



Low Current Consumption 300mA CMOS Voltage Regulator

Features

- Dropout voltage: 0.16V at 100mA
- Large output current: 300mA
- Input voltage: up to 18V
- Output voltage range: 1.5V~5.0V
- Low power consumption: 0.8uA(TYP.)

Typical Application

- Battery powered equipment
- Communication tools
- Mobile phones
- Portable games

General Description

FC181C series are highly precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage.

The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption. The FC181C series can operate with up to 18V input.

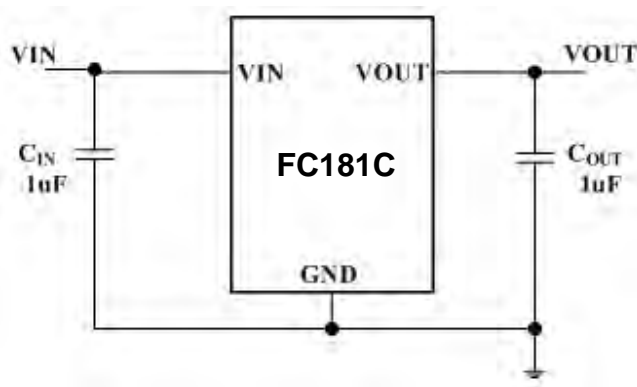
Selection Guide

FC181C 33 S5

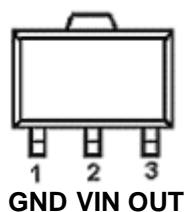
S3L: SOT-23-3L Package
T3: SOT-89-3 Package
S5: SOT-23-5 Package
D6: DFN2X2-6L Package

Output voltage: 33=3.3V
50=5.0V
28=2.8V
30=3.0V
XX=X.XV

Typical Application Circuit

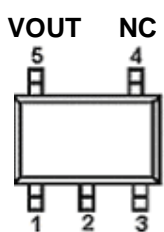


Pin Configuration



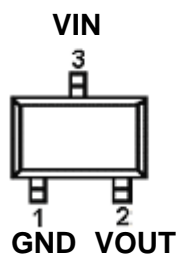
GND VIN OUT

SOT-89



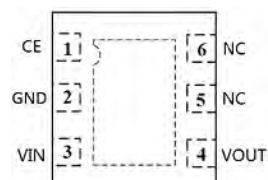
VIN GND CE

SOT-23-5



GND VOUT

SOT-23



DFN2X2-6L

Pin Assignment

Pin Number			Pin Name	Functions
SOT-89-3L	SOT-23-3L	SOT-23		
1	1	1	GND	Ground
2	3	3	VIN	Power Input
3	2	2	VOUT	Output

Pin Number		Pin Name	Functions
SOT-23-5	DFN2X2-6L		
1	3	VIN	Power Input
2	2	GND	Ground
3	1	CE	Chip Enable Pin
4	5, 6	NC	No Connection
5	4	VOUT	Output

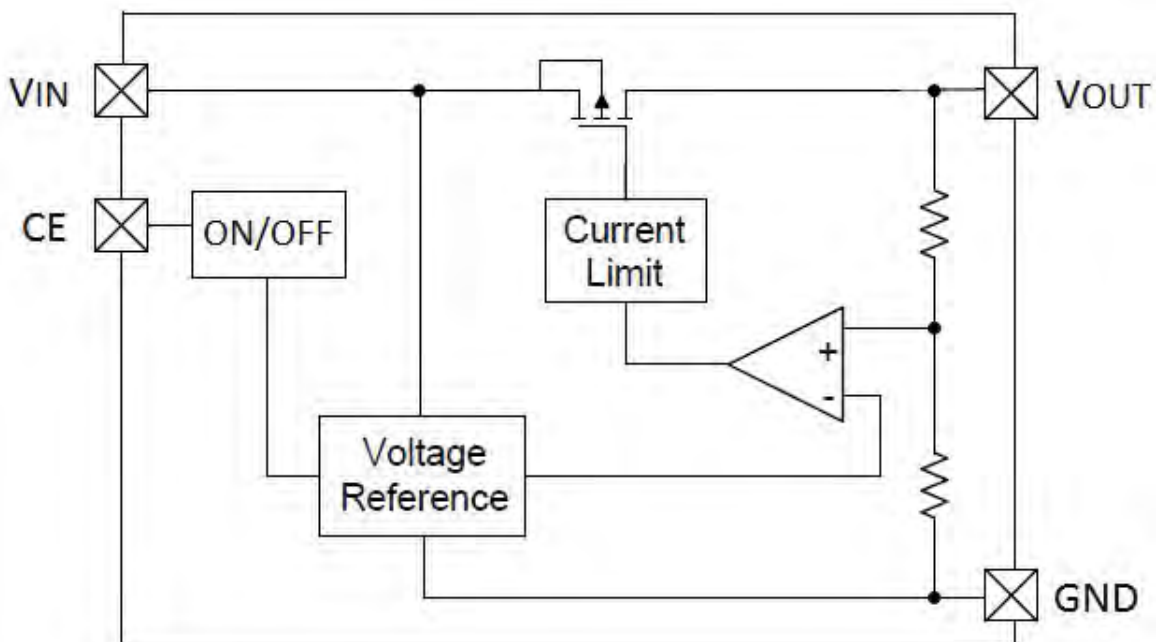
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNITS
INPUT VOLTAGE	V_{IN}	18	V
OUTPUT CURRENT	I_{out}	500	mA
OUTPUT VOLTAGE	V_{out}	$V_{ss}-0.3 \sim V_{out}+0.3$	V
OPERATING TEMP.	T_{Opr}	-40 ~ +85	°C
STORAGE TEMP.	T_{stg}	-55 ~ +125	°C
LEAD TEMP.	T_{solder}	260 °C, 10s	

PACKAGE DISSIPATION LEVEL

Package	Pd(mW)
SOT-23-5L	250

Block Diagram





FC181C

FC181C33 (VIN=4.3V, CIN=1uF~10uF, COUT=1uF~10uF, Ta=25°C)

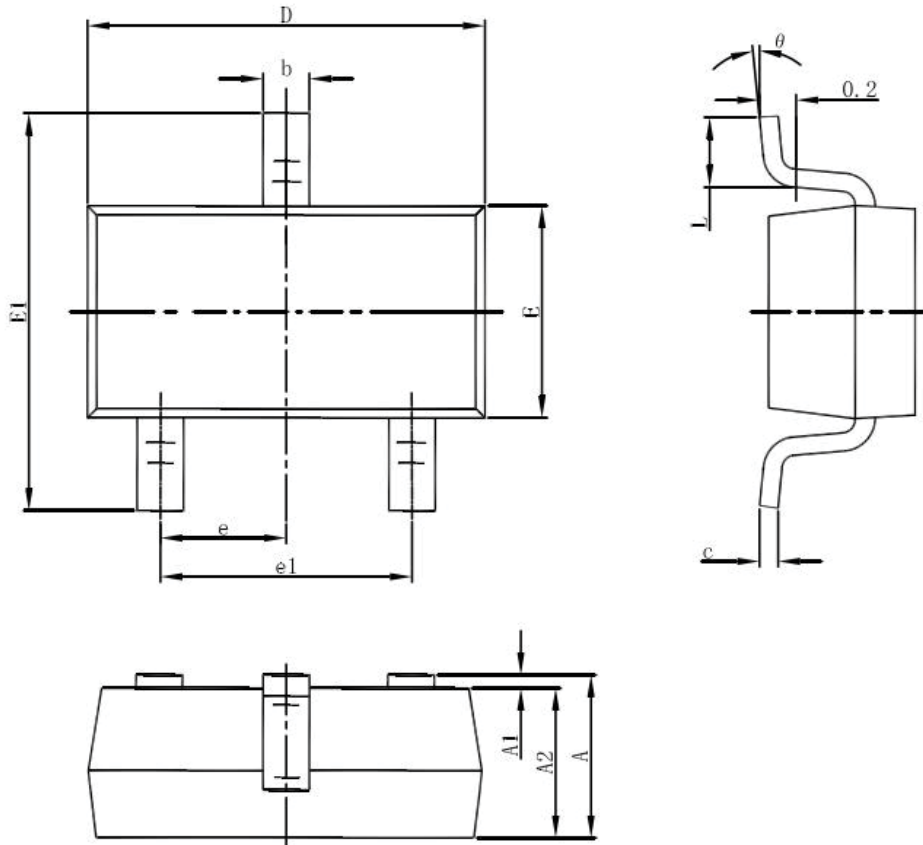
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Voltage					18.0	V
Supply Current	I _{SS}	V _{IN} = 4.3V		0.8		uA
Output Voltage	V _{OUT}	V _{IN} =4.3V, I _{OUT} =30mA	3.234	3.3	3.366	V
Max. Output Current	I _{OUT(max)}	V _{IN} =4.3V, 0.95*V _{OUT}		300		mA
Load Regulation	ΔV _{OUT}	V _{IN} =4.3V, 1mA≤I _{OUT} ≤100mA		6		mV
		V _{IN} =4.3V, 1mA≤I _{OUT} ≤200mA		12		mV
Dropout Voltage	V _{dif1}	I _{OUT} =10mA		160		mV
	V _{dif2}	I _{OUT} =200mA		320		mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	I _{OUT} =10mA, 4.3V≤V _{IN} ≤18V		0.02		%/V
CE "High" Voltage	V _{CEH}		1.3			V
CE "Low" Voltage	V _{CEL}				0.7	V
Short-circuit Current	I _{SHORT}	V _{IN} = 4.3V		40		mA
Over Current Protection	I _{LIMIT}	V _{IN} = 4.3V		500		mA
Auto Discharge Resistance	R _{DCHG}	V _{CE} =0V, V _{OUT} = V _{OUT} , V _{IN} = 5V		500		Ω

FC181C50 (VIN=6.0V, CIN=1uF~10uF, COUT=1uF~10uF, Ta=25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Voltage					18.0	V
Supply Current	I _{SS}	V _{IN} = 6.0V		0.8		uA
Output Voltage	V _{OUT}	V _{IN} =6.0V, I _{OUT} =30mA	4.9	5.0	5.1	
Max. Output Current	I _{OUT(max)}	V _{IN} =6.0V, 0.95*V _{OUT}		300		mA
Load Regulation	ΔV _{OUT}	V _{IN} =6.0V, 1mA≤I _{OUT} ≤100mA		4		mV
		V _{IN} =6.0V, 1mA≤I _{OUT} ≤200mA		8		mV
Dropout Voltage	V _{dif1}	I _{OUT} =100mA		120		mV
	V _{dif2}	I _{OUT} =200mA		240		mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	I _{OUT} =10mA, 6.0V≤V _{IN} ≤18V		0.02		%/V
CE "High" Voltage	V _{CEH}		1.3			V
CE "Low" Voltage	V _{CEL}				0.7	V
Short-circuit Current	I _{SHORT}	V _{IN} = 6.0V		40		mA
Over Current Protection	I _{LIMIT}	V _{IN} = 6.0V		500		mA
Auto Discharge Resistance	R _{DCHG}	V _{CE} =0V, V _{OUT} = V _{OUT} , V _{IN} = 5V		500		Ω

Package information

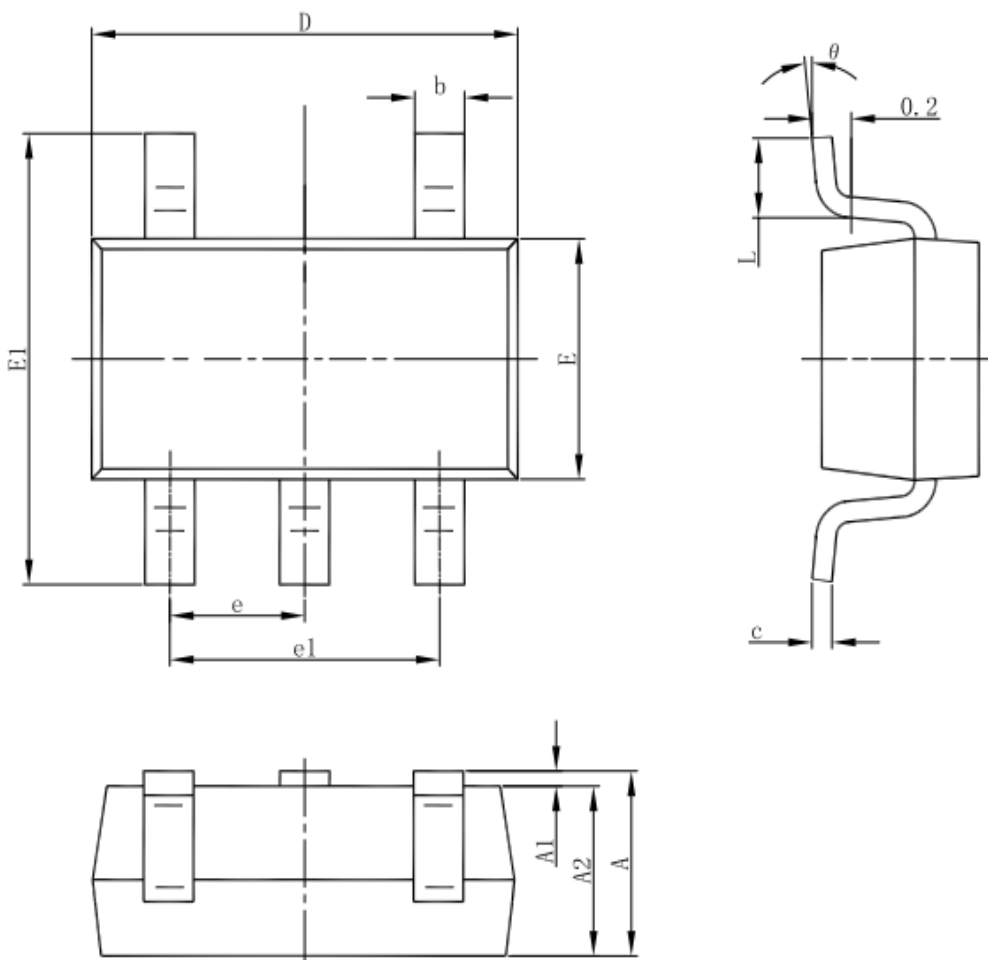
3-pin SOT-23-3L Outline Dimensions



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°

Package information

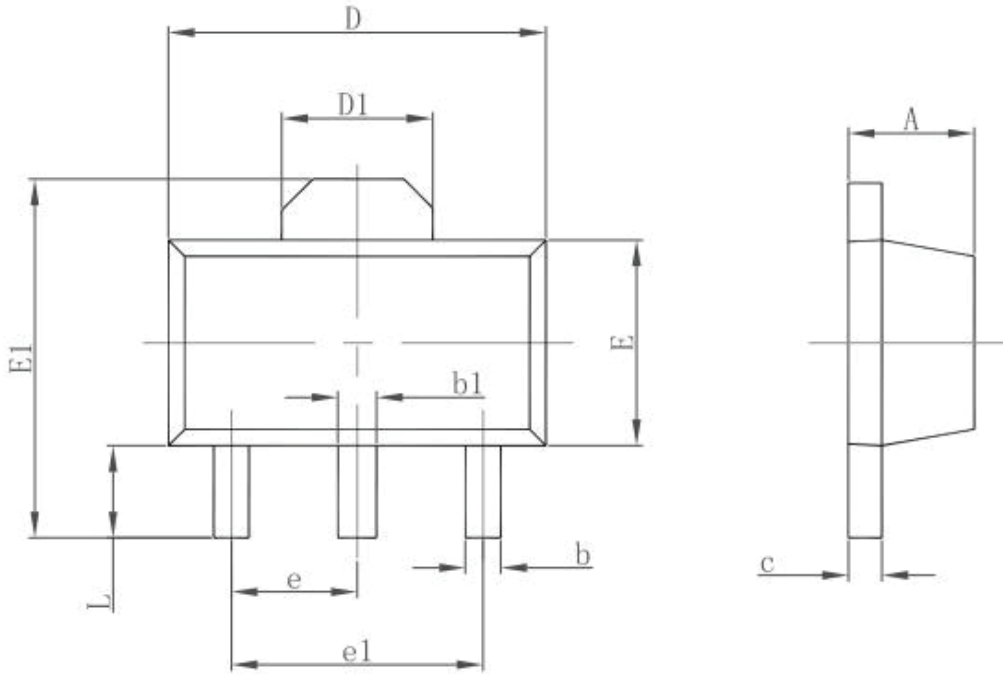
SOT-23-5



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°

Package information

SOT-89-3



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