60V,200mA,2uA, Higt PSRR Voltage Regulator

Feature

- 2μA Ground Current at no Load
- ±2% Output Accuracy
- 200mA Output Current
- Wide Operating Input Voltage Range: 2V to 60V
- 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 SOT89-3 ,SOT23-3L ,DFN1X1-4 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 Descrition

The FC572C 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 FC572C is stable with the ceramic output capacitor over its wide input range from 2V to 60V and the entire range of output load current.

Ordering Information

FC572CXXXX

PACKAGE TYPE
- S3L: SOT-23-3L
- S5: SOT23-5
- GT3 : SOT-89-3
- VT3: SOT-89-3
- UT3: SOT-89-3
- D4 : DFN1X1-4

OUTPUT VOLTAGE
- 12: 1.2V
- 15: 1.5V
- 18 1.8V
- 30: 3.0V
- 33: 3.3V
- 50: 5.0V
- A9: 9V
- B2: 12V

Example: FC572C33S5
→ 3.3V Version, in SOT23-5 Package & Tape & Reel Packing Type

FC572C33S3L
→ 3.3V Version, in SOT23-3L Package & Tape & Reel Packing Type

FC572C33GT3
→ 3.3V Version, in Green SOT-89-3 Package & Reel Packing Type

FC572C33VT3
→ 3.3V Version, in Green SOT-89-3 Package & Reel Packing Type

FC572C33UT3
→ 3.3V Version, in Green SOT-89-3 Package & Reel Packing Type

FC572C33D4
→ 3.3V Version, in Green DFN1X1-4 Package & Reel Packing Type

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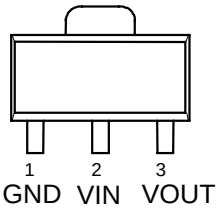
Pin Configuration

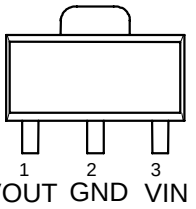
SOT-89 (GT3)

TOP VIEW
1: GND
2. VIN
3. VOUT



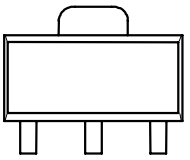
SOT-89 (UT3)

TOP VIEW
1: VOUT
2. GND
3. VIN



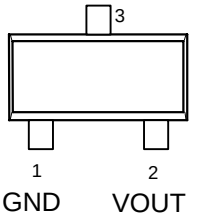
SOT-89 (VT3)

TOP VIEW
1. VIN
2. GND
3: VOUT



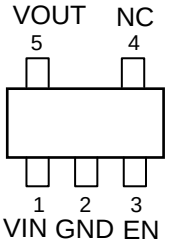
SOT-23 (S3L)

TOP VIEW
1: GND
2: VOUT
3: VIN



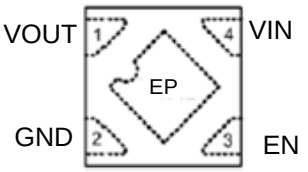
SOT23-5(S5)

TOP VIEW
1: VIN
2. GND
3. EN
4. NC
5. VOUT



DFN1X1-4 (D4)

TOP VIEW
1: VOUT
2. GND
3. EN
4. VIN



60V,200mA,2uA, Higt PSRR Voltage Regulator

Typical Application Circuit

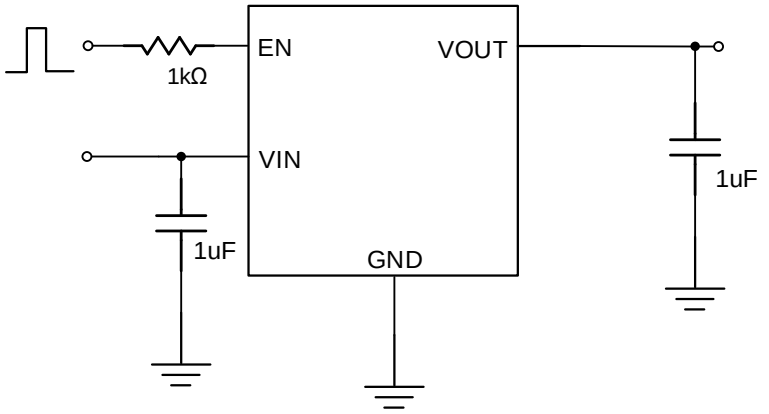


Figure 1: Application circuit of Fixed VOUT LDO with enable function

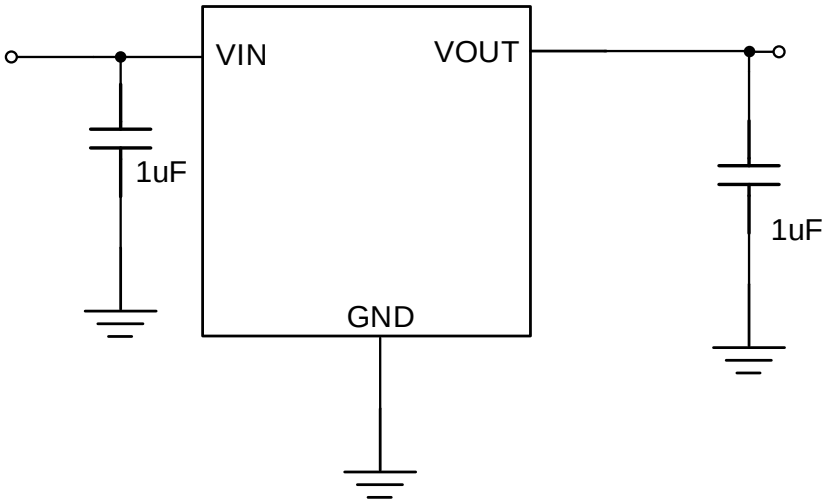
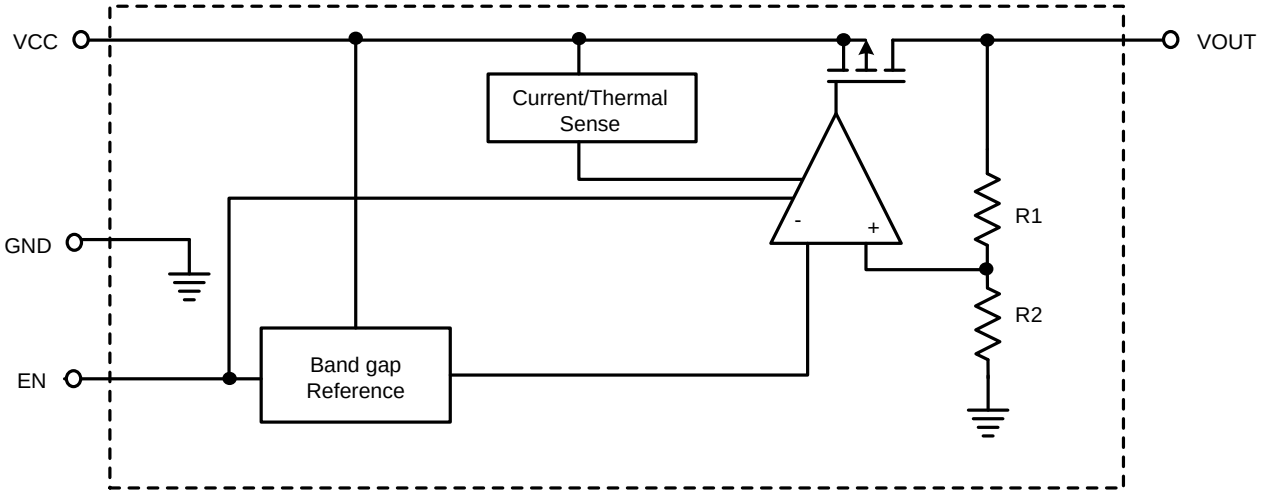


Figure 2: Application circuit of Fixed V_{OUT} LDO

60V,200mA,2uA, Higt PSRR Voltage Regulator

BLOCK DIAGRAM



Absolute Maximum Ratings

VIN Pin to GND Pin Voltage ..... -0.3V to 60V

VOUT Pin to GND Pin Voltage TP572CA1, B2 ..... -0.3V to 14V

TP572C18 ,33,50 S5 ..... -0.3V to 6.0V

VOUT Pin to VIN Pin Voltage ..... -40V to 0.3V

Storage Temperature Range ..... -60℃~150℃

Lead Temperature (Soldering, 10 sec) ..... 260℃

Junction Temperature ..... 150℃

Operating Ambient Temperature Range T_A ..... -40℃~85℃

SOT-23-5, θ_{JA} ---------- 218.1℃/W

SOT-23-5, θ_{JC} ---------- 28.5℃/W

(Assume no Ambient Airflow, no Heatsink)

Recommended Operating Conditions

Supply Input Voltage ----------3.5V to 60V

Junction Temperature Range ---------- -40℃ to 125℃

Ambient Temperature Range---------- -40℃ to 85℃

60V,200mA,2uA, Higt PSRR Voltage Regulator

Electrical Characteristics

(V_{IN}=15V, V_{EN}=5V, T_A=25℃, unless otherwise specified) (Note 1)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{IN}		2	--	60	V
DC Output Voltage Accuracy		I_{LOAD} =0.1mA	-2		2	%
Dropout Voltage (I_{LOAD} =100mA)	V_{DROP}	V_{OUT} ≥ 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} ≤ 5V		2	3.5	μA
	I_{QH}	5V < V_{OUT} ≤ 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_L	EN Falling	0.6			
EN Input Current	I_{EN}	V_{EN} = 36V		10		nA
Line Regulation	ΔLINE	I_{LOAD} =1mA, 5 ≤ V_{IN} ≤ 36V	--	0.3		%
Load Regulation	ΔLOAD	1mA≤ I_{LOAD} ≤ 0.2A		0.1		%
Output Current Limit	I_{LM}	V_{OUT} =0	200	300		mA
Power Supply Rejection Ratio	PSRR	V_{OUT} =5V, I_{LOAD} =1mA, V_N = 12V, f = 100Hz		70		dB
Thermal Shutdown Temperature	T_{SD}	I_{LOAD} =10mA	--	160	--	℃
Thermal Shutdown Hysteresis	ΔT_{SD}			15		℃

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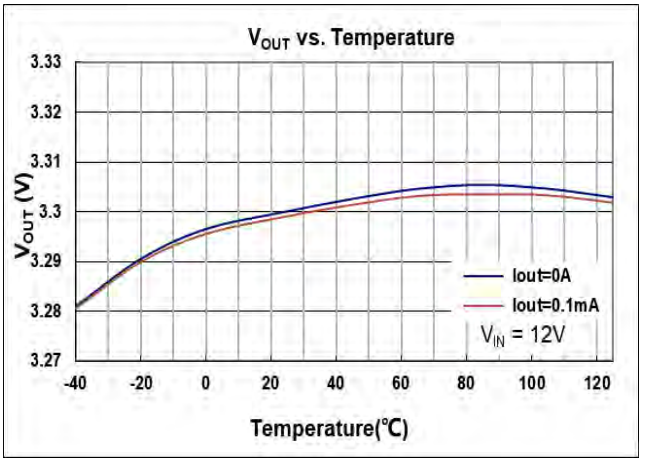
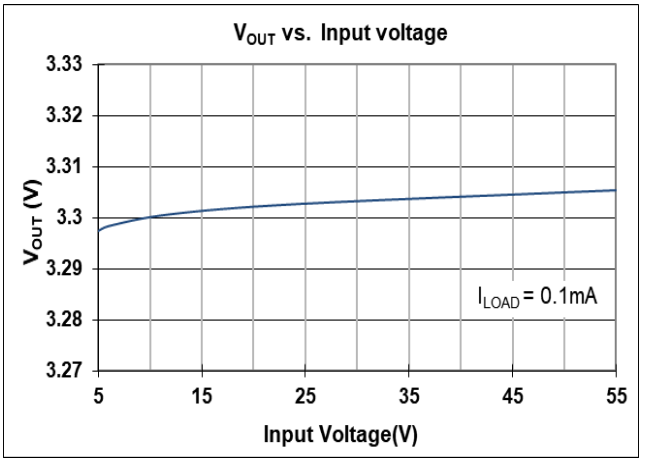
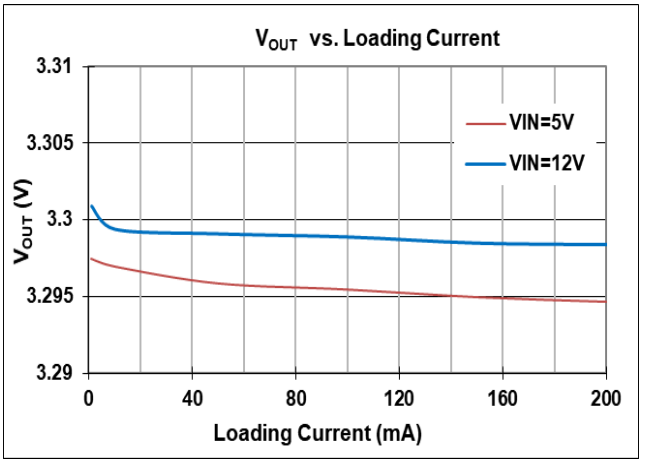
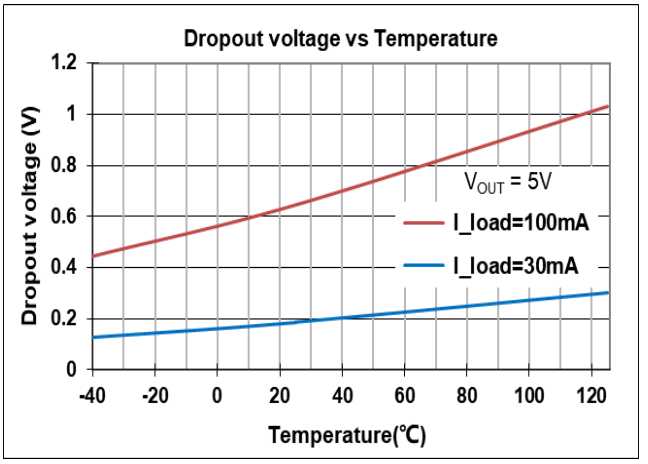
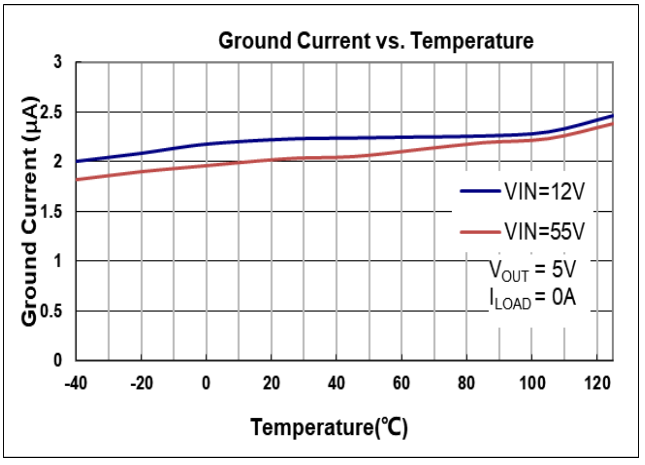
Typical Operating Characteristics

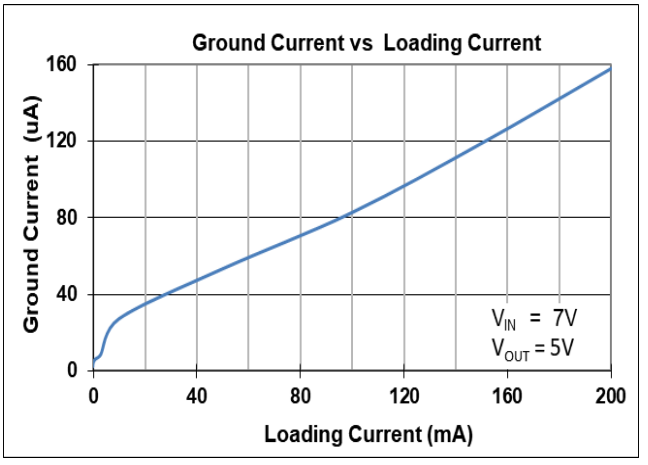












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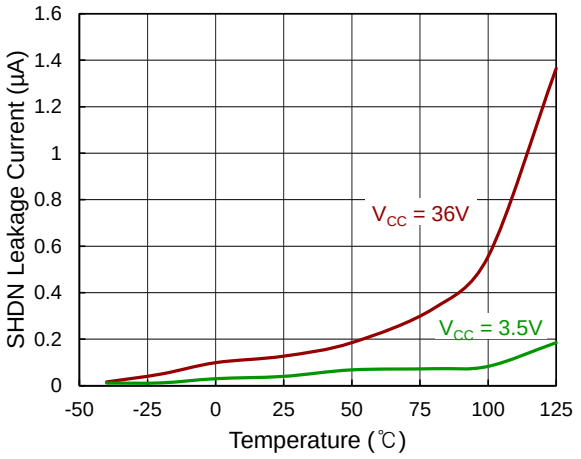
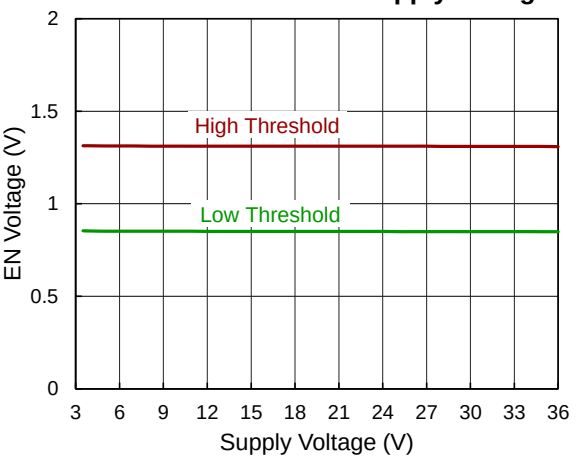
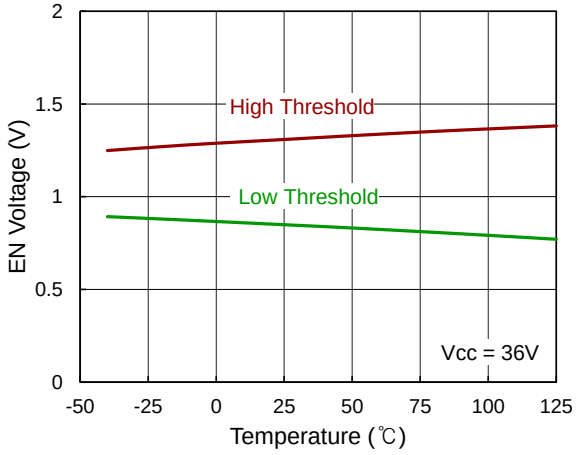
SHDN Leakage Input Current vs. Temp.



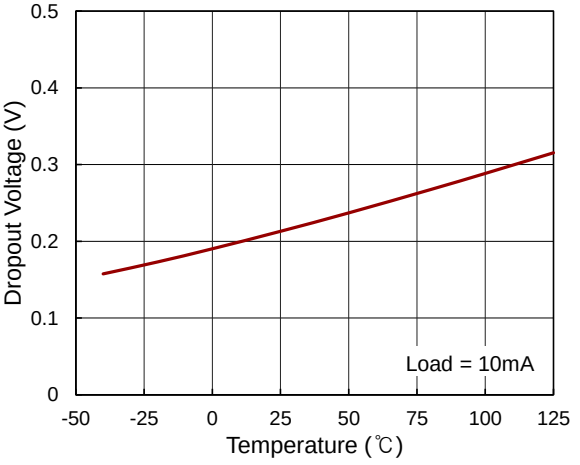
Enable Threshold vs. Supply Voltage



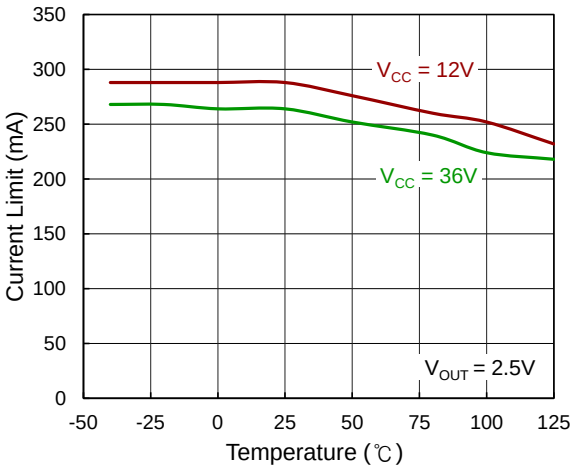
Enable Threshold vs. Temperature



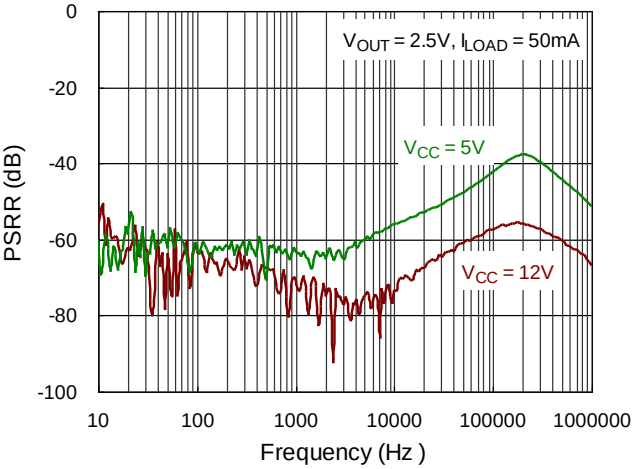
Dropout Voltage vs. Temperature



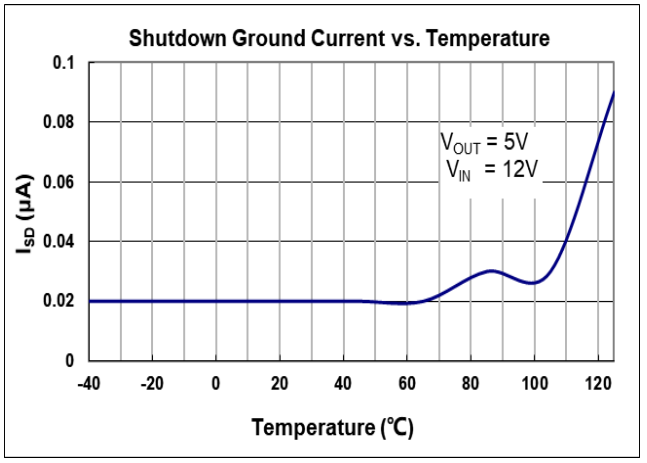
Current Limit vs. Temperature

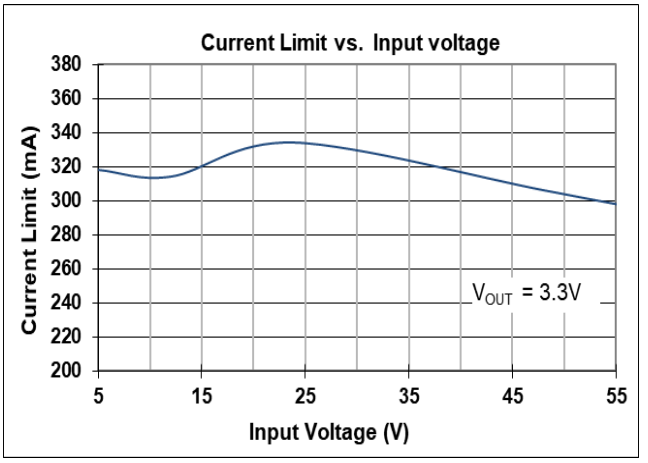


PSRR vs. Frequency

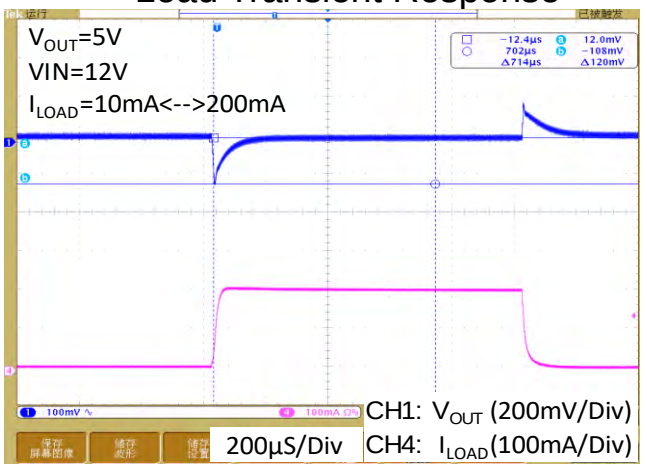


60V,200mA,2uA, Higt PSRR Voltage Regulator

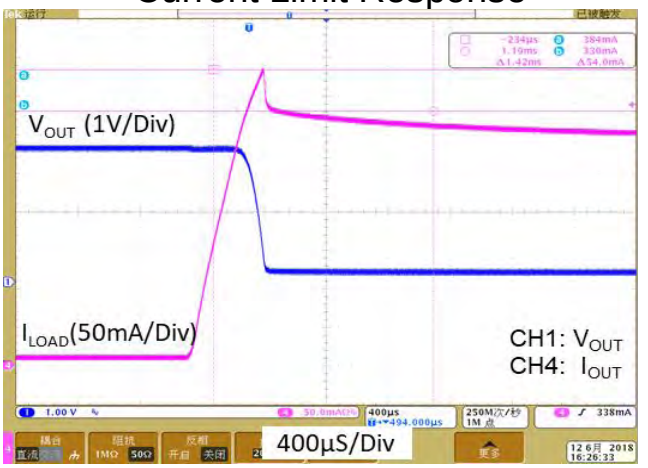




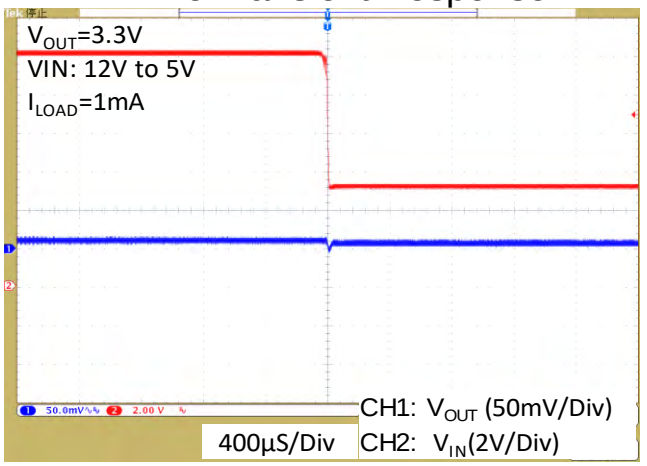
Load Transient Response



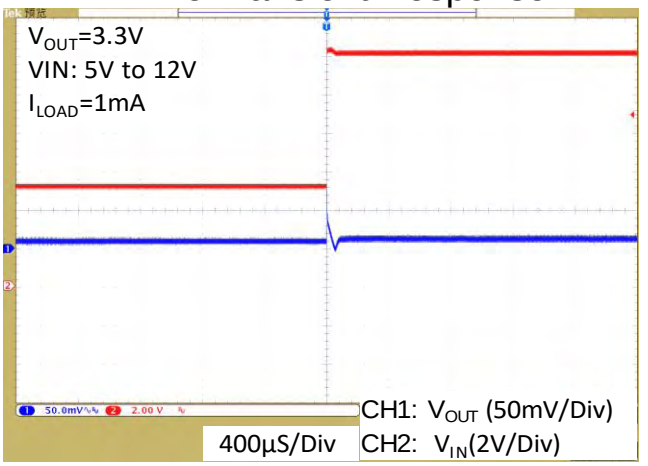
Current Limit Response



Line Transient Response



Line Transient Response



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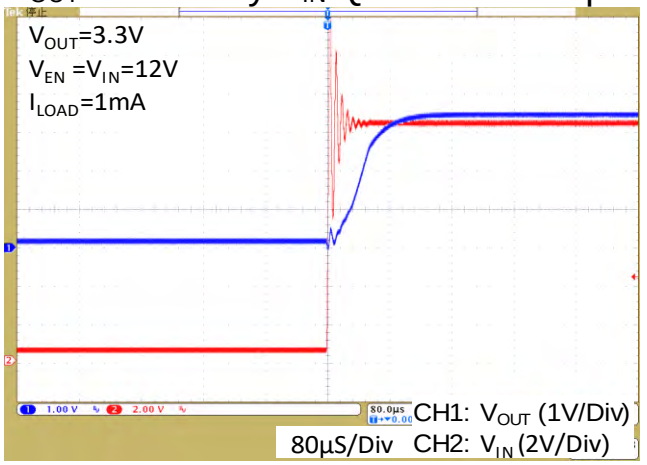
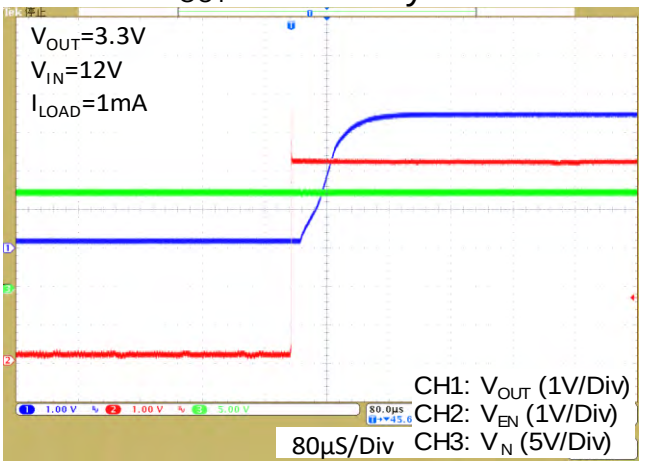
V_{OUT} Turn on by V_{IN} Quick Power Up



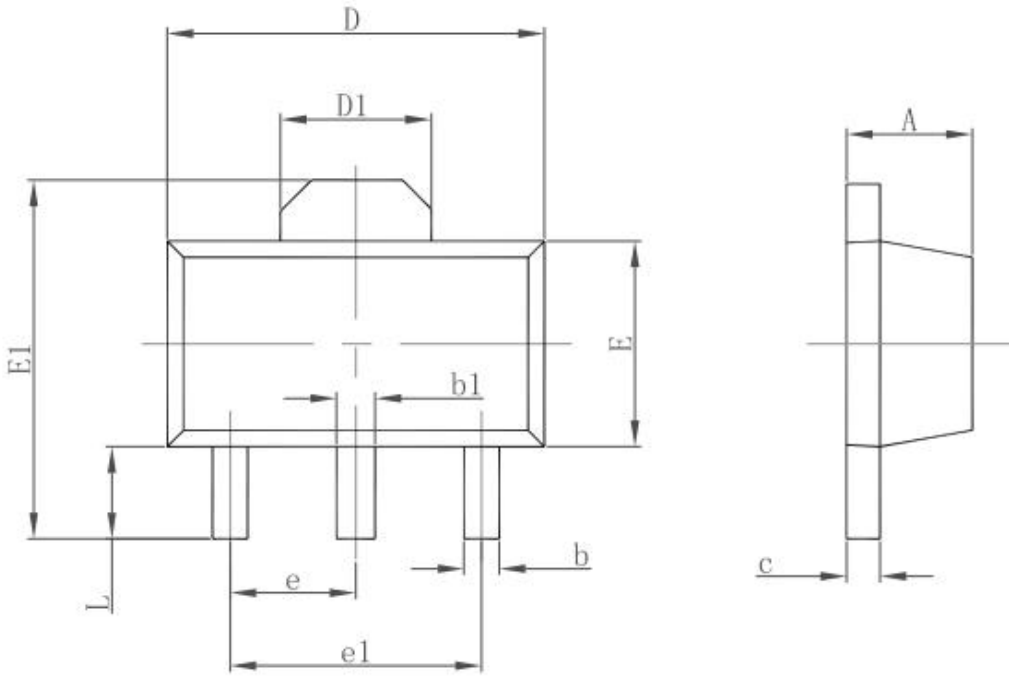
V_{OUT} Turn On by EN



60V,200mA,2uA, Higt PSRR Voltage Regulator

Package informantion

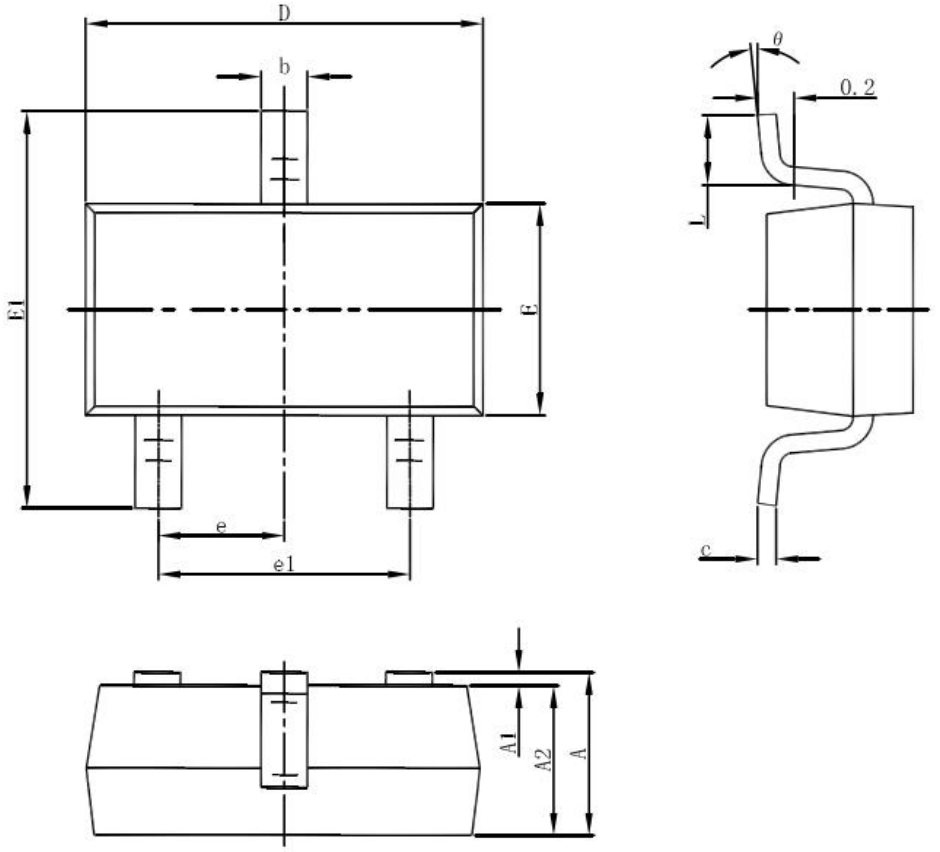
SOT89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

60V,200mA,2uA, Higt PSRR Voltage Regulator

3-pin SOT23-3L Outline Dimensions

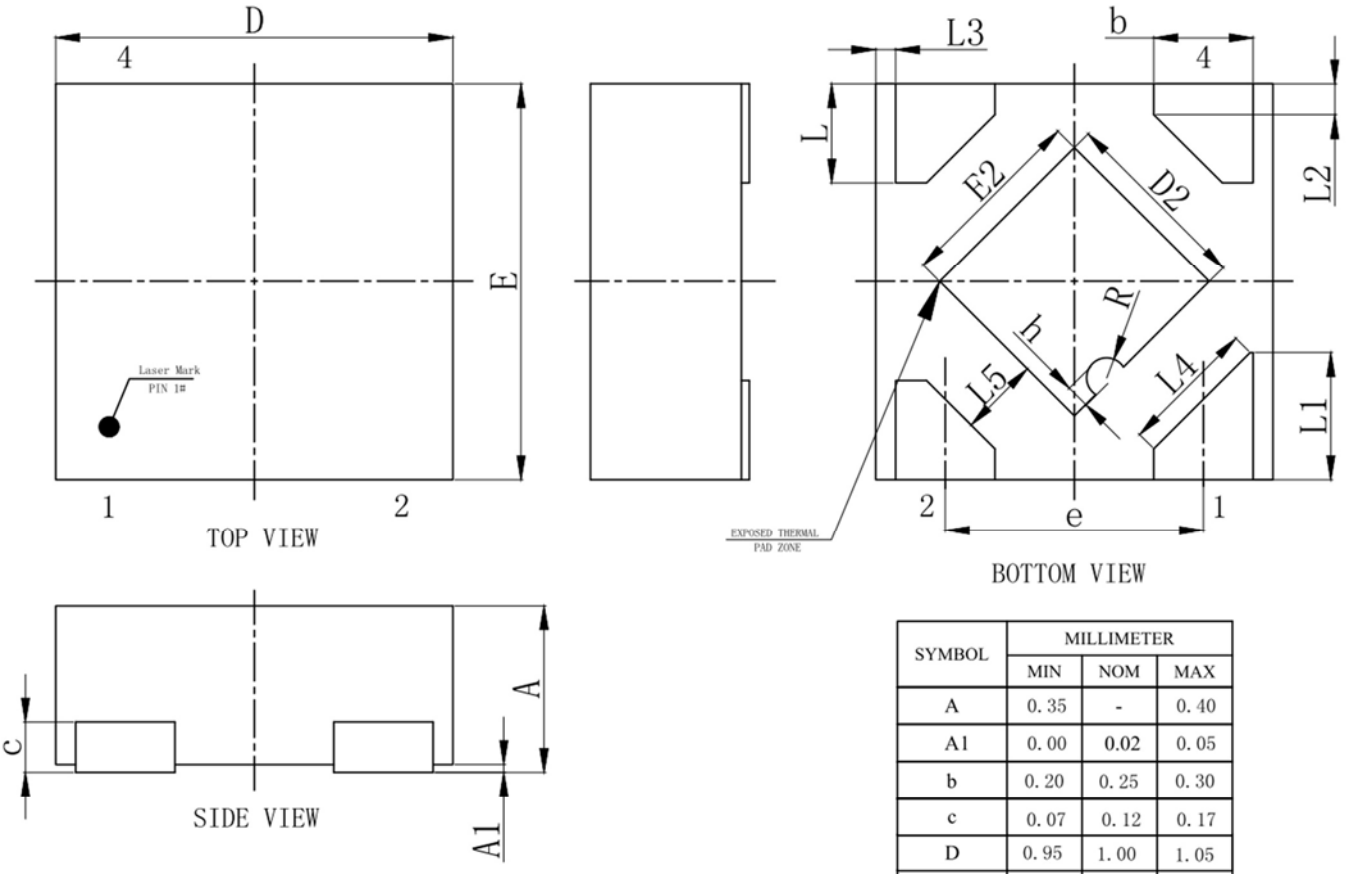


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)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

60V,200mA,2uA, Higt PSRR Voltage Regulator

Package informantion

DFN1X1-4 Outline Dimensions

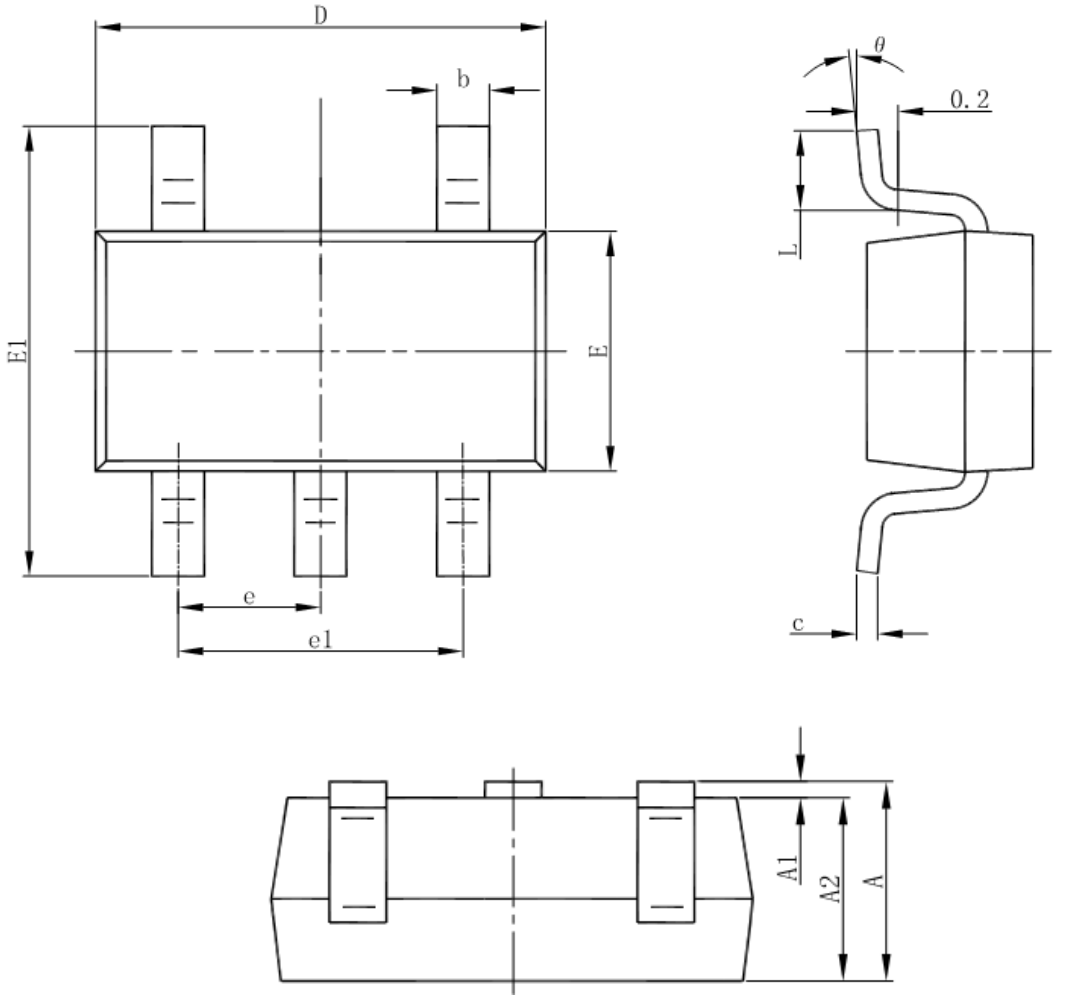


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.35	-	0.40
A1	0.00	0.02	0.05
b	0.20	0.25	0.30
c	0.07	0.12	0.17
D	0.95	1.00	1.05
D2	0.38	0.48	0.58
e	0.65BSC		
E	0.95	1.00	1.05
E2	0.38	0.48	0.58
L	0.20	0.25	0.30
L1	0.27	0.32	0.37
L2	0.077REF		
L3	0.05REF		
L4	0.34REF		
L5	0.20REF		
R	0.05REF		
h	0.06REF		

60V,200mA,2uA, Higt PSRR Voltage Regulator

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°