Positive Voltage Regulator

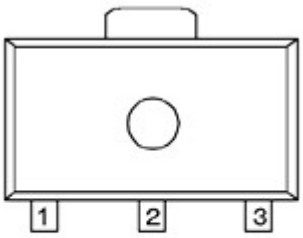
Features

- Maximum Output Current 500mA
- Dropout Voltage 0.25V at I_{out} = 150mA
- Maximum Operating Voltage 8V
- Output Voltage Range 1.7V to 5.0V
- Highly Accurate ± 2%
- Low Power Consumption 60μA (TYP.)

General Description

The FS3305 are highly precise, low power consumption, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The FS3305 consists of a current limiter Circuit, a driver transistor, a precision reference voltage and an error amplifier. Output voltage is selectable in 0.1V steps between 1.8V to 5.0V. SOT89 packages are available.

Package Information

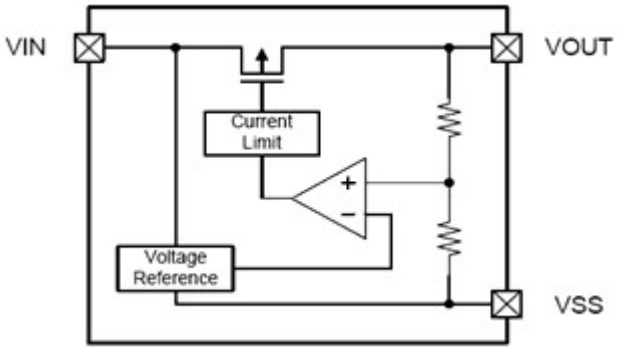


SOT-89
(TOP VIEW)

Pin Configurations

PIN	SOT89(G-Type)	SOT89(N-Type)
1	V_{OUT}	GND
2	GND	V_{IN}
3	V_{IN}	V_{OUT}

Functional Block Diagram



Ordering information

FS3305-① ② ③ ④ ⑤ ⑥

DESIGNATOR	SYMBOL	DESCRIPTION
① ②	Output Voltage	…25=2.5V; 27=2.7V; 30=3.0V; 33=3.3V; 36=3.6V; 50=5.0V …
③	Output Voltage Accuracy	2: ±2.0%
④	Pin Type:	G: G-Type ; N: N-Type
⑤ ⑥	Package Type:	SM:SOT89

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Input Voltage	V_{in}	-0.3 to 8.0	V
Output Current	I_{out}	500	mA
Output Voltage	V_{out}	V_{ss}-0.3 to V_{IN} +0.3	V
Power Dissipation (T_{amb} = 25℃)	SOT89	500	mW
Operating Temperature	T_{opr}	–40 to +125	℃
Storage Temperature	T_{stg}	–65 to +150	℃

Electrical Characteristics

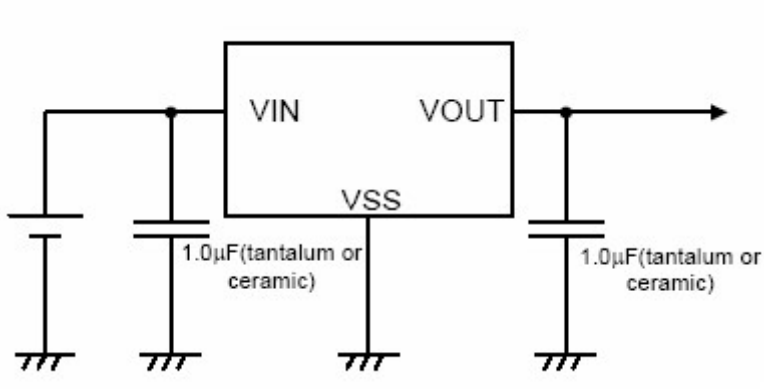
V_{in}=V_{out}+1V, T_a=25℃, C_{in}=1uF,C_L=1uF, unless otherwise sepcified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$	I_{OUT} = 40mA V_{IN}=$V_{OUT\ (T)}$+1V	0.98×$V_{OUT\ (T)}$	$V_{OUT\ (T)}$	1.02×$V_{OUT\ (T)}$	V
Maximum Output Current	$I_{OUT\ max}$	V_{IN} = V_{OUT}+1V	500	--	--	mA
Load Regulation	$\triangle V_{OUT}$	V_{IN} = V_{OUT}+1V 1mA ≤ I_{OUT} ≤ 150mA	--	20	50	mV
Dropout Voltage	V_{drop}	I_{OUT} = 150mA	--	250	300	mV
Supply Current	I_{SS}	V_{IN} = V_{OUT} + 1V	--	60	80	uA
Line Regulation	$\triangle V_{OUT}$/ ($\triangle V_{IN}$`V_{OUT})	I_{OUT} = 40mA V_{OUT} + 1V ≤ V_{IN} ≤ 6V	--	0.2	0.3	%V
Input Voltage	V_{IN}	--	--	--	6	v
Output Voltage Temperature Characteristics	$\triangle V_{OU}T$/ ($\triangle V_{IN}$`V_{OUT})	I_{OUT} = 40mA -40℃ ≤ T_a ≤ 85℃	--	±100	--	ppm /℃

Note:

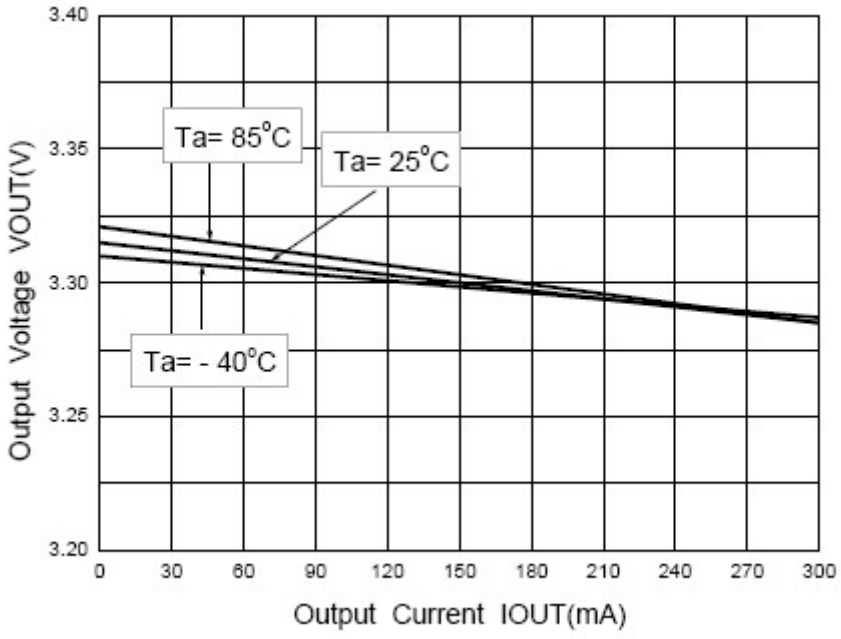
1. $V_{out(T)}$ = Specified output Voltage.
2. $V_{out(E)}$ = Effective output Voltage (i.e. the output voltage when "V_{out} (T)+1.0V" is provided at the V_{IN} pin while maintaining a certain I_{out} value)
3. V_{drop} = { V_{IN1} (note5) - V_{OUT1} (note4) }
4. V_{out1} = A voltage equal to 98% of the output voltage whenever an amply stabilized I_{out} ($V_{out(T)}$ +1.0V) is input.
5. V_{IN1} = The input voltage when V_{out} = V_{OUT1}

- **Typical Performance Characteristics** (T_J =25℃ Noted)

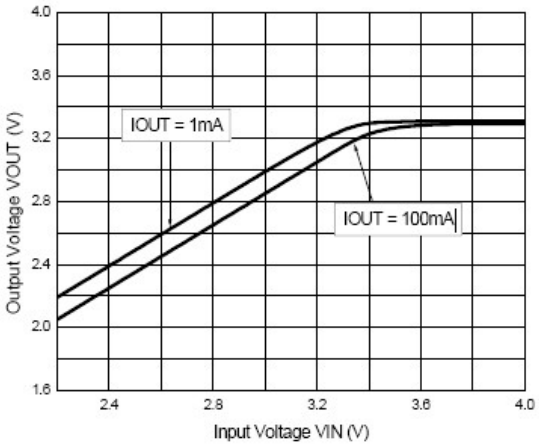


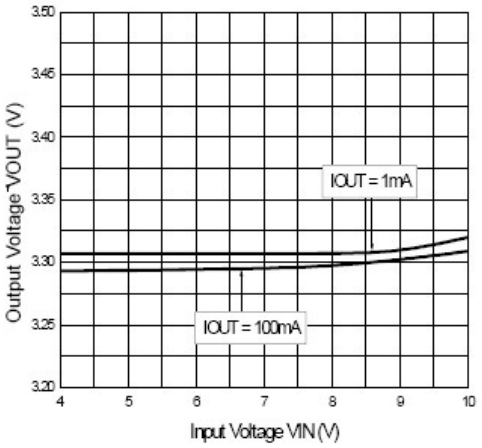
- **Typical Performance Characteristics**

1. Output Voltage vs. Output Current

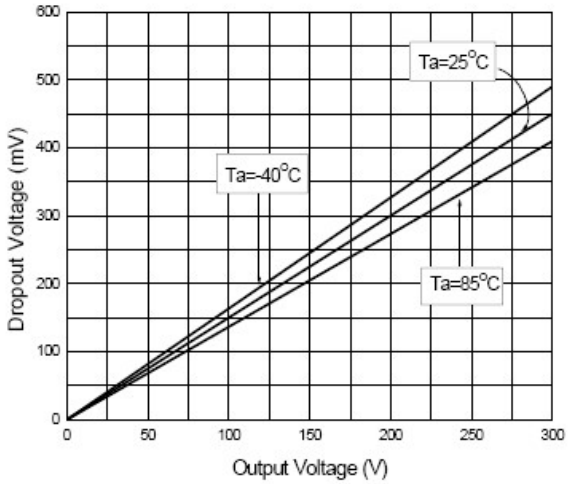


2. Output Voltage vs. Input Voltage

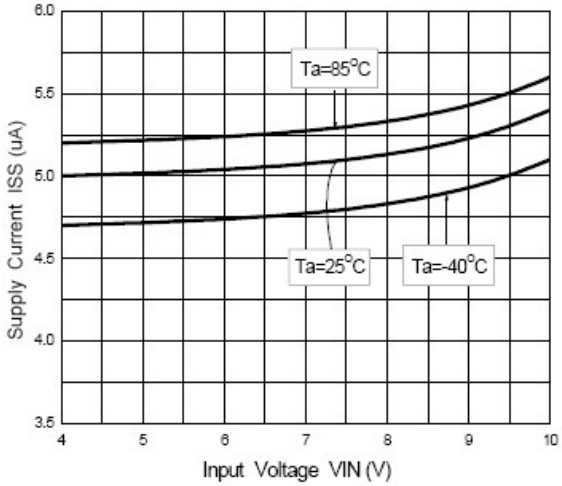




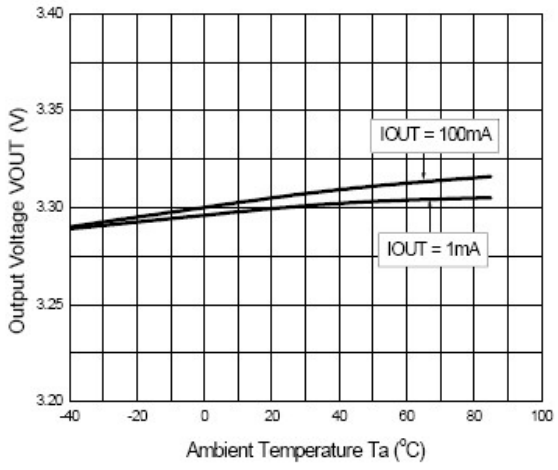
3. Dropout Voltage vs. Output Current



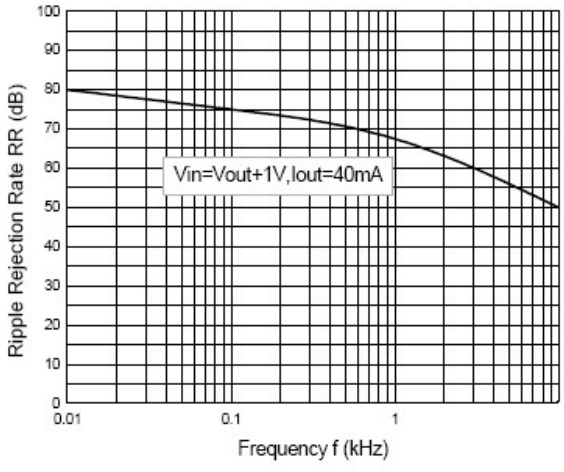
4. Supply Current vs. Input Voltage



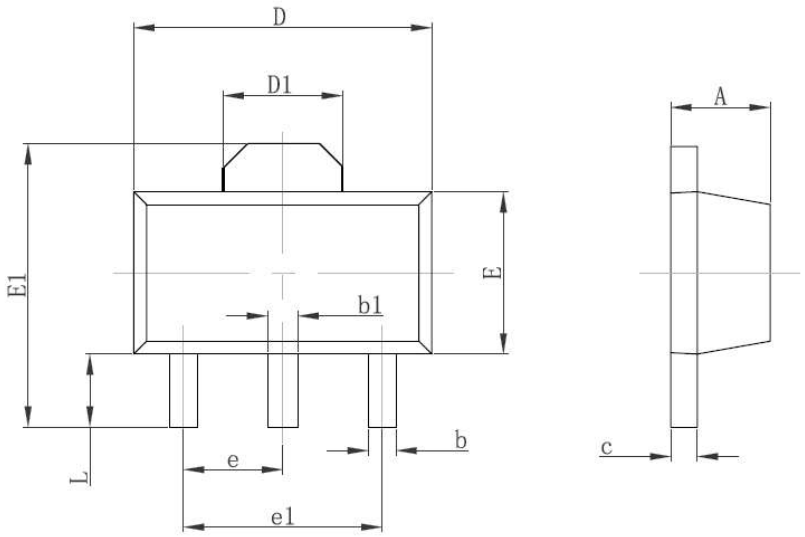
5. Output Voltage vs. Ambient Temperature



6 . Ripple Rejection Rate



- **Package Information**



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	0.197
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		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.200	0.035	0.047