250mA Low Dropout Linear Voltage Regulator

• Features

• CMOS Low Power Consumption 5.0 μ A (TYP.)
• Dropout Voltage: 100mV @ 100mA 200mV @ 200mA
• Output Current: more than 250mA (5.0V type)
• Highly Accurate: ± 2%
• Current Limiter Circuit Built-In
• Output Voltage Range: 1.5V to 5.0V

• Description

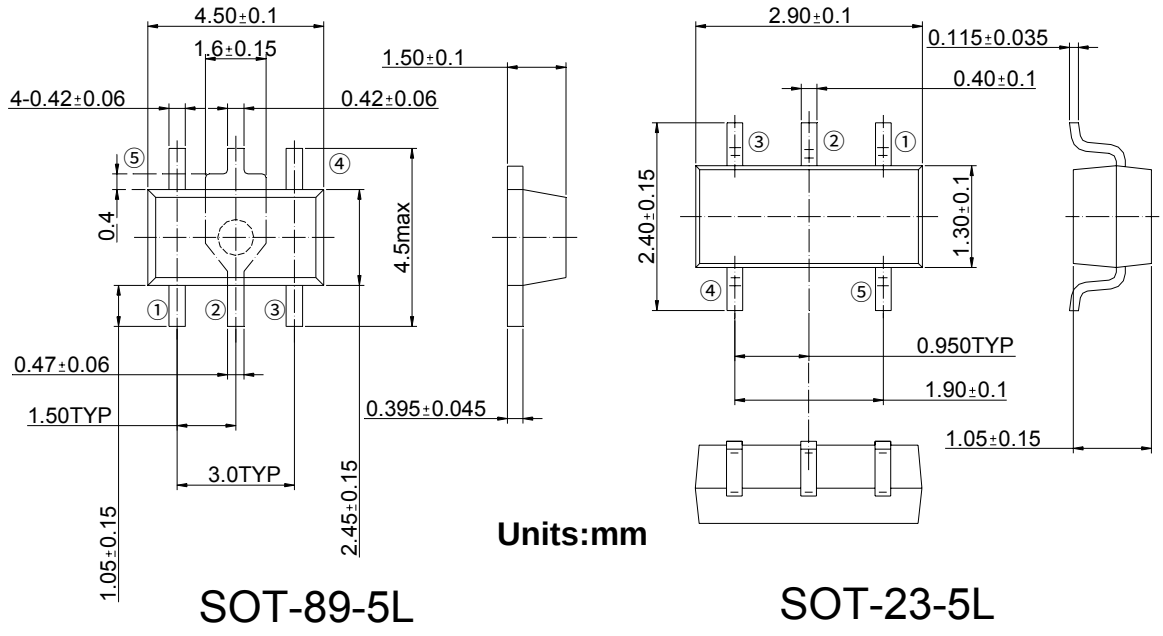
The RCR3132 series are precise, low power consumption, high voltage; positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The RCR3132 series consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit.

The current limiter's fold back circuit also operates as a short protect for the output current limiter and the output pin. Laser trimming technologies can set output voltage internally. It is selectable within a range of 1.5V to 5V.
SOT-23-5L and SOT-89-5L packages are available.

• Applications

• Battery powered equipment
• Reference voltage sources
• Cameras, Video cameras
• Portable AV systems
• Mobile phones
• Communication tools
• Portable games

• Pin Configurations



• Functional Pin Description

Pin Name	FUNCTION	Pin Name	
		SOT-89-5L	SOT-23-5L
V_{IN}	Input	4	1
V_{OUT}	Output	5	5
GND	Ground	2	2
CE	ON/OFF Control	3	3
NC	No Connection	1	4

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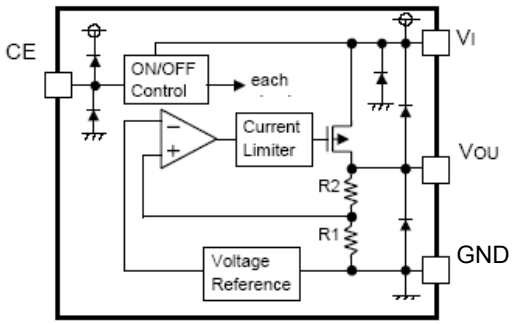
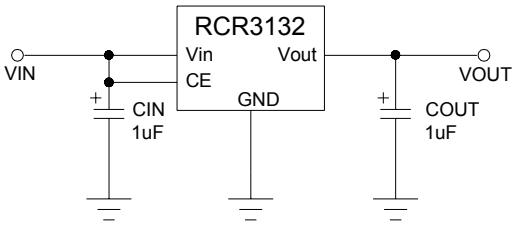
Internal Block Diagram



• Typical Application Circuit



Ordering information

RCR3132-□ □ □ □ □

Package Type: SK: SOT-23-5L

SN: SOT-89-5L

Output Voltage Accuracy:

2: within ±2%

Output Voltage

15=1.5V, 18=1.8V, 20=2.0V, 25=2.5V, 33=3.3V, 50=5.0V

• Absolute Maximum Ratings

Parameter		Value	Unit
Input Voltage		10	V
Output Current		500	mA
Output Voltage		Vss-0.3 ~V_{IN}+0.3	V
Operating Ambient Temperature		-40 to +85	℃
Storage Temperature		-55 to +125	℃
Continuous Total Power Dissipation	SOT-23-5L	250	mW
	SOT-89-5L	500	mW

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Conditions		Min	Typ	Max	Units
Output Voltage(1)	V_{OUT}(E)(NOTE2)	I_{OUT}=40mA		×0.98	V_{OUT}(T)	×1.02	V
Maximum Output Current	I_{OUT}			200	--	--	mA
Load Regulation	△VOUT	1mA≤I_{OUT}≤100mA		--	25	--	mV
Dropout Voltage	Vdif1	I_{OUT}=30mA	V_{OUT}≥2.8V	--	--	30	mV
			V_{OUT}=2.5V	--	--	50	
			V_{OUT}<1.8V	--	--	250	
	Vdif2	I_{OUT}=100mA	V_{OUT}≥2.8V	--	--	100	mV
			V_{OUT}=2.5V	--	--	150	
			V_{OUT}<1.8V	--	--	500	
Supply Current	Iss	V_{IN}=4.0V		--	5.0		μA
Standby Current	Istby	VIN=VOUT(T)+1.0V, VCE=VSS			0.01	0.10	μA
Line Regulations	$\frac{V_{OUT}}{V_{OUT}*\triangle V_{IN}}$	I_{OUT}=40mA V_{OUT}(T)+1.0V≤V_{IN}≤6V		--	0.01	0.3	%/V
Input Voltage	V_{IN}			1.8	--	6	V
Output Voltage Temperature Characteristics	$\frac{\triangle V_{OUT}}{\triangle Topr*\triangle V_{OUT}}$	I_{OUT}=40mA -40°C ≤ Topr ≤ 85°C		--	±100	--	ppm/°C
Output Noise	en	IOUT=10mA, 300Hz~50kHz			30		μVrms
Current Limiter	I_{short}	V_{IN}=V_{OUT}+1.5V, V_{OUT}=Vss			100		mA
Ripple-Rejection	|RR|	V_{IN}=V_{OUT}+3.0V, f = 120Hz V_{PP}=1V, I_{OUT}=90mA		60			dB
CE "High" Voltage	VCEH			1.6		VIN	V
CE "Low" Voltage	VCEL					0.25	V
CE "High" Current (A series)	ICEH	VIN=VCE=VOUT(T)+1.0V		-0.1		20	μA
CE "High" Current (B series)	ICEH	VIN=VCE=VOUT(T)+1.0V		-0.1		0.10	μA
CE "Low" Current	ICEL	V_{IN}=V_{OUT}(T)+1.0V, V_{CE}=V_{SS}		-0.1		0.10	μA

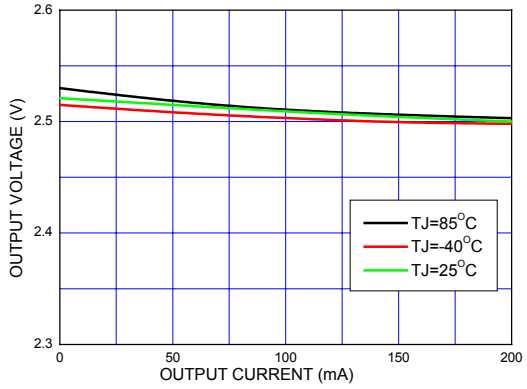
Note:

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 VIN pin while maintaining a certain I_{OUT} value).
3. Vdif= {V_{IN}1 (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. $V_{IN\,1}$ = The Input Voltage when V_{OUT1} appears as Input Voltage is gradually decreased.
6. Unless otherwise stated, V_{IN} = $V_{OUT(T)}$+1.0V

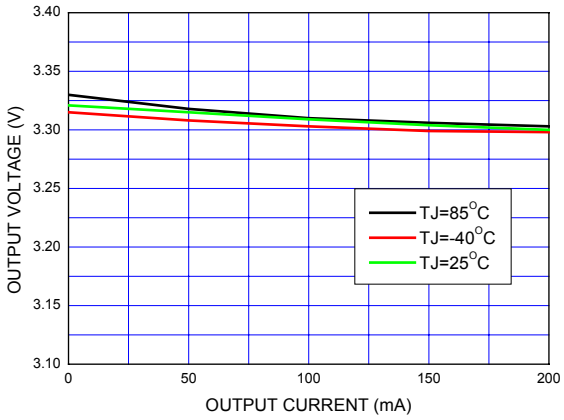
TYPICAL PERFORMANCE CHARACTERISTICS

OUTPUT VOLTAGE vs. OUTPUT CURRENT

RCR3132-2.5 VIN=4.0V
CIN=1μF (ceramic), CL= 1μF(Ceramic)

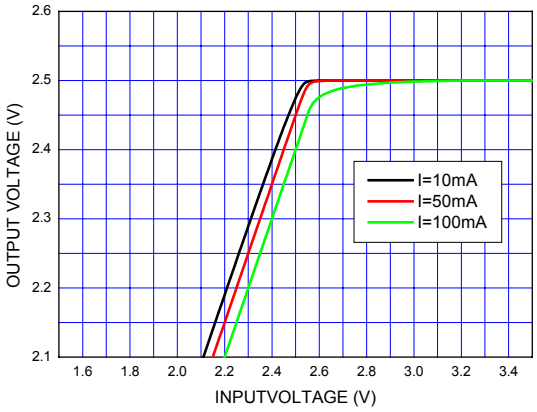


RCR3132-3.3 VIN=4.0V
CIN=1μF (ceramic), CL= 1μF(Ceramic)

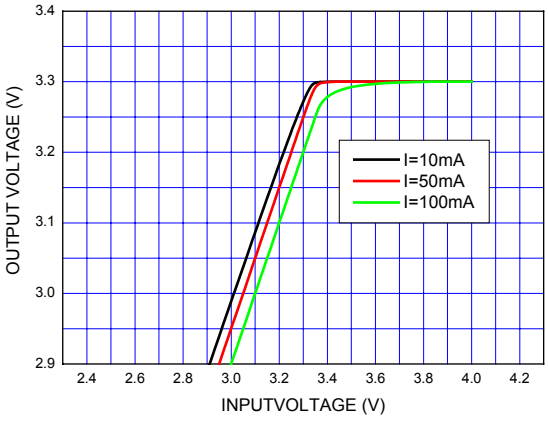


OUTPUT VOLTAGE vs. INPUT VOLTAGE

RCR3132-2.5 Ta=25°C
CIN=1μF (ceramic), CL= 1μF(Ceramic)

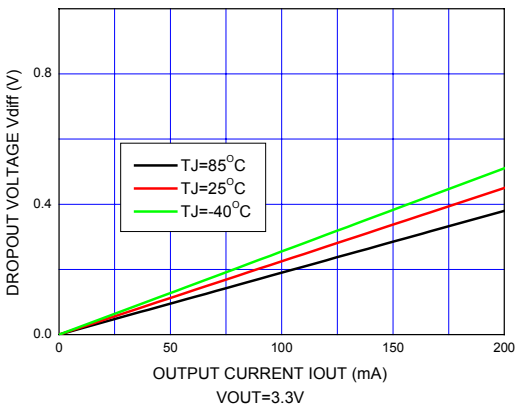


RCR3132-3.3 Ta=25°C
CIN=1μF (ceramic), CL= 1μF(Ceramic)

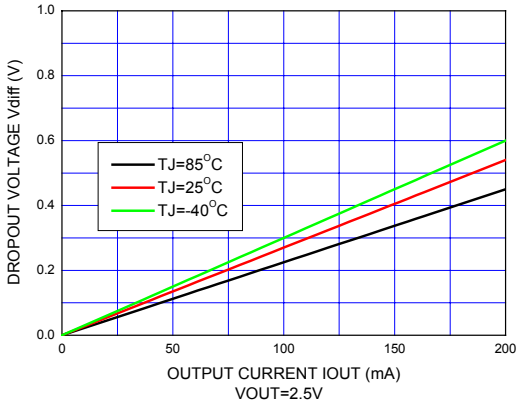


DROPOUT VOLTAGE vs. OUTPUT CURRENT

RCR3132-2.5 Ta=25°C
CIN=1μF (ceramic), CL= 1μF(Ceramic)



RCR3132-3.3 Ta=25°C
CIN=1μF (ceramic), CL= 1μF(Ceramic)



RIPPLE REJECTION RATE

RCR3132-3.3

V_{IN}=6V_{DC}+1V_{p-p}AC

CIN=1μF (ceramic), CL= 1μF(Ceramic)