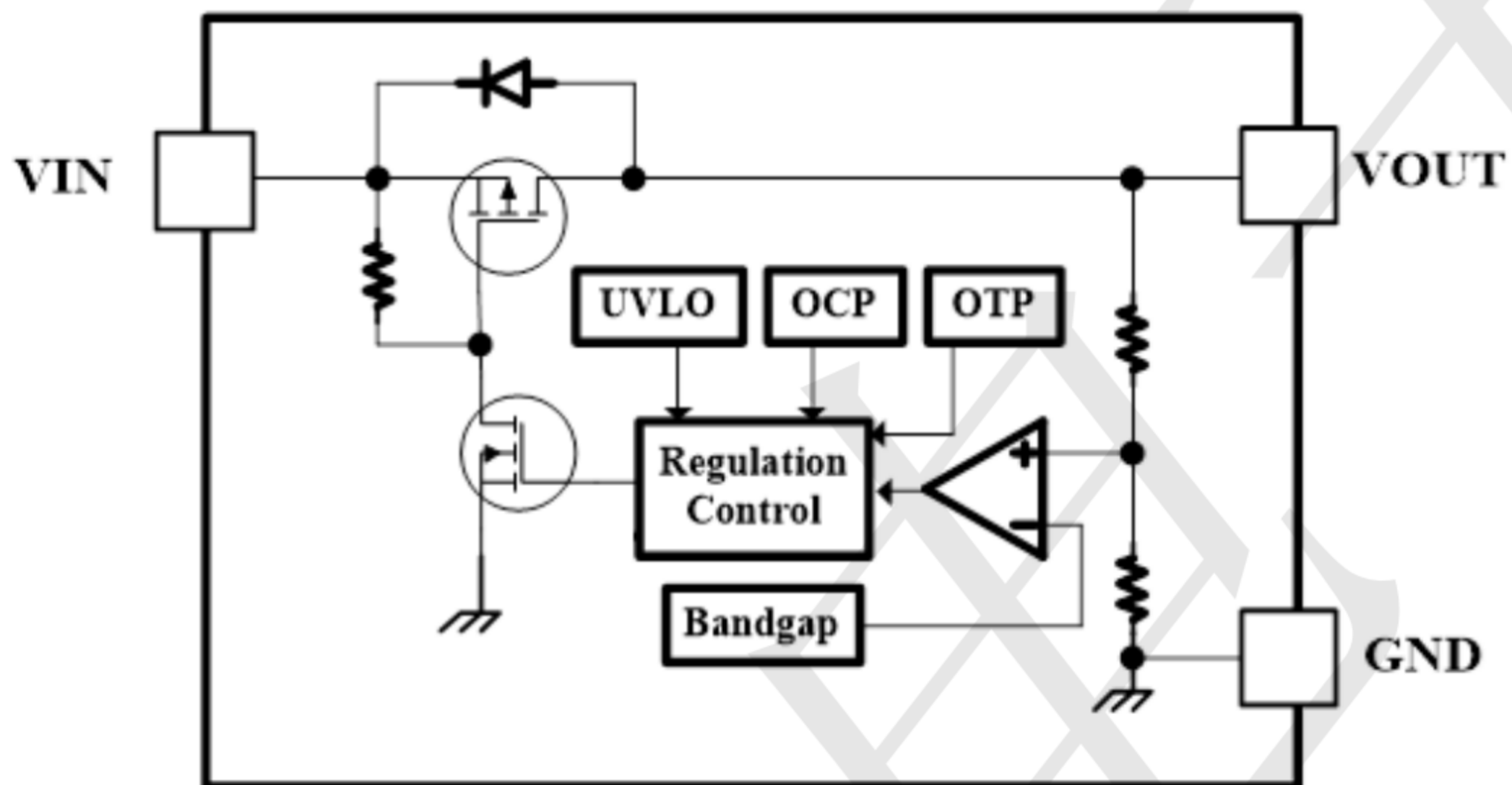
**Note 2:** All voltages are with respect to the potential at the ground pin.

**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, 2SOP).

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



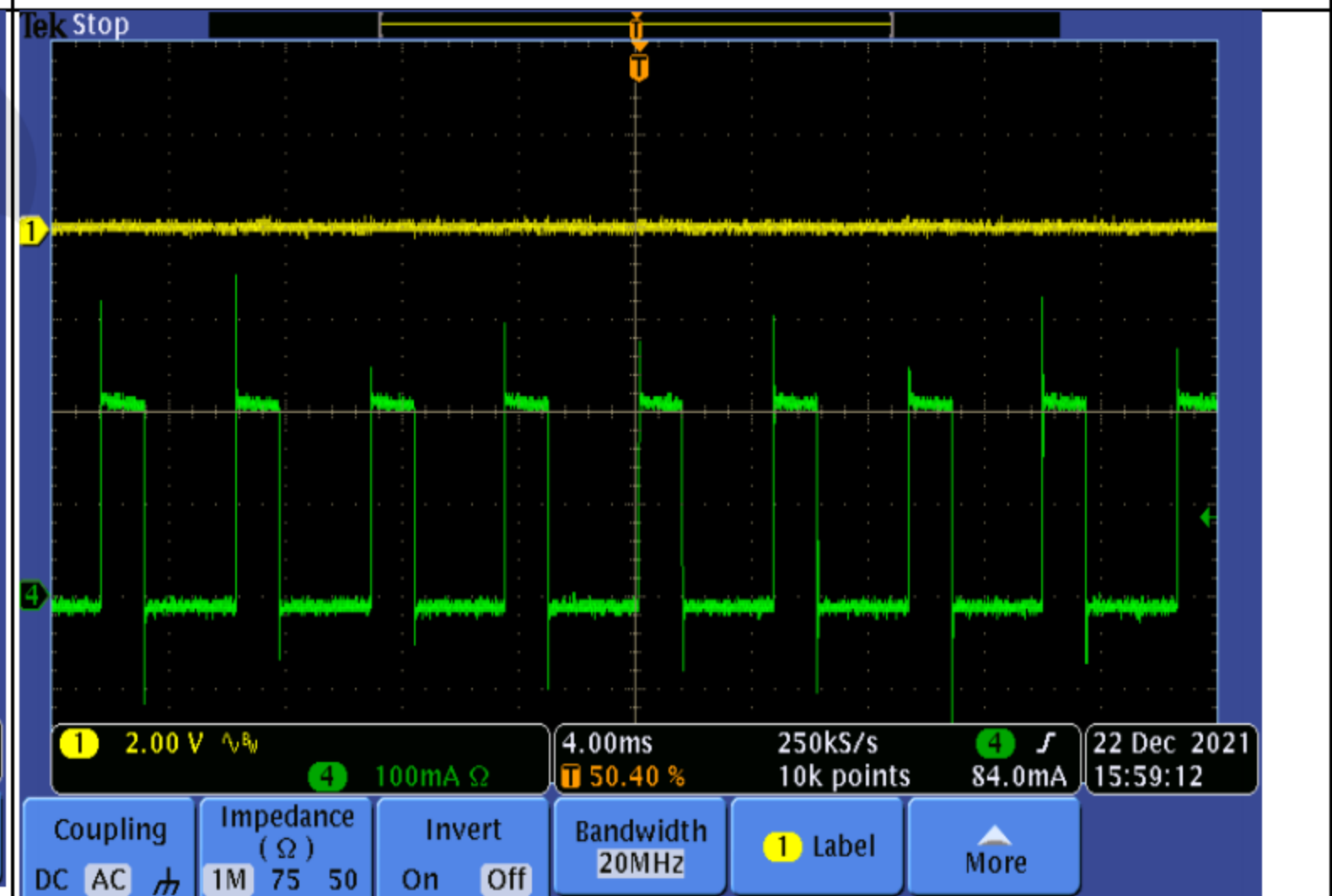
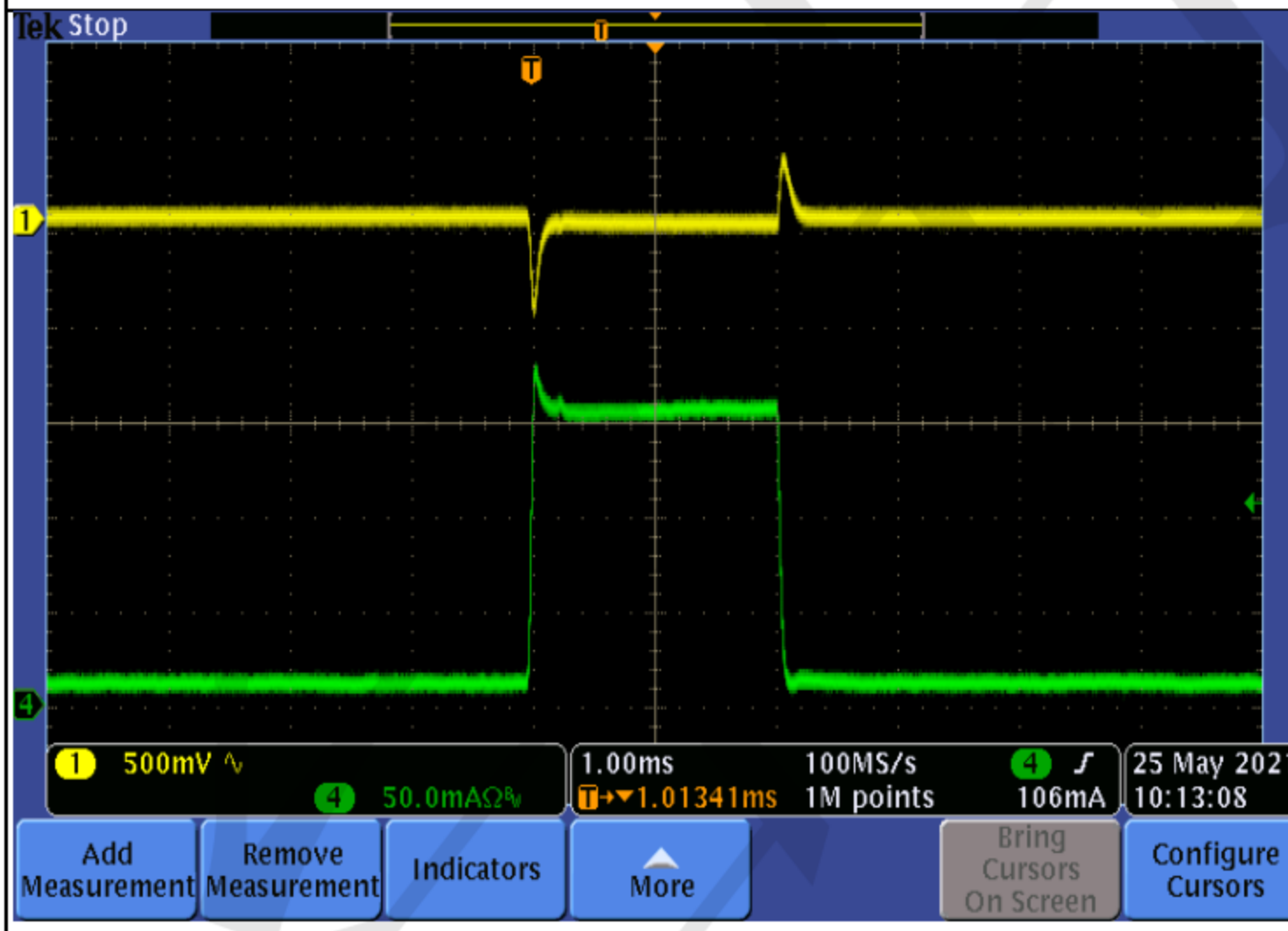
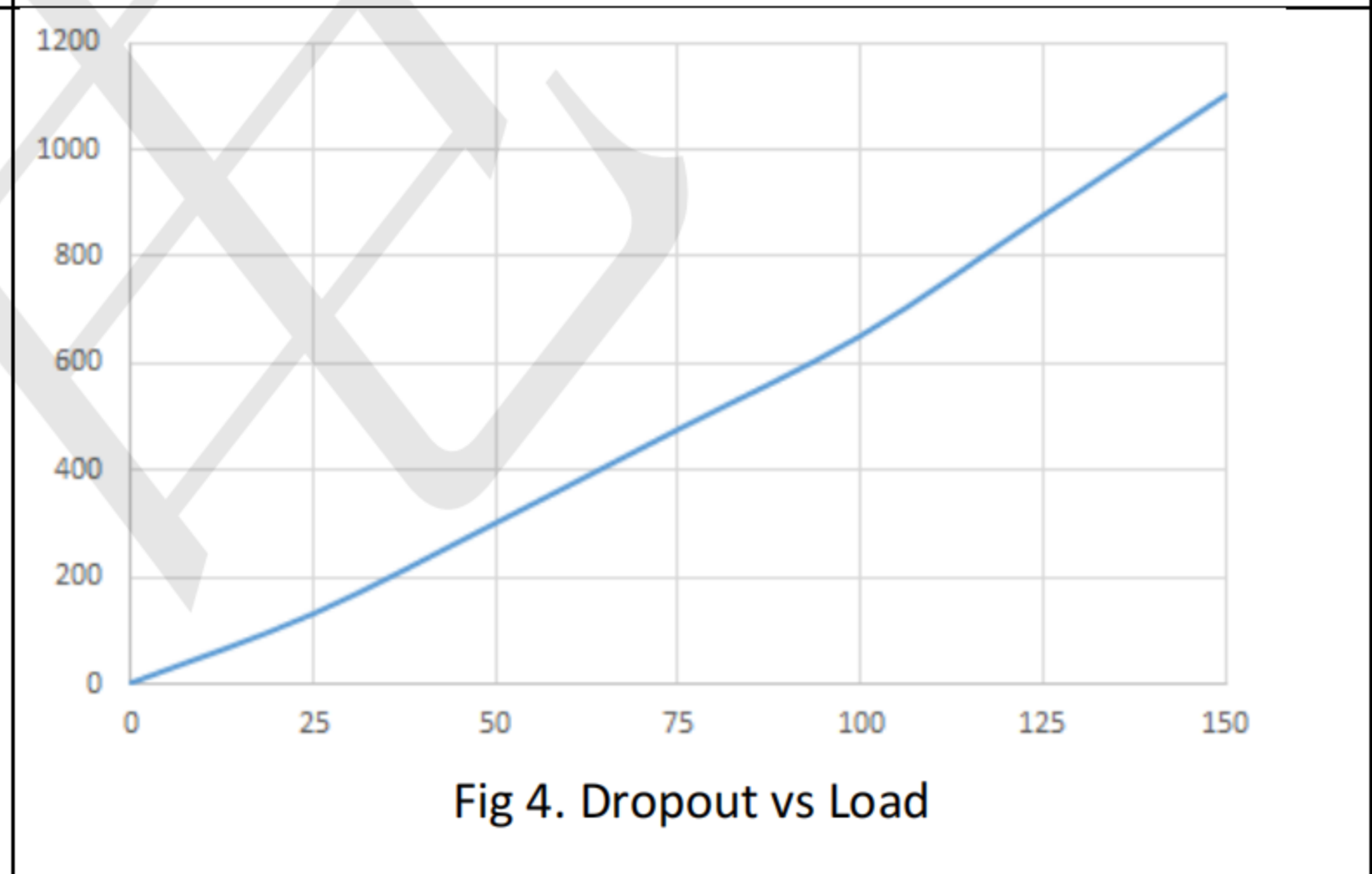
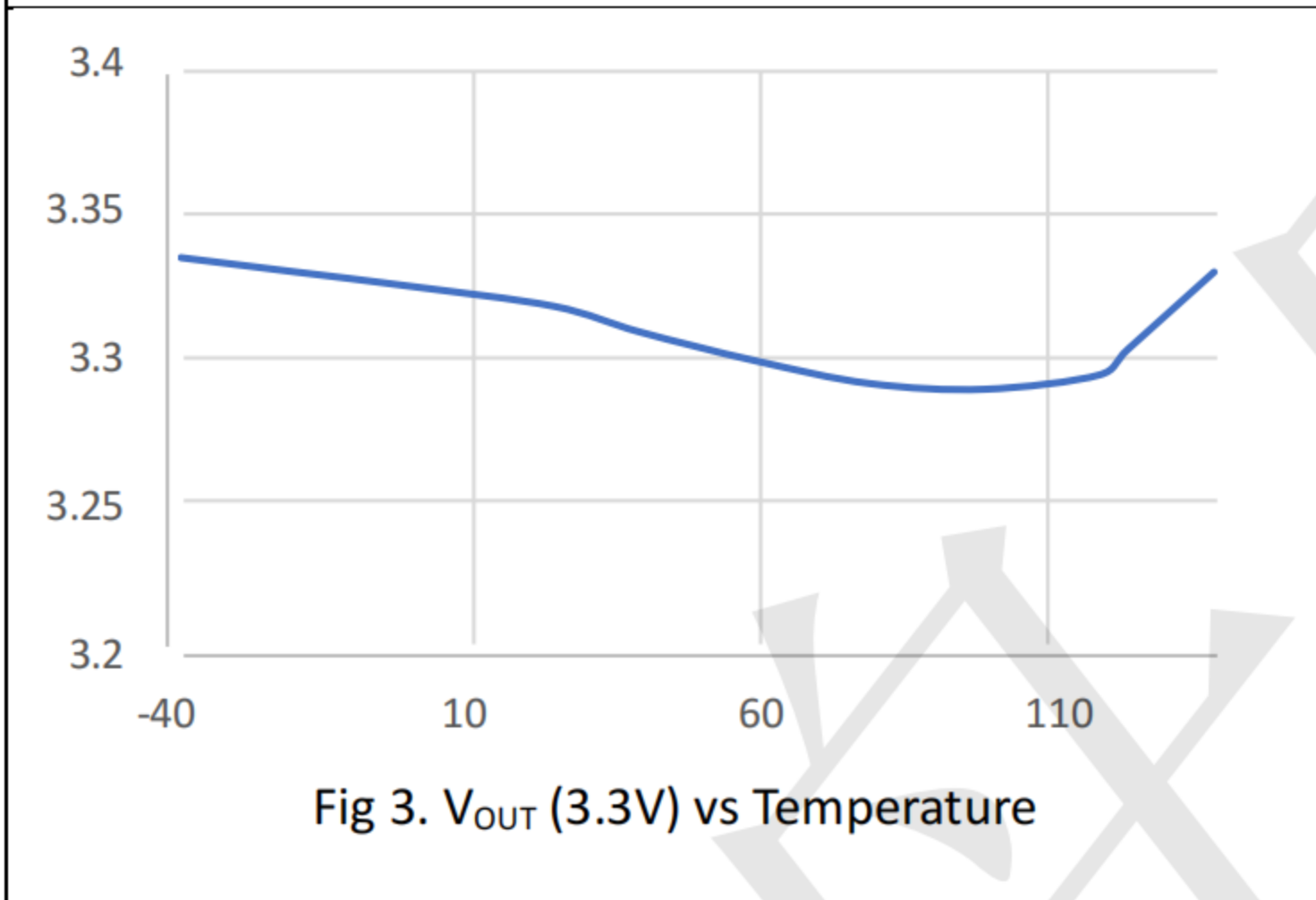
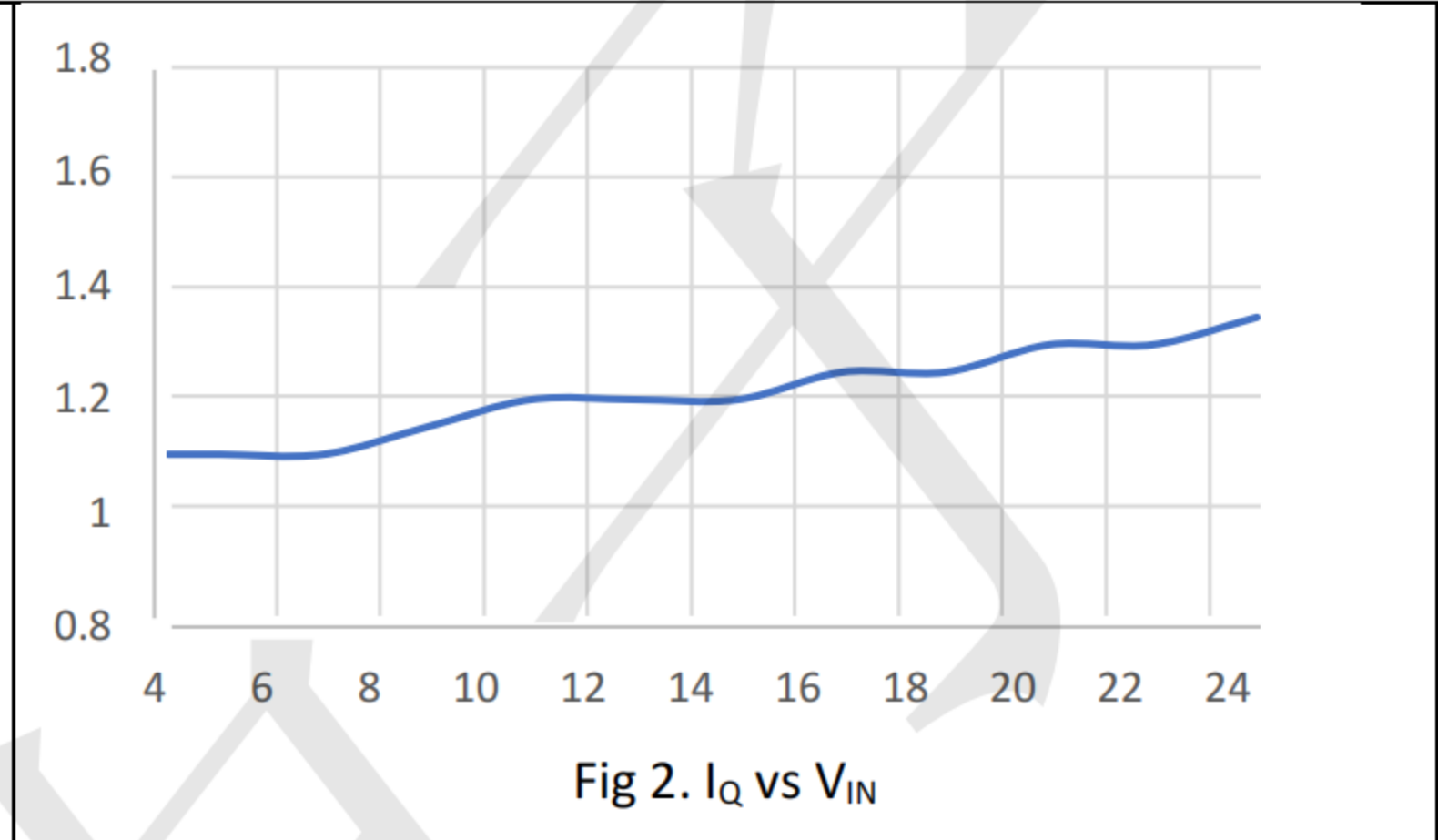
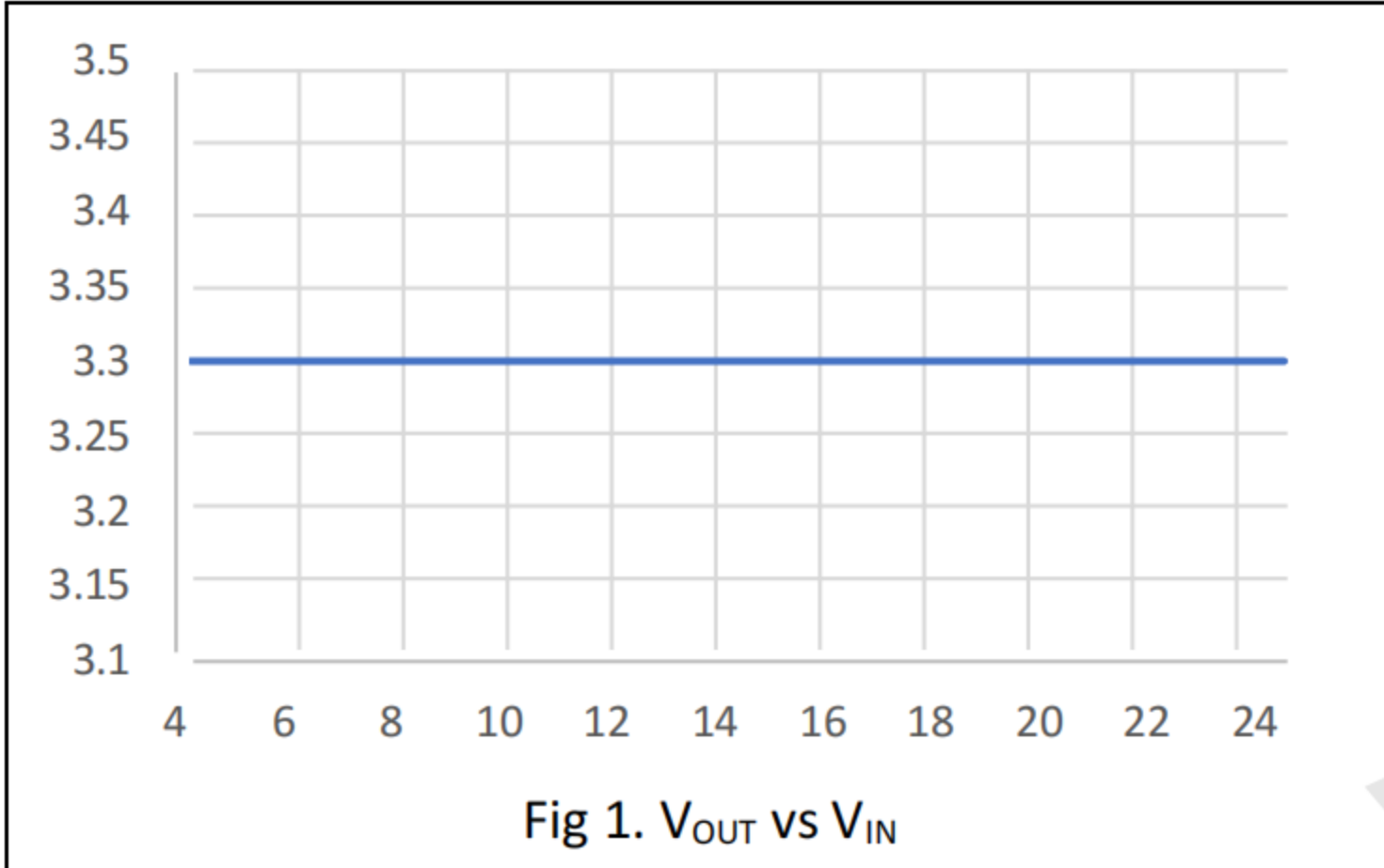
Functional Block Diagram





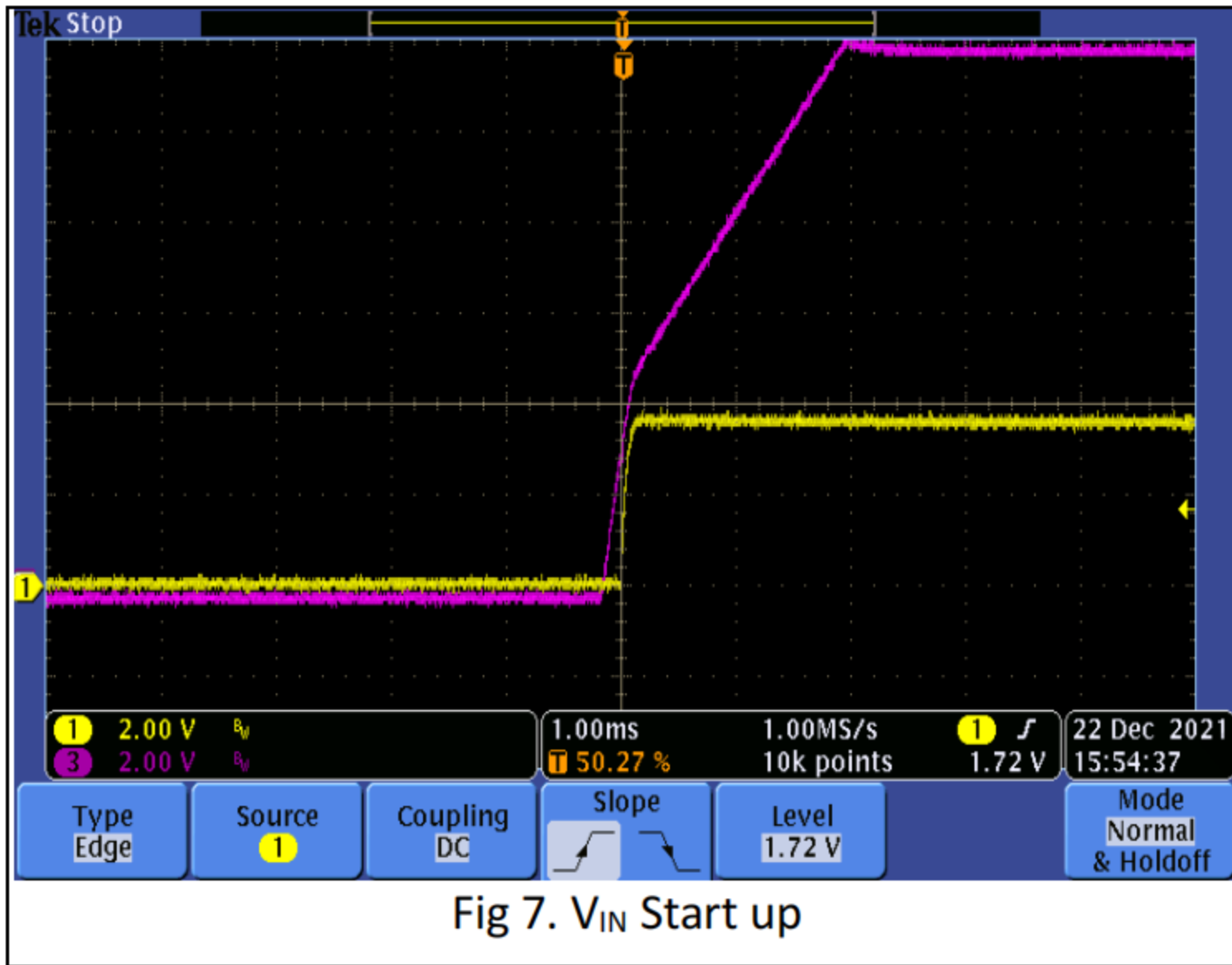
### Typical Performance Characteristics

$V_{IN} = V_{OUT} + 1.5V$ ,  $I_{OUT} = 1mA$ ,  $V_{OUT} = 3.3V$ ,  $C_{IN} = C_{OUT} = 1\mu F$ ,  $T_J = 25^\circ C$ , unless otherwise specified





Typical Performance Characteristics(cont.)





**TECH PUBLIC**

—台丹电子—

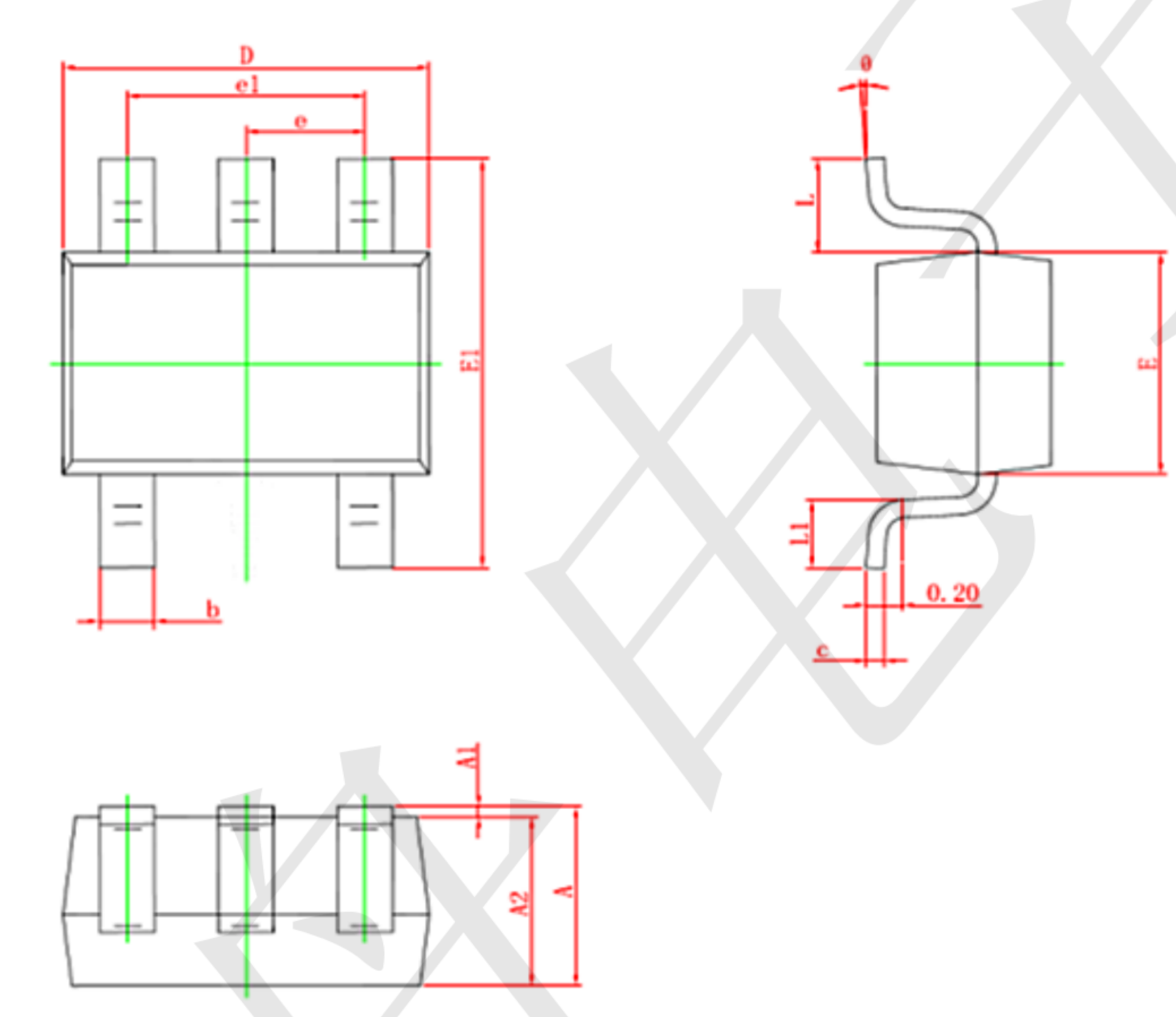
**TPS715 Series**

24V,50mA, Ultralo-Quiescent-Current LDO

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

**Package information**

SC70-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.110	0.175	0.004	0.007
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°