FC2116 600mA Low Dropout CMOS Positive Voltage Regulator

CMOS Positive Voltage Regulator

Description

The FC2116 series of positive, linear regulators feature low quiescent current (30μA typ.) with low dropout voltage, making them ideal for battery applications.
These rugged devices have both Thermal Shutdown, and Current Fold-back to prevent device failure under the "Worst" of operating conditions.
The ' is stable with an output capacitance of 2.2μF or greater.

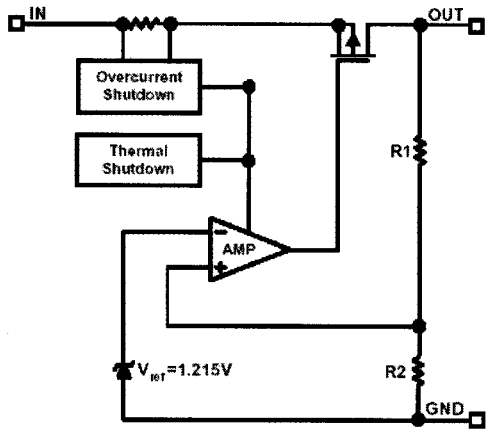
Features

- Very Low Dropout Voltage
- Guaranteed 600mA output
- Over-Temperature Shutdown
- Current Limiting
- Short Circuit Current Fold-back
- Factory Pre-set Output Voltage
- Highly Accurate± 1.5%
- Low Temperature Coefficient

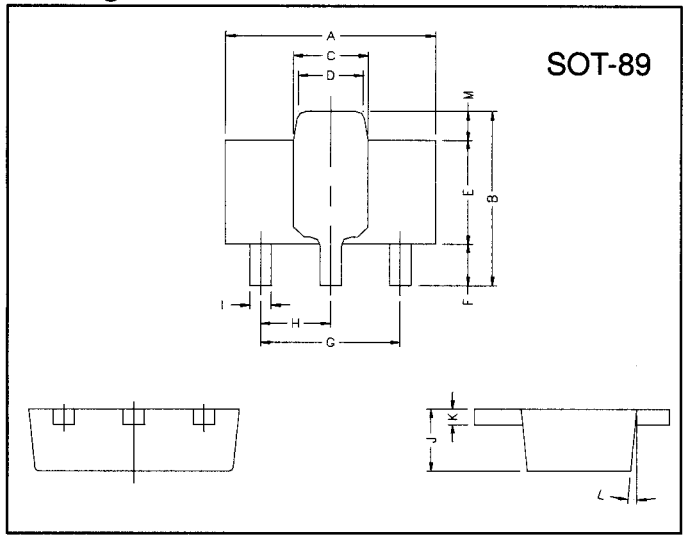
Applications

- Battery Powered Widgets
- Instrumentation
- Wireless Devices
- Cordless Phones
- PC Peripherals
- Portable Electronics
- Electronic Scales

Block Diagram

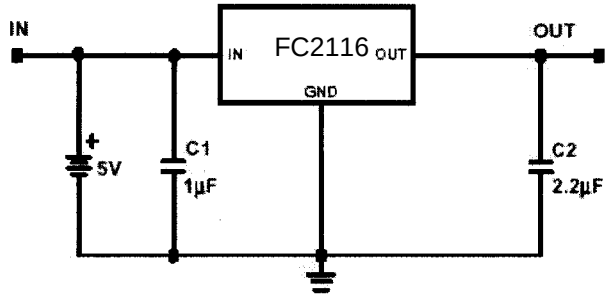


Package Dimensions



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.4	4.6	G	3.00 REF.	
B	4.05	4.25	H	1.50 REF.	
C	1.50	1.70	I	0.40	0.52
D	1.30	1.50	J	1.40	1.60
E	2.40	2.60	K	0.35	0.41
F	0.89	1.20	L	5° TYP.	
			M	0.70 REF.	

Typical Application Circuit



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Input Max Voltage	V_{IN}	8	V
Output Current	I_{OUT}	1	A
Output Voltage	V_{OUT}	1.3~3.8	V
Supply Voltage	V_{IN}	4.5~5.5	V
Operating Ambient Temperature	Topr	-40 ~ +85	℃
Junction Temperature	Tj	-40 ~ +125	℃
Maximum Junction Temperature	$T_{j\,Max}$	150	℃
Thermal Resistance	θjc	18	℃/W
	θja	180	℃/W
Power Dissipation(△T=100℃)	PD	550	mW
EDS Classification		B	

Electrical Characteristics Ta=25℃ unless otherwise noted

Parameter	Symbol	Condition		Min	TYP	Max	Unit
Output Voltage	$V_{OUT(E)}$ (Note1)	$V_{IN}=V_{OUT(T)}+1V$, I_O=1mA		-1.5%	$V_{OUT(T)}$ (Note2)	1.5%	V
Output Current	I_O	$V_{IN}=V_{OUT(T)}+2V$, $V_{OUT}\geqq V_{OUT(E)}*0.96$		600	-	-	mA
Current Limit	I_{LIM}	V_O>1.2V		600	800	-	mA
Load Regulation	REG_{LOAD}	$V_{IN}=V_{OUT(T)}+2V$, I_O=1mA to 600mA		-	0.2	1	%
Dropout Voltage	$V_{DROPOUT}$	I_O=600mA $V_O=V_{OUT(E)}$-2%	1.3V≦$V_{OUT(T)}$≦1.4V	-	-	1900	mV
			1.4V<$V_{OUT(T)}$≦2.0V	-	-	1400	
			2.0V<$V_{OUT(T)}$≦2.8V	-	-	800	
			2.8V<$V_{OUT(T)}$	-	-	600	
Quiescent Current	I_Q	V_{IN}= $V_{OUT(T)}$+1V, I_O=0mA		-	30	50	μA
Line Regulation	REG_{LINE}	I_O=1mA $V_{IN}=V_{OUT(T)}$+1 to $V_{OUT(T)}$+2	1.3V≦$V_{OUT(T)}$≦1.4V	-0.2	-	0.2	%
			1.4V<$V_{OUT(T)}$≦2.0V	-0.15	-	0.15	
			2.0V<$V_{OUT(T)}$<4.0V	-0.1	0.02	0.1	
			4.0V≦$V_{OUT(T)}$	-0.4	0.2	0.4	
Input Voltage	VIN			Note3	-	7	V
Over Temperature Shutdown	OTS			-	150	-	℃
Over Temperature Hysterisis	OTH			-	30	-	℃
Output Voltage Temperature Coefficient	TC			-	30	-	ppm/℃
Short Circuit Current(Note4)	I_{SC}	$V_{IN}=V_{OUT(T)}$+1V, V_{OUT}<0.8V		-	300	600	mA
Power Supply Rejection	PSRR	I_O=100mA C_O=2.2μF	f=100Hz	-	60	-	dB
			f=1kHz	-	50	-	
			f=10kHz	-	20	-	
Output Voltage Noise	eN	f=10Hz~100kHz I_O=10mA, C_{BYP}=0μF	C_O=2.2μF	-	30	-	μVrms

Note 1: V_{OUT} (E) =Effective Output Voltage (i.e. the output voltage when "V_{OUT} (T) + 1.0V" is provided at the VIN pin while maintaining a certain I_{OUT} value).

2: V_{OUT} (T) =Specified Output Voltage

3: $V_{IN\,(MIN)}$ =V_{OUT}+$V_{DROPOUT}$

4: To prevent the Short Circuit Current protection feature from being prematurely activated, the input voltage must be applied before a current source load is applied.

OUTPUT VOLTAGE

FC2116-1.3V	FC2116-2.7V	FC2116-3.4V
FC2116-1.5V	FC2116-2.8V	FC2116-3.5V
FC2116-1.8V	FC2116-2.9V	FC2116-3.6V
FC2116-1.9V	FC2116-3.0V	FC2116-3.7V
FC2116-2.0V	FC2116-3.1V	FC2116-3.8V
FC2116-2.5V	FC2116-3.3V	FC2116-2.85V

Characteristics Curve

