

### Features

- 2μA Ground Current at no Load
- ±2% Output Accuracy
- 200mA Output Current
- Wide Operating Input Voltage Range: 2V to 50V
- Dropout Voltage: 0.65V at 100mA ( $V_{OUT}=5V$ )
- Support Fixed Output Voltage 1.8V, 3.3V, 5V, 9V, 12V
- Stable with Ceramic or Tantalum Capacitor
- Current Limit Protection
- Over-Temperature Protection
- SOT-23-5 Package Available

### 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 TP552C is a low-dropout (LDO) voltage regulators 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 2μA and zero disable current is ideal for powering the battery equipment to a longer service life. The TP552C

is stable with the ceramic output capacitor over its wide input range from 2V to 50V and the entire range of output load current.

### Ordering Information

#### TP552C50S5

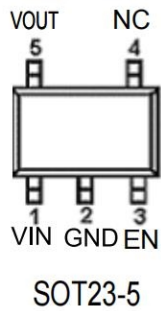
S5:SOT23-5 Package  
D4:DFN1X1-4 Package

Output voltage: 12=1.2V  
15=1.5V  
18=1.8V  
30=3.0V  
33=3.3V  
50=5.0V  
A9=9V  
B2=12V

### Marking

TP552C12S5 Marking: **ꝑ J12**  
 TP552C15S5 Marking: **ꝑ J15**  
 TP552C18S5 Marking: **ꝑ J18**  
 TP552C30S5 Marking: **ꝑ J30**  
 TP552C33S5 Marking: **ꝑ J33**  
 TP552C50S5 Marking: **ꝑ J50**  
 TP552C50S5 Marking: **ꝑ JA9**  
 TP552C50S5 Marking: **ꝑ JB2**

## 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

## Typical Application Circuit

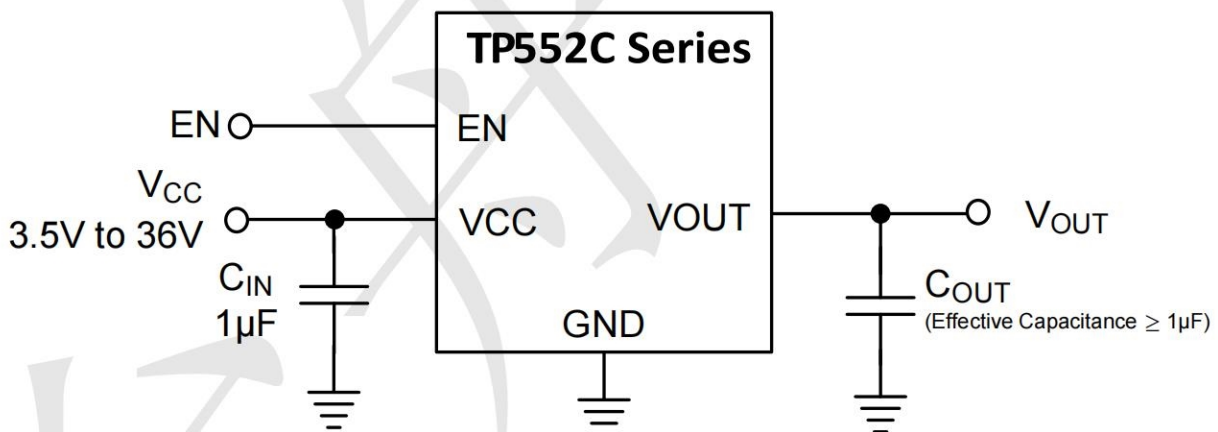
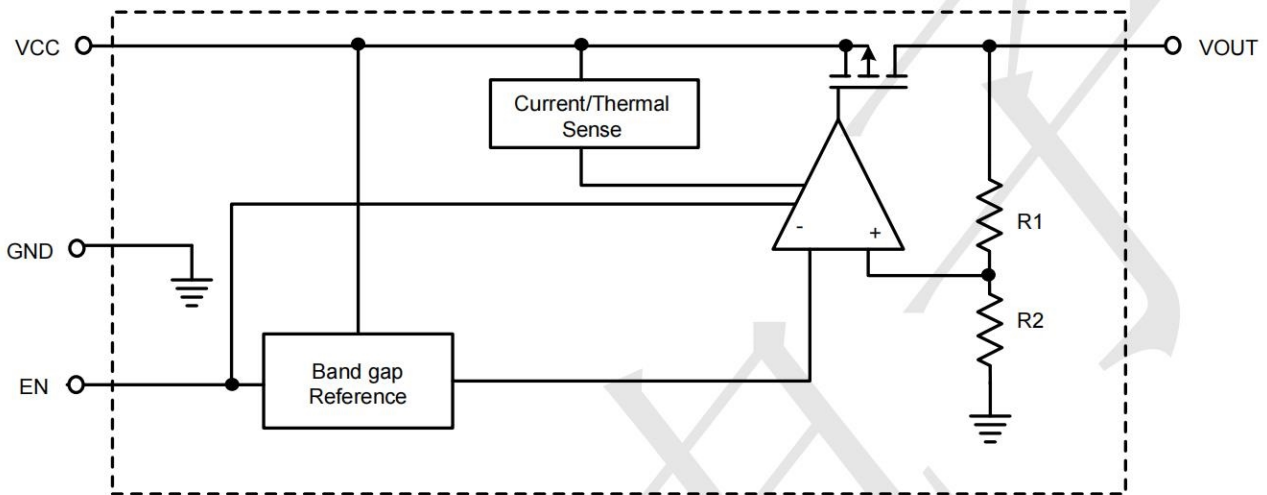


Figure 1: Application circuit of Fixed  $V_{OUT}$  LDO with enable and sense functions



BLOCK DIAGRAM



Absolute Maximum Ratings

VIN Pin to GND Pin Voltage .....	-0.3V to 60V
VOUT Pin to GND Pin Voltage	TP552CA1, B2 ,S5 ..... -0.3V to 14V
	TP552C18 ,33,50 S5 ..... -0.3V to 6.0V
VOUT Pin to VIN Pin Voltage .....	-40V to 0.3V
Storage Temperature Range .....	-60°C~150°C
Lead Temperature (Soldering, 10 sec) .....	260°C
Junction Temperature .....	150°C
Operating Ambient Temperature Range $T_A$ .....	-40°C~85°C
SOT-23-5, $\theta_{JA}$ .....	218.1°C/W
SOT-23-5, $\theta_{JC}$ .....	28.5°C/W

(Assume no Ambient Airflow, no Heatsink)

Recommended Operating Conditions

Supply Input Voltage .....	3.5V to 50V
Junction Temperature Range .....	-40°C to 125°C
Ambient Temperature Range .....	-40°C to 85°C

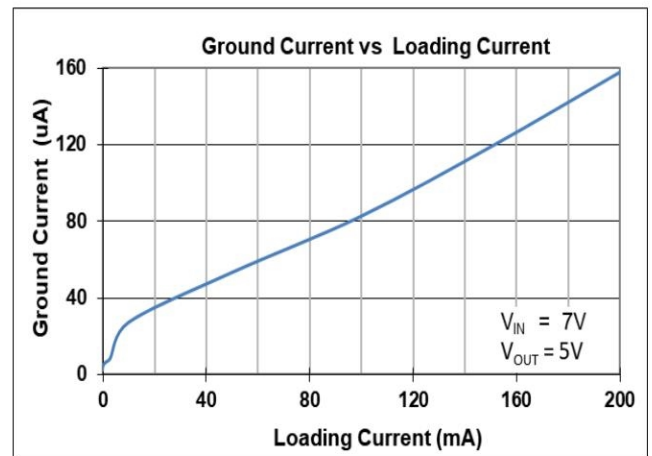
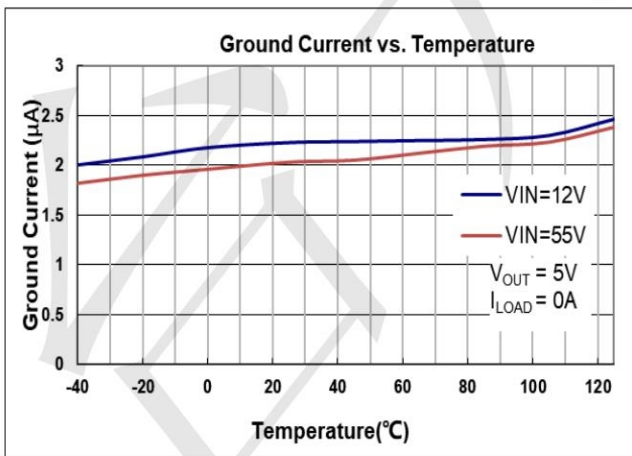
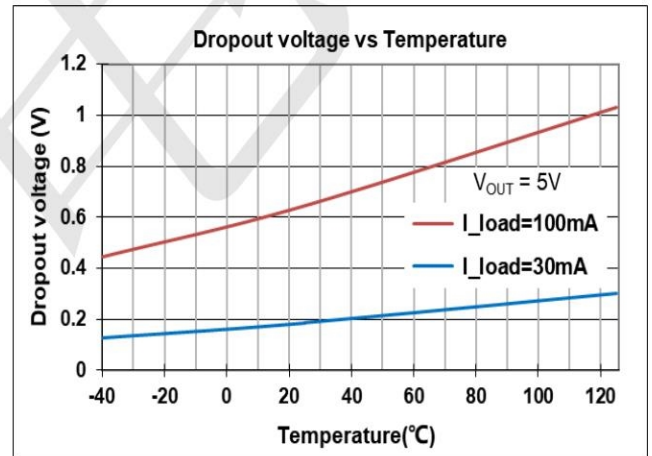
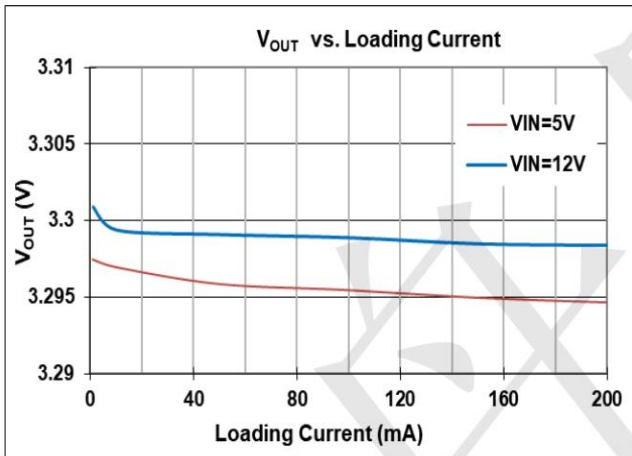
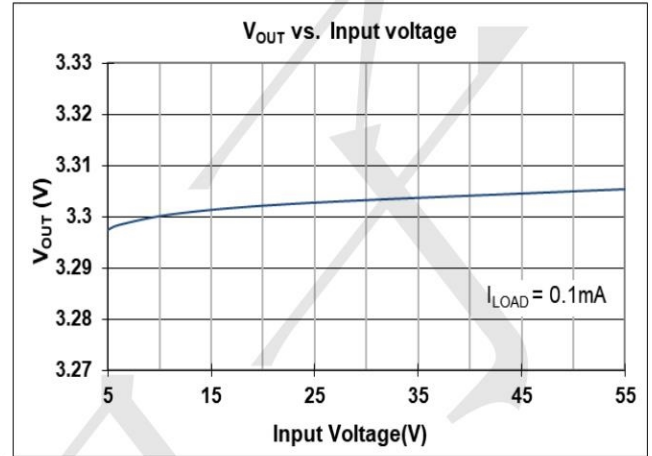
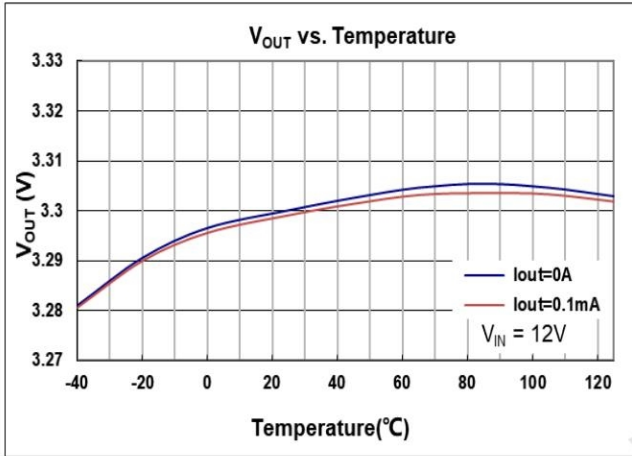
### Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{IN}$		2	--	50	V
DC Output Voltage Accuracy		$I_{LOAD} = 0.1mA$	-2		2	%
Dropout Voltage ( $I_{LOAD} = 100mA$ )	$V_{DROP}$	$V_{OUT} \geq 5V$	--	0.66		V
	$V_{DROP\_3.3V}$	$V_{OUT} = 3.3V$		0.75		
	$V_{DROP\_1.8V}$	$V_{OUT} = 1.8V$		1		
Ground Current ( $I_{LOAD} = 0mA$ )	$I_Q$	$V_{OUT} \leq 5V$		2	3.5	$\mu A$
	$I_{QH}$	$5V < V_{OUT} \leq 12V$		5	8	
Shutdown Ground Current	$I_{SD}$	$V_{EN} = 0V$ , $V_{OUT} = 0V$		0.01	0.5	$\mu A$
$V_{OUT}$ Shutdown Leakage Current	$I_{LEAK}$			0.01	0.5	$\mu A$
Enable Threshold Voltage	$V_{IH}$	EN Rising			2	V
	$V_{IL}$	EN Falling	0.6			
EN Input Current	$I_{EN}$	$V_{EN} = 36V$		10		nA
Line Regulation	$\Delta LINE$	$I_{LOAD} = 1mA$ , $5 \leq V_{IN} \leq 36V$	--	0.3		%
Load Regulation	$\Delta LOAD$	$1mA \leq I_{LOAD} \leq 0.2A$		0.1		%
Output Current Limit	$I_{LIM}$	$V_{OUT} = 0$	200	300		mA
Power Supply Rejection Ratio	PSRR	$V_{OUT} = 5V$ , $I_{LOAD} = 1mA$ , $V_{IN} = 12V$ , $f = 100Hz$		70		dB
Thermal Shutdown Temperature	$T_{SD}$	$I_{LOAD} = 10mA$	--	160	--	$^{\circ}C$
Thermal Shutdown Hysteresis	$\Delta T_{SD}$			15		$^{\circ}C$

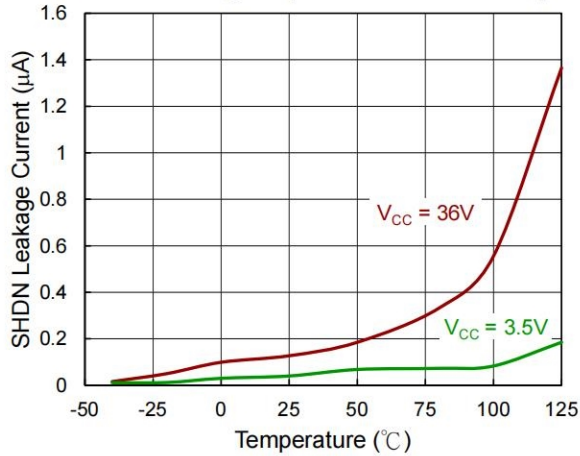


Typical Operating Characteristics

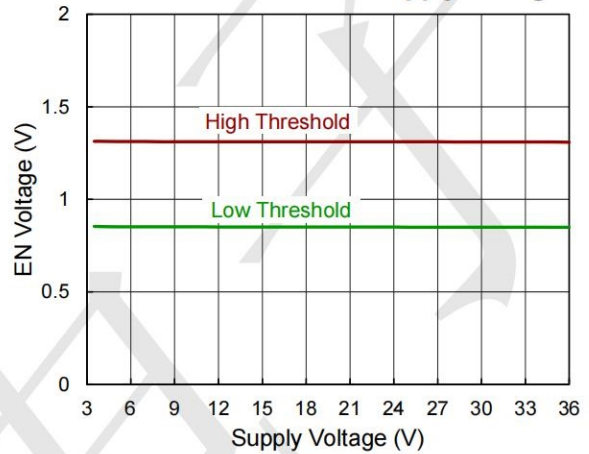




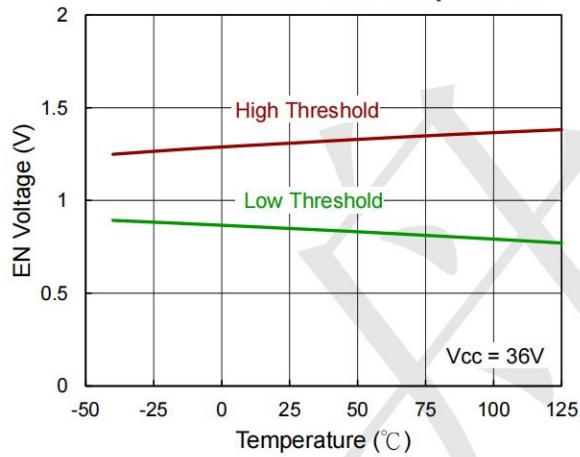
SHDN Leakage Input Current vs. Temp.



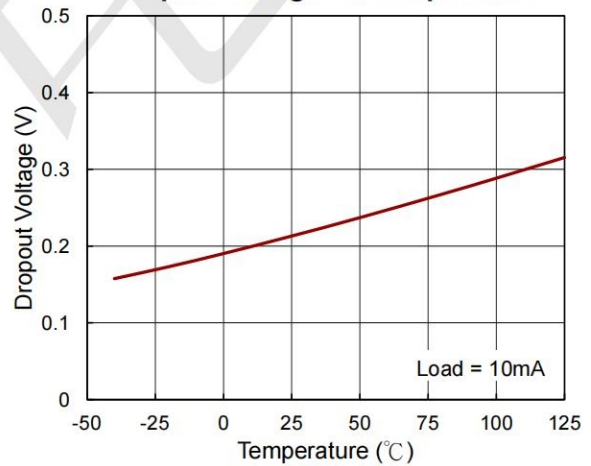
Enable Threshold vs. Supply Voltage



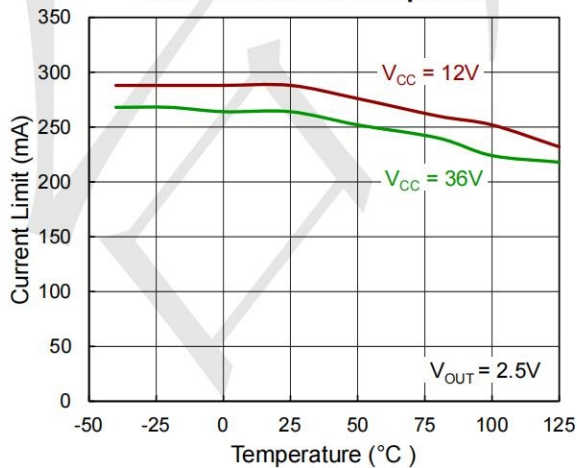
Enable Threshold vs. Temperature



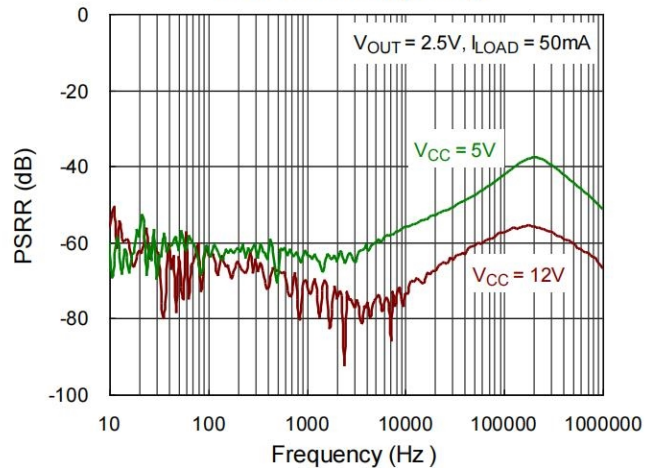
Dropout Voltage vs. Temperature

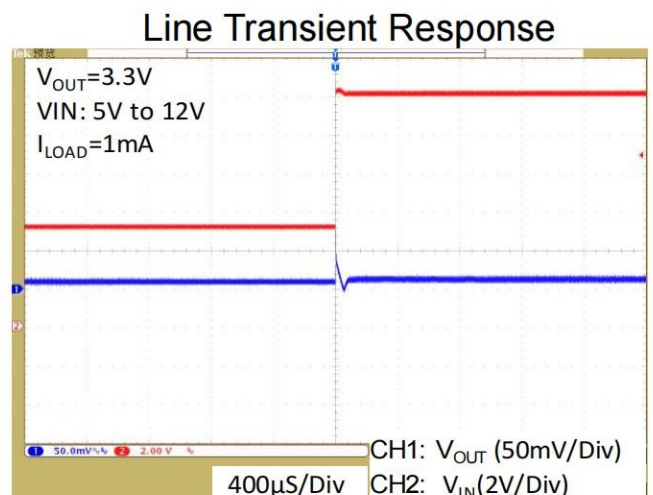
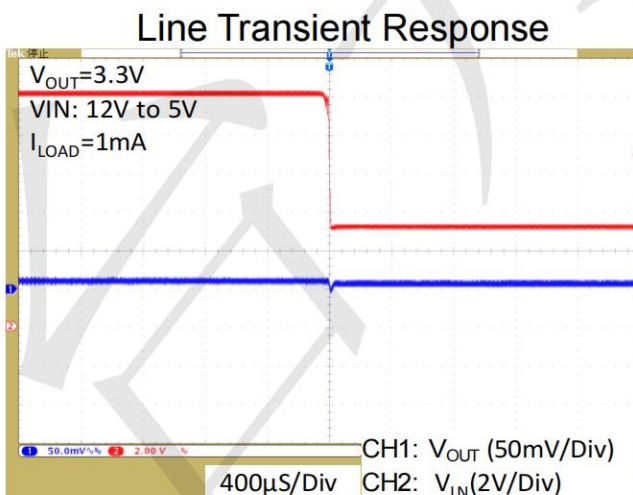
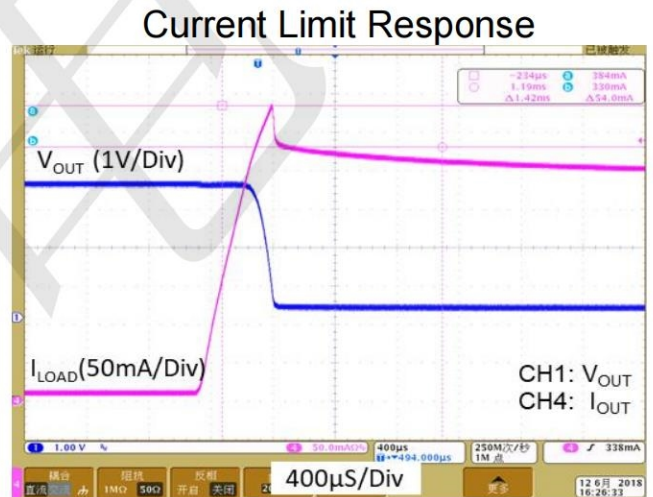
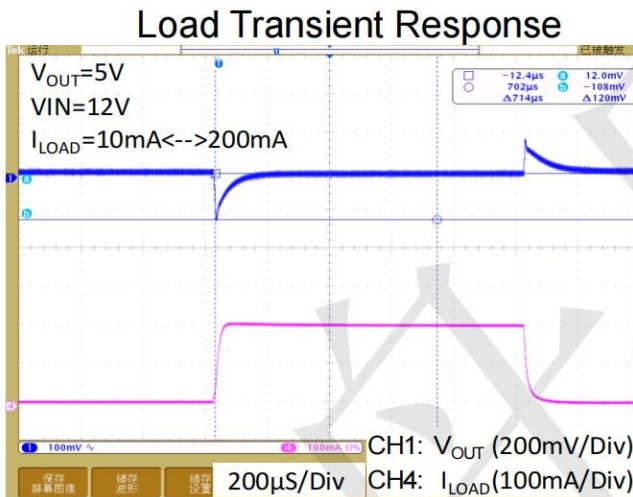
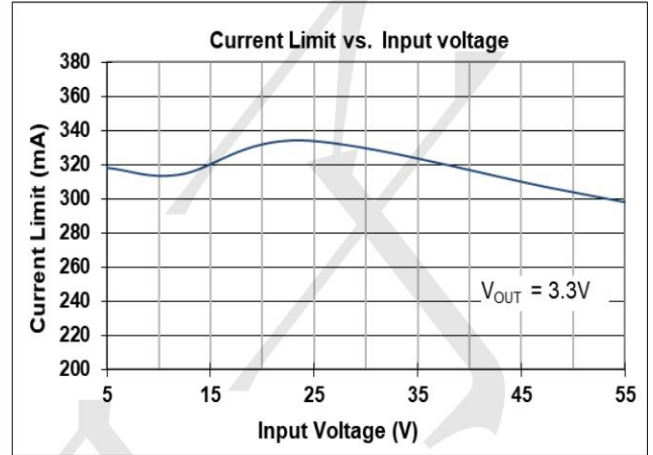
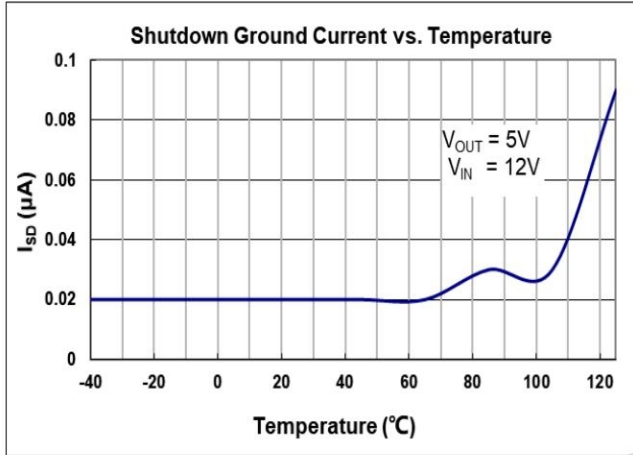


Current Limit vs. Temperature



PSRR vs. Frequency







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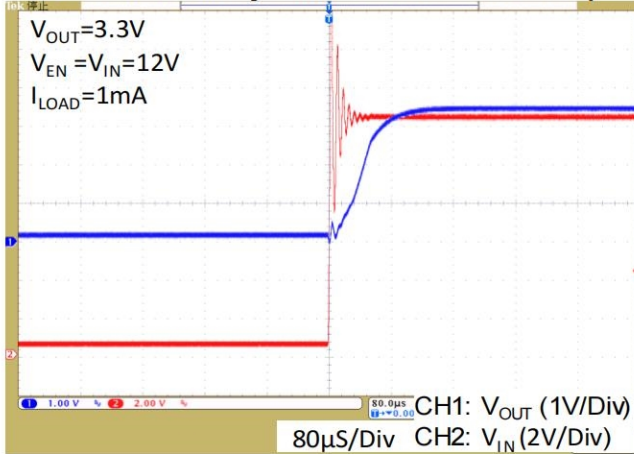
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TP552 Series

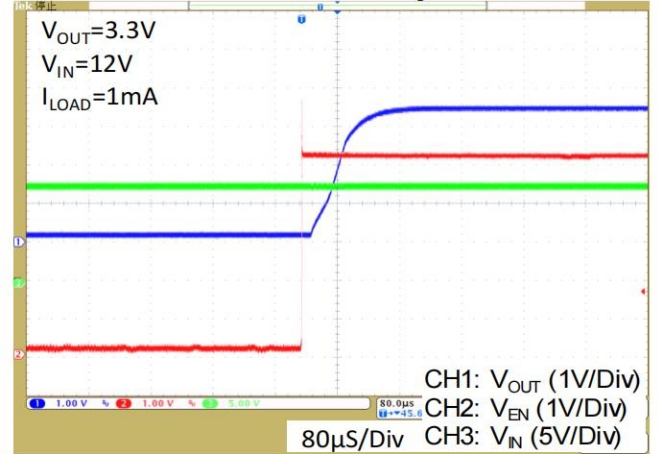
50V,200mA,2uA, Higt PSRR Voltage Reaulators

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

$V_{OUT}$  Turn on by  $V_{IN}$  Quick Power Up



$V_{OUT}$  Turn On by EN







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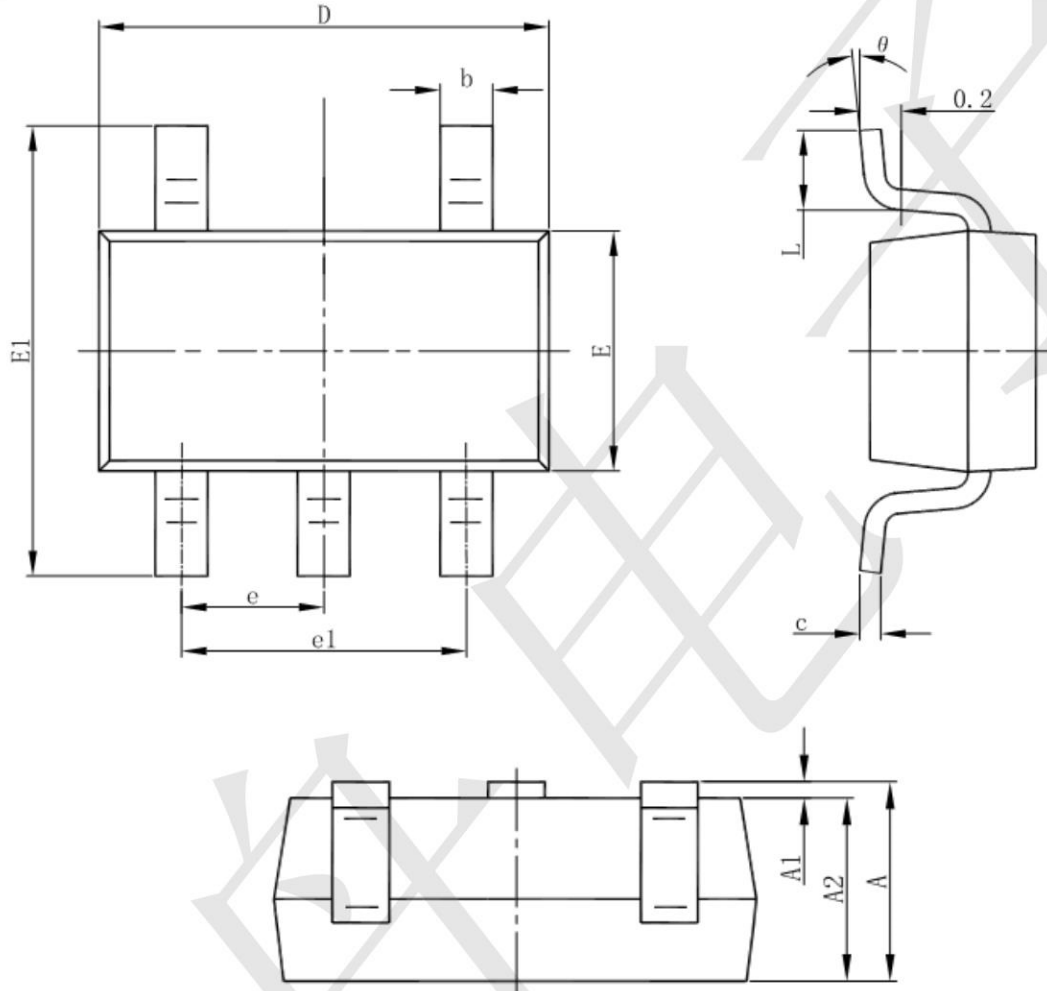
**TP552 Series**

**50V,200mA,2uA, Higt PSRR Voltage Reaulators**

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

**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
$\theta$	0°	8°	0°	8°

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