



AnaSem Analog Semiconductor IC VR P Series

#08-12

High Speed/Low Dropout/High Accuracy CMOS Positive Voltage Regulator

Description

The VRP Series is a positive voltage regulator where low dropout and highly accurate output were achieved by low current consumption. The output voltage guarantees $\pm 1\%$ within the range of all temperatures by Vref that the temperature characteristic is controlled. It corresponds to the low ESR capacitor as an output stabilization capacitor. To make the current capacity of the output transistor not exceeded, the overcurrent protection circuit is built in.

Feature

Output voltage: 1.2 ~ 5.0V (Selectable 0.1V Step)
 High accuracy output voltage: $\pm 1\%$ (-40 ~ 85)
 Maximum output current: 300mA
 Dropout voltage: 200mV (Output: 3.0V Iout: 100mA)
 Maximum input voltage: 6.0V
 Low current consumption: 1.5 μ A/Typ, 3.0 μ A/Max
 Low ESR capacitor : ceramic capacitor
 Operating temperature range: -40 to 85
 Built-in overcurrent protector
 Small package: SOT-23(400mW) LLP-6(600mW)

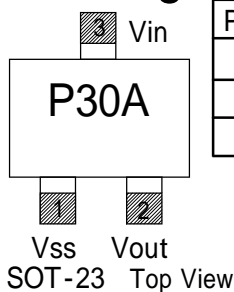
Applications

Battery powered-devices
 Cellular phones
 Digital/Video cameras
 Portable games
 Handheld instruments

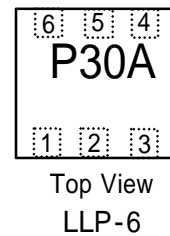
Product Number: VRP3010PTA
 VRP3010PLA

VRP	3010:Output Voltage Spec	P :Function Spec	T :Package L :Package	A :Version
AnaSem V/R P-Series	30:3.0V Output 10:1% Accuracy 20:2% Accuracy	P :Input/1.8 ~ 6.0V Output/+1.2 ~ 5.0V	T:SOT-23 L:LLP-6	A :-40 ~ +85

Pin Configuration

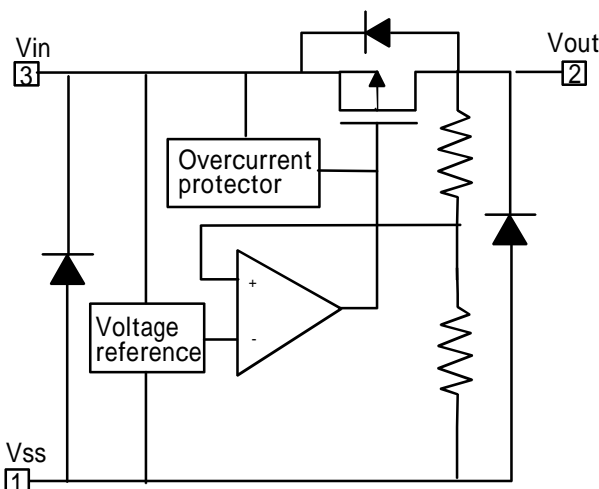


Pin	Name	Description
1	Vss	Power Ground
2	Vout	Output
3	Vin	Input Voltage

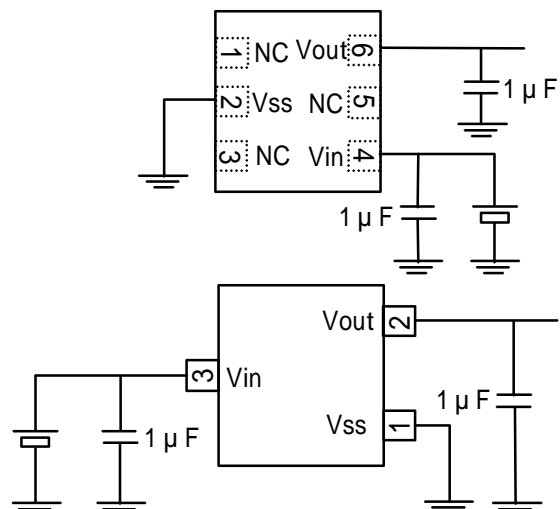


Pin	Name	Description
1	NC	
2	Vss	Power Ground
3	NC	
4	Vin	Input Voltage
5	NC	
6	Vout	Output

Block Diagram

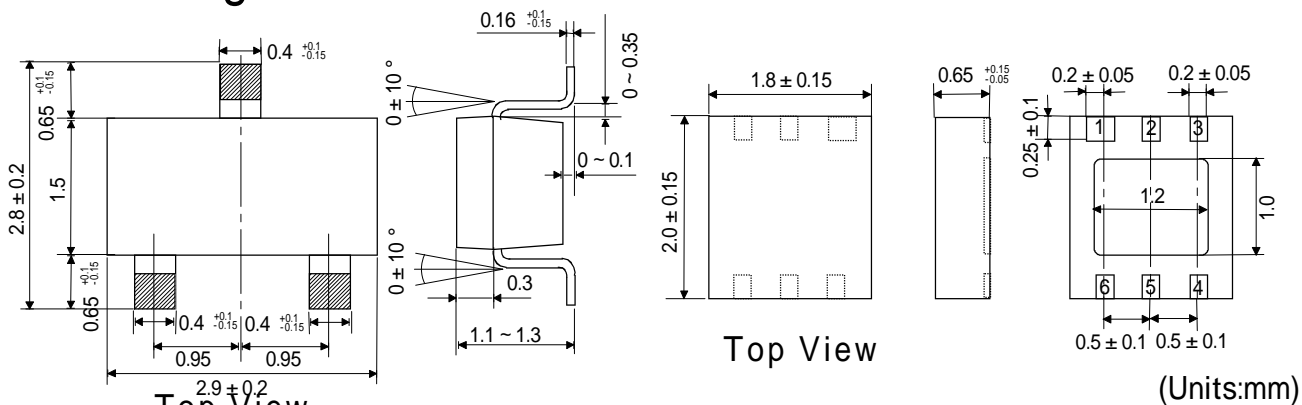


Typical Application



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Package Size



Absolute Maximum Rating

Item	Sign	Value
Input Supply Voltage	Vin	-0.3V ~ +7.0V
Output Current	Iout	500mA
Output Voltage	Vout	Vss-0.3V ~ Vin+0.3V
Power Dissipation	SOT-23	Pd 400mW(ON PCB)
	LLP-6	Pd 600mW(ON PCB)
Operating Temperature Range	Topr	-40 ~ +85
Storage Temperature Range	Tstg	-50 ~ +125

Electric Characteristics

Ta=25

Item	Symbol	Measurement condition	Spec			Unit	
			Min	Typ	Max		
Output voltage	Vout	Vout+1.0V Vin 6.0V Iout=30mA	Vout 2.0V	Vout × 0.99	Vout	V	
		-40 Ta +85	Vout 1.9V	Vout -0.02	Vout	V	
Output current	Iout	Vin Vout+1.0V	1.2 Vout 1.5V		100	mA	
			1.6 Vout 1.9V		150	mA	
			2.0 Vout 2.4V		200	mA	
			2.5 Vout 2.9V		250	mA	
			3.0 Vout 3.9V		300	mA	
			4.0 Vout 5.0V		300	mA	
Dropout voltage	Vdrop	Iout=60mA	1.2 Vout 1.5V		600	900	mV
			1.6 Vout 1.9V		500	800	mV
		Iout=100mA	2.0 Vout 2.4V		400	640	mV
			2.5 Vout 2.9V		300	500	mV
			3.0 Vout 3.9V		250	440	mV
			4.0 Vout 5.0V		200	360	mV
Power dissipation	Idd	Vin=Vout+1.0V,Vout=Open		1.5	3.0	μA	
Input voltage	Vin		1.8		6.0	μA	
Load regulation	Vout	Vin=Vout+1.0V,1mA Iout 80mA			40	mV	
Line regulation	$\frac{Vout}{Vin \cdot Vout}$	Vout+0.5V Vin 6.0V,Iout=30mA		0.05	0.20	%/V	
Output voltage temperature coefficient	$\frac{Vout}{Ta \cdot Vout}$	Vin=Vout+1.0V,Vout 1.95V,Iout=30mA -40 Ta +85		± 20		ppm/	
Output voltage temperature coefficient	$\frac{Vout}{Ta \cdot Vout}$	Vin=Vout+1.0V,Vout 1.9V,Iout=30mA -40 Ta +85		± 100		ppm/	
Short circuit current	Ishort	Vin=Vout+1.0V,Vout=0V		100		mA	

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