



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 regulator is stable with an output capacitance of 2.2µF or greater.

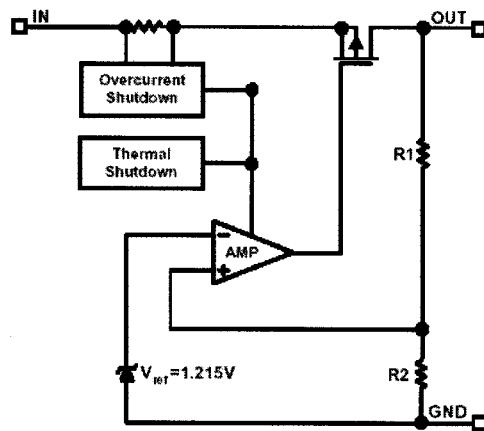
Features

- 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

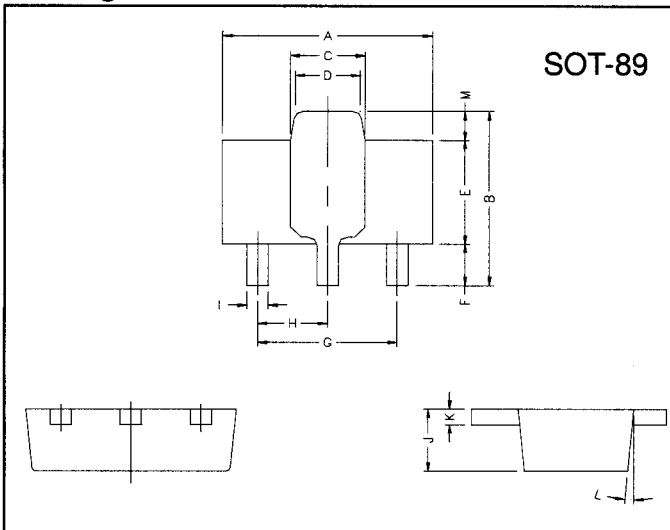
Applications

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

Block Diagram

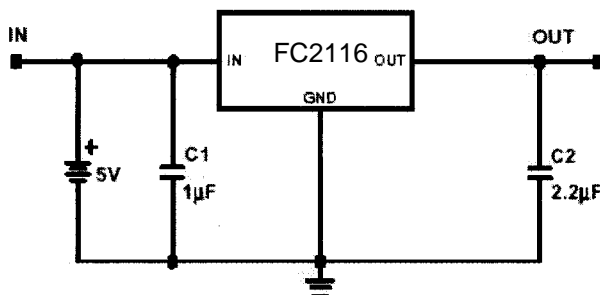


Package Dimensions



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





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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	T _{opr}	-40 ~ +85	°C
Junction Temperature	T _j	-40 ~ +125	°C
Maximum Junction Temperature	T _{j Max}	150	°C
Thermal Resistance	θ _{jc}	18	°C/W
	θ _{ja}	180	°C/W
Power Dissipation(ΔT=100°C)	PD	550	mW
EDS Classification		B	

Electrical Characteristics Ta=25°C 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} ≥V _{OUT(E)} *0.96	600	-	-	mA	
Current Limit	I _{LM}	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	V _{IN}		Note3	-	7	V	
Over Temperature Shutdown	OTS		-	150	-	°C	
Over Temperature Hysteresis	OTH		-	30	-	°C	
Output Voltage Temperature Coefficient	TC		-	30	-	ppm/°C	
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	e _N	f=10Hz~100kHz I _o =10mA, C _{BYP} =0μF				μVrms	

Note 1: 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).

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.



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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

