

Features

- 2 μ A Ground Current at no Load
- $\pm 2\%$ 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 2 μ A 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

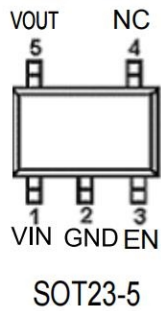
S5:SOT23-5 Package
D4:DFN1X1-4 Package

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: **TPJ12**
TP552C15S5 Marking: **TPJ15**
TP552C18S5 Marking: **TPJ18**
TP552C30S5 Marking: **TPJ30**
TP552C33S5 Marking: **TPJ33**
TP552C50S5 Marking: **TPJ50**
TP552C50S5 Marking: **TPJA9**
TP552C50S5 Marking: **TPJB2**

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

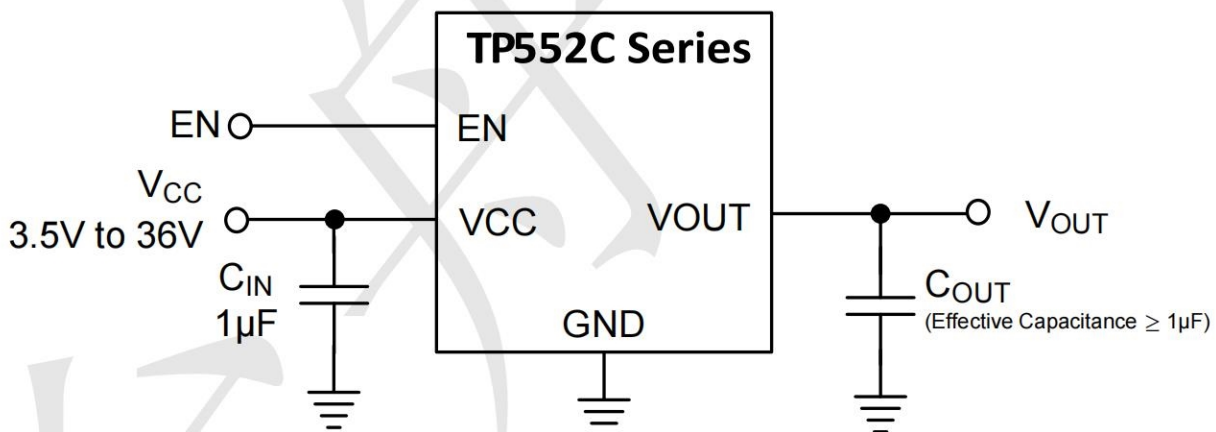
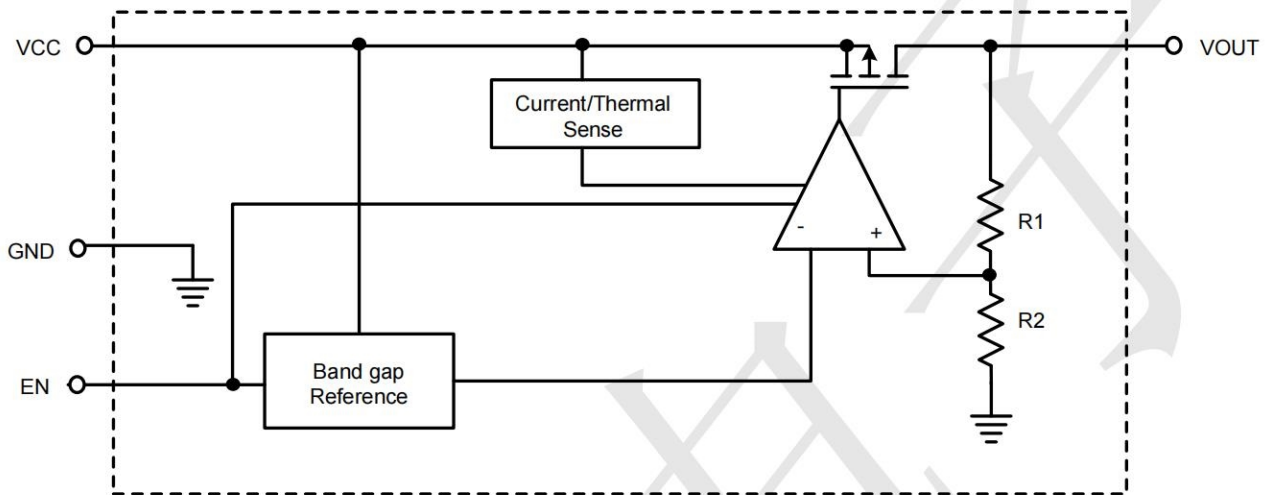


Figure 1: Application circuit of Fixed V_{OUT} LDO with enable and sense functions



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, θ_{JA}	218.1°C/W
SOT-23-5, θ_{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

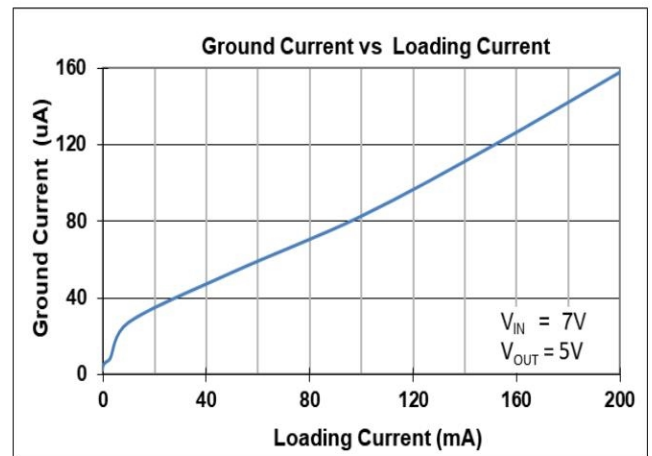
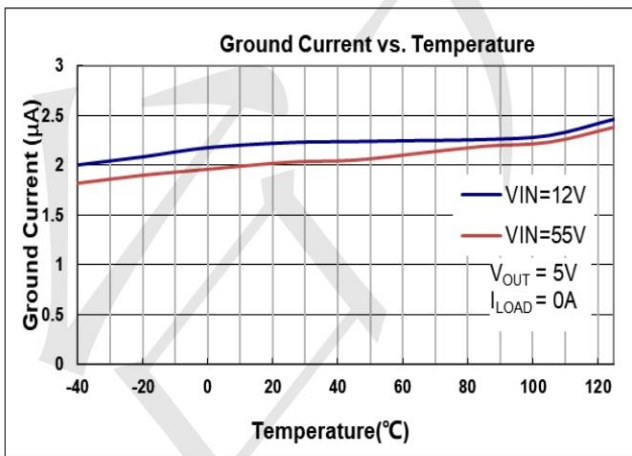
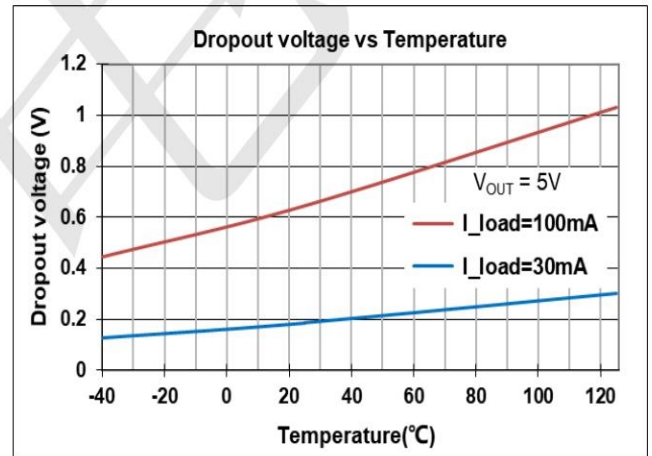
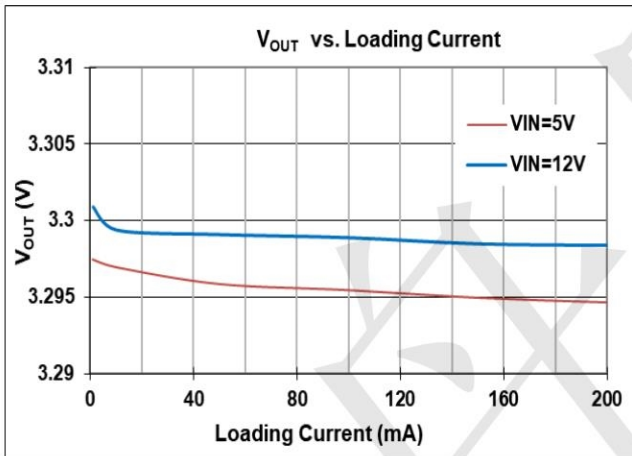
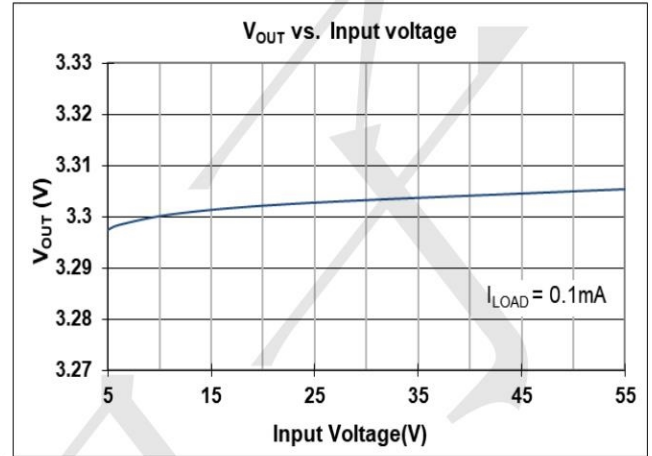
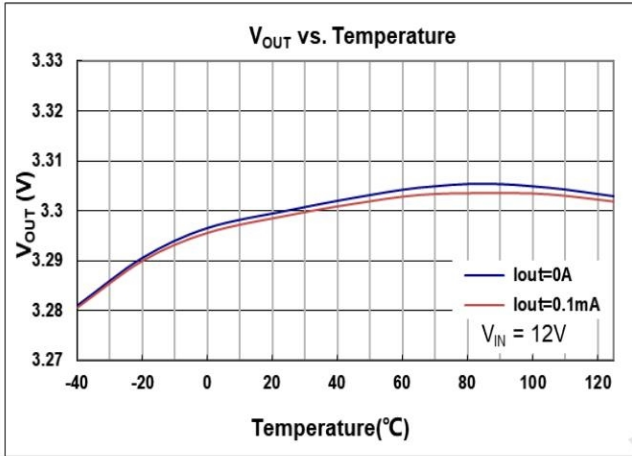
Electrical Characteristics

($V_{IN}=15V$, $V_{EN}=5V$, $T_A=25^{\circ}C$, 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	μA
	I_{QH}	$5V < V_{OUT} \leq 12V$		5	8	
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			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	ΔT_{SD}			15		$^{\circ}C$

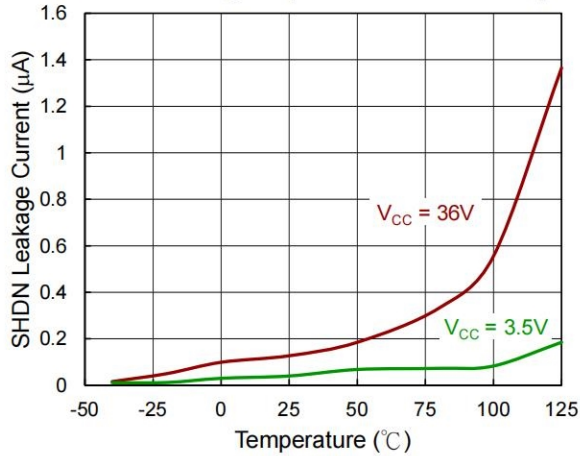


Typical Operating Characteristics

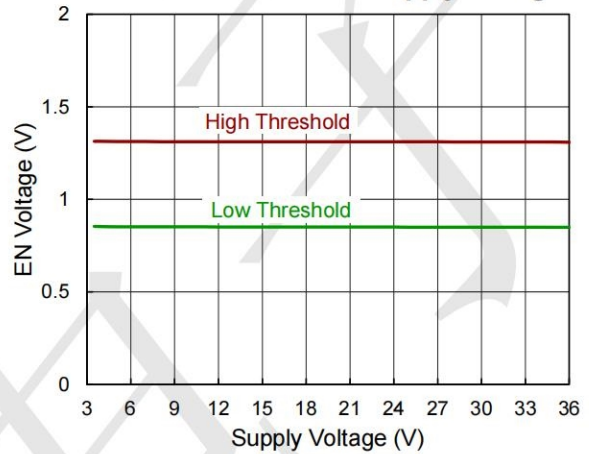




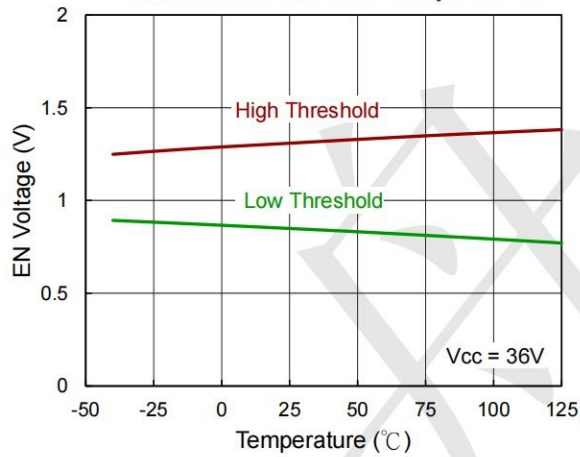
SHDN Leakage Input Current vs. Temp.



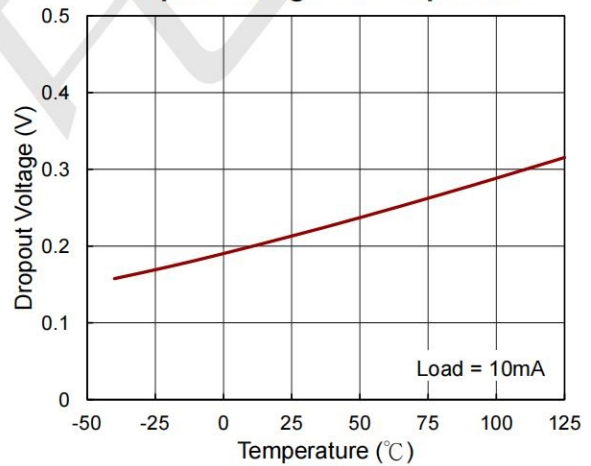
Enable Threshold vs. Supply Voltage



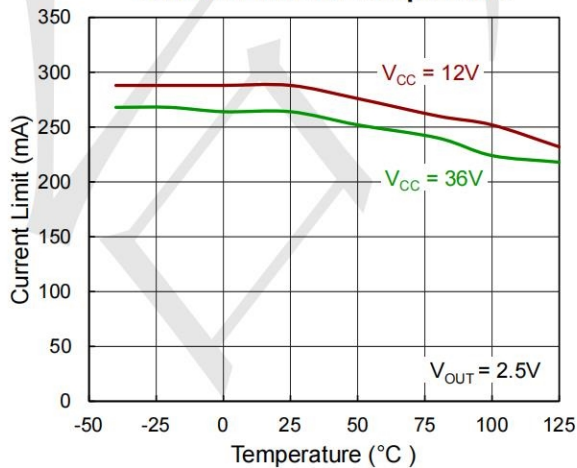
Enable Threshold vs. Temperature



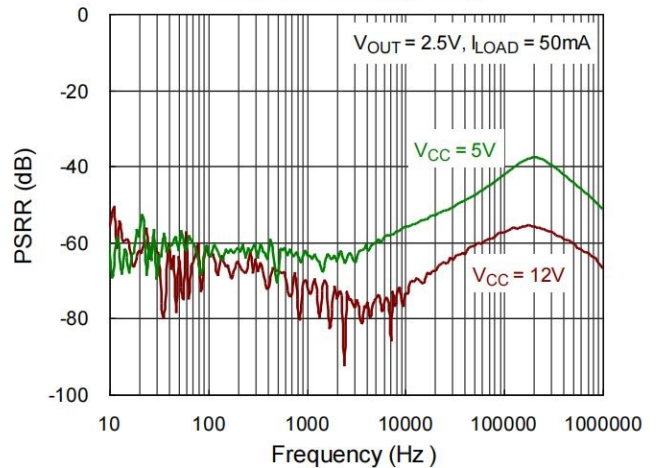
Dropout Voltage vs. Temperature

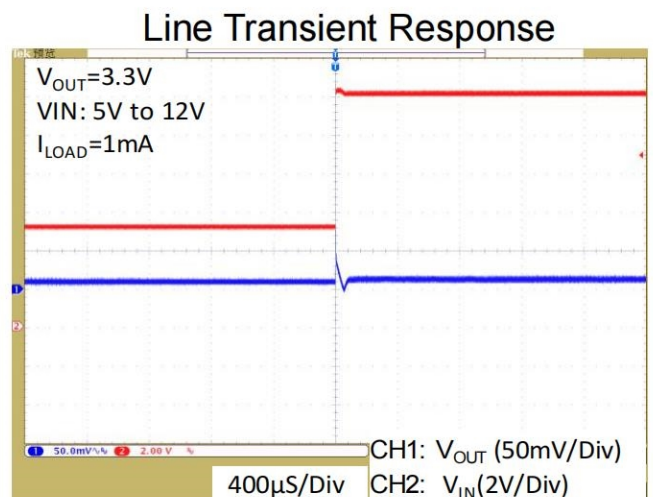
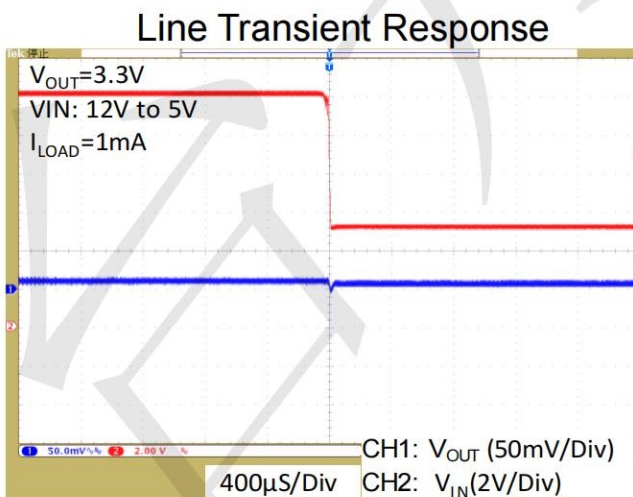
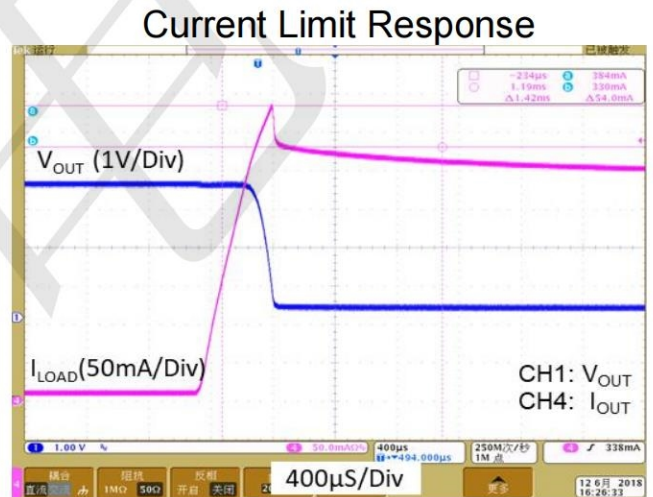
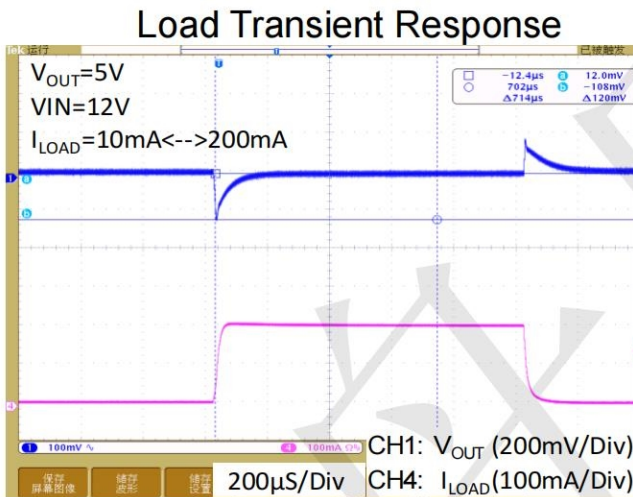
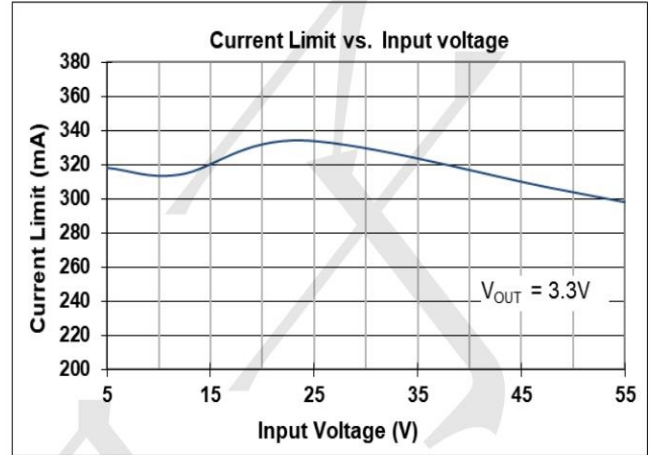
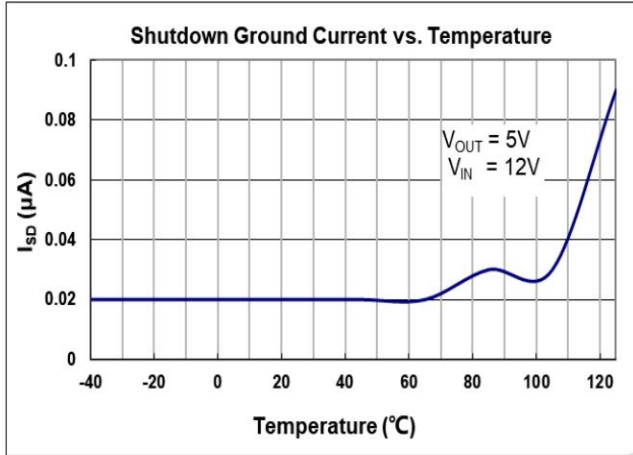


Current Limit vs. Temperature



PSRR vs. Frequency







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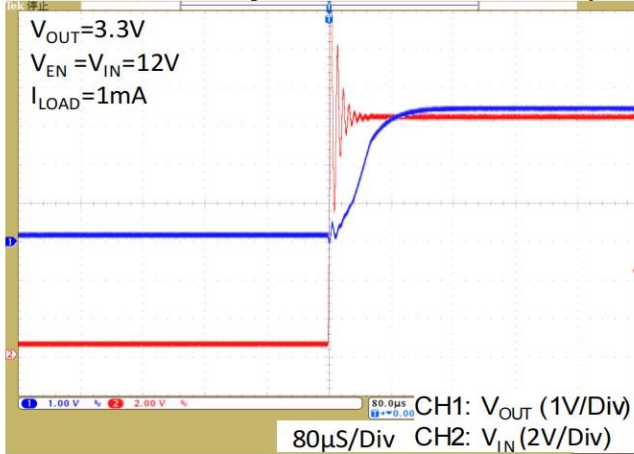
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TP552 Series

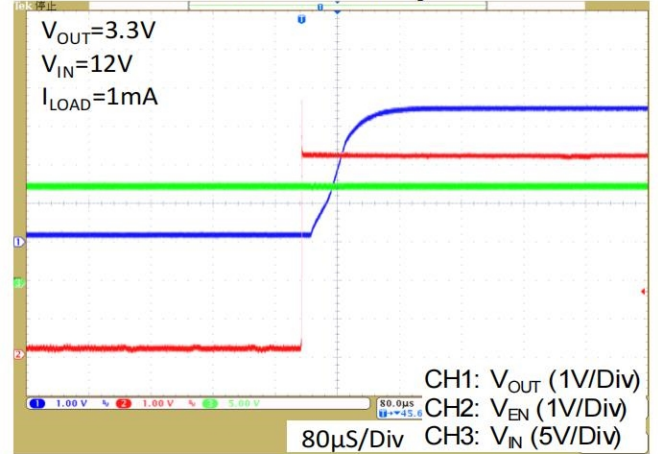
50V,200mA,2uA, Higt PSRR Voltage Reaulators

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



V_{OUT} Turn On by EN





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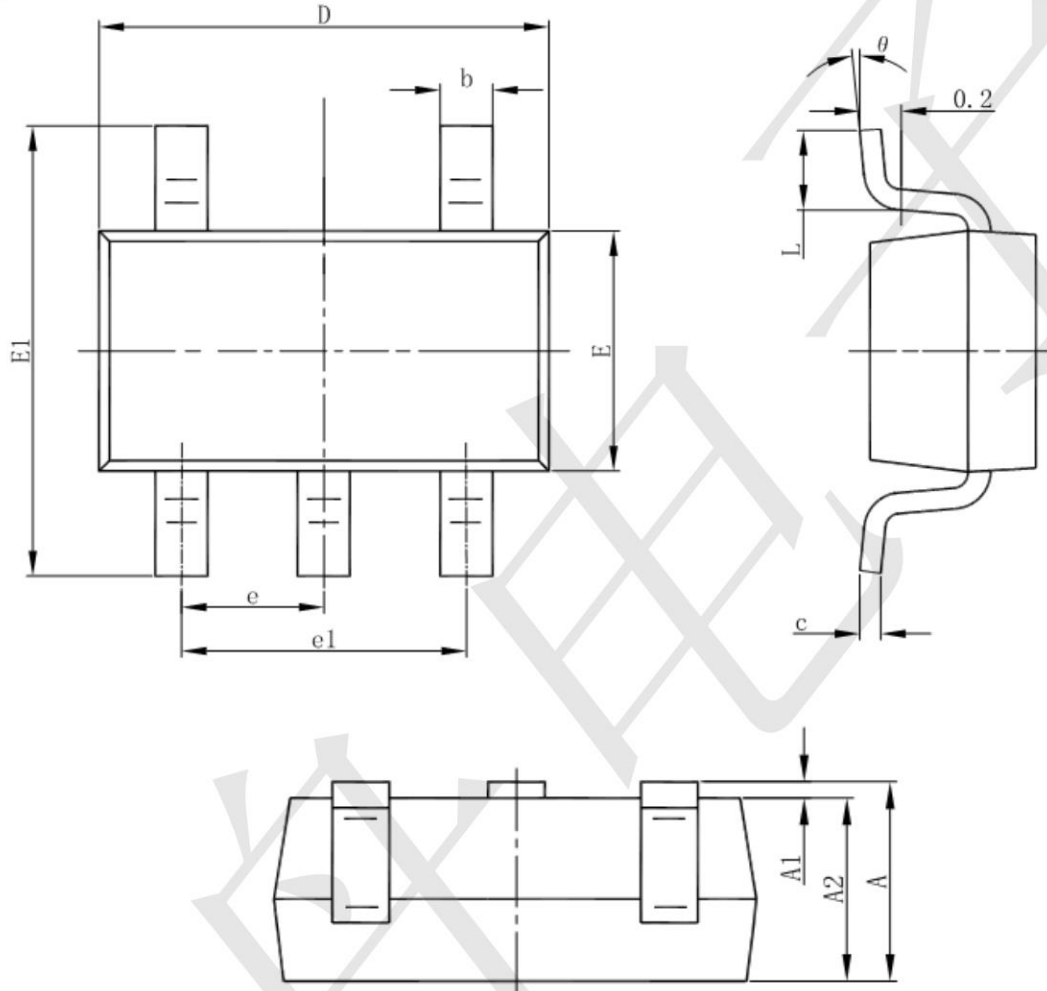
TP552 Series

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

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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°

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