Dual Low Dropout Linear Voltage Regulators

Features

- CMOS Low Power Consumption 4.0μA (TYP.)
- Low Dropout Voltage : 250mV at I_{OUT} = 100mA
- Output Current : more than 250mA
- Highly Accurate : ± 2%
- Internal current limiting and short protecting
- High Ripple Rejection :70DB(1KHz)
- Operating Temperature Range: -40℃ to +85℃

General Description

The RCR3402 series are highly accurate, dual、low noise, CMOS LDO voltage regulators, one channel output voltage is 1.5V , the other channel output voltage is 3.0V .Performance features of the series includes low output noise, high ripple rejection ratio, low dropout and very fast turn-on times.

The RCR3402 includes a reference voltage source, error amplifiers, The series provides large currents with a significantly small dropout voltage. The RCR3402 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit.

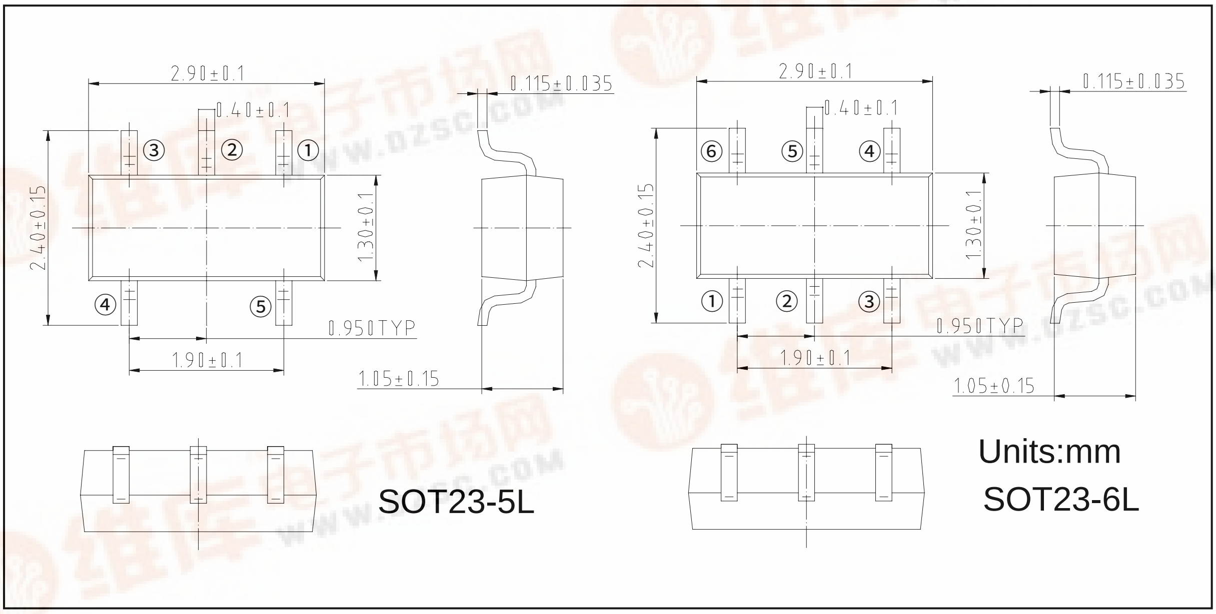
The current limiter's feedback circuit also operates as a short protect for the output current limiter.

SOT23-5L & SOT23-6L packages are available.

Applications

- Battery powered equipment
- Reference voltage sources
- Cameras, Video cameras
- Portable AV systems
- Mobile phones
- MP3
- Communication tools
- Portable games

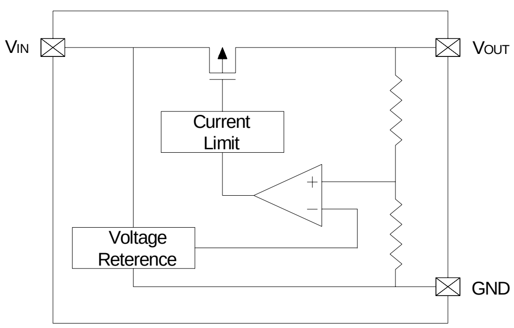
Package Information



Pin Configuration

Pin Configuration Code									
A		B		C		D		E	
Pin Name	SOT23-5L	Pin Name	SOT23-6L	Pin Name	SOT23-6L	Pin Name	SOT23-6L	Pin Name	SOT23-5L
①	VIN2	①	VIN2	①	VIN2	①	VIN1	①	VOUT2
②	GND	②	GND	②	VIN1	②	VIN2	②	GND
③	VIN1	③	VIN1	③	GND	③	GND	③	VOUT1
④	VOUT1	④	VOUT1	④	VOUT2	④	VOUT2	④	VIN1
⑤	VOUT2	⑤	NC	⑤	NC	⑤	NC	⑤	VIN2
		⑥	VOUT2	⑥	VOUT1	⑥	VOUT1		

Functional Block Diagram



Ordering information

RCR3402 -□ □ □ □ □

Package Type:
SK: SOT23-5L;SL: SOT23-6L;

Pin Assignment:
A; B; C; D; E Refer to the Pin Configuration

Output Voltage
13: Vout1=1.5V & Vout2=3.0V;
31: Vout1=3.0V & Vout2=1.5V;
……………………………….
Refer to the Followed Output Voltage Select Table

Indicates the product number

Output Voltage Select Table (Please connect the provider for details, the followed explanation just a part not all)

Output Voltage Code: 1 = 1.5V; 2 = 1.8V; 3 = 3.0V; 4 = 3.3V; 5 = 3.6V; …… A = 4.0V …… Z = 5.0V			
Code	**Explanation**	**Code**	**Explanation**
13	V_{OUT1} = 1.5V & V_{OUT2} = 3.0V	5A	V_{OUT1} = 3.6V & V_{OUT2} = 4.0V
31	V_{OUT1} = 3.0V & V_{OUT2} = 1.5V	Z3	V_{OUT1} = 5.0V & V_{OUT2} = 3.0V
21	V_{OUT1} = 1.8V & V_{OUT2} = 1.5V	AZ	V_{OUT1} = 4.0V & V_{OUT2} = 5.0V

- **Absolute Maximum Ratings**

Parameter	Symbol		Ratings	Unit
Input Voltage	V_{IN}		-0.3 to 9	V
Output Current	I_{OUT}		350	mA
Output Voltage	V_{OUT}		Vss-0.3 to V_{IN}+0.3	V
Operating Ambient Temperature	T_{OPR}		-40 to +125	℃
Storage Temperature	T_{STG}		-65 to +150	℃
Continuous Total Power Dissipation	P_D	SOT23-5L	250	mW
		SOT23-6L	400	

- **Electrical Characteristics**

$V_{IN} = V_{OUT}$+1V,T_A = 25℃,C_{IN} = 10uF,C_L = 10uF,unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	$V_{OUT(E)}$	I_{OUT} = 40mA	×0.98	$V_{OUT(T)}$	×1.02	V
Maximum Output Current	I_{OUT}		250	--	--	mA
Load Regulation	$\triangle V_{OUT}$	1mA $\leq I_{OUT} \leq$ 100mA	--	25	--	mV
Dropout Voltage	V_{DROP1}	I_{OUT} = 80mA	--	150	--	mV
	V_{DROP2}	I_{OUT} = 160mA	--	320	--	mV
Supply Current	I_{SS}	V_{IN} = 4.0V	--	4.0	--	μA
Line Regulations	$\frac{V_{OUT}}{V_{OUT}*\triangle V_{IN}}$	I_{OUT} = 40mA $V_{OUT(T)}$+1.0V$\leq V_{IN} \leq$6V	--	0.01	0.3	%/V
Input Voltage	V_{IN}			--	9	V
Output Voltage Temperature Characteristics	$\frac{\triangle V_{OUT}}{\triangle T_{OPR}*\triangle V_{OUT}}$	I_{OUT} = 40mA -40℃ $\leq T_{OPR} \leq$ 85℃	--	±100	--	ppm/℃

Note 1. $V_{OUT(T)}$=Specified Output Voltage .

Note 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).

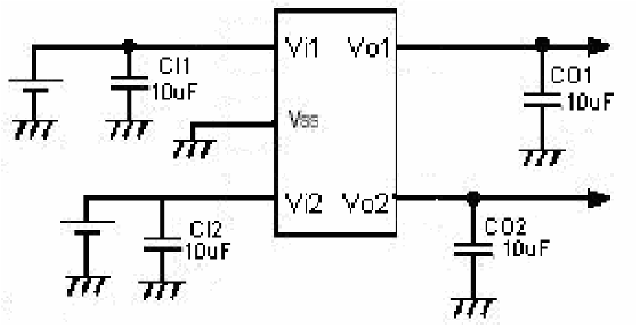
Note 3. V_{DROP} = { V_{IN}1 (Note5)-V_{OUT1} (Note4) }

Note 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.

Note 5. $V_{IN\,1}$ = The Input Voltage when V_{OUT1} appears as Input Voltage is gradually decreased.

Note 6. Unless otherwise stated, $V_{IN} = V_{OUT(T)}$+1.0V

Typical Application Circuit



All capacitors are tantalum or ceramic

- **Typical Performance Characteristics**

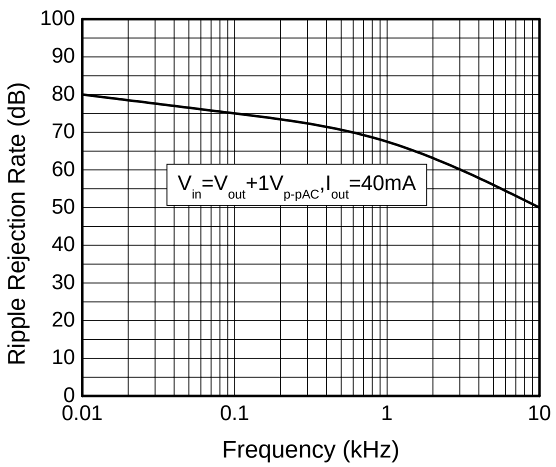


Figure2. Ripple Rejection Rate

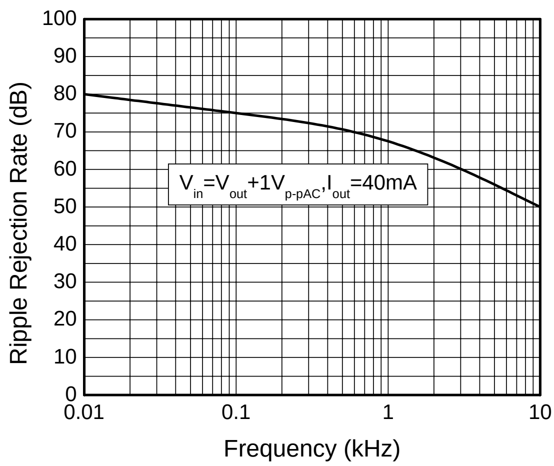


Figure2. Ripple Rejection Rate

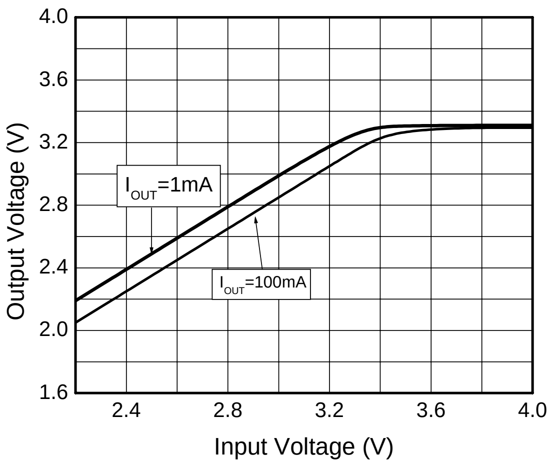


Figure3. Output Voltage vs. Input Voltage

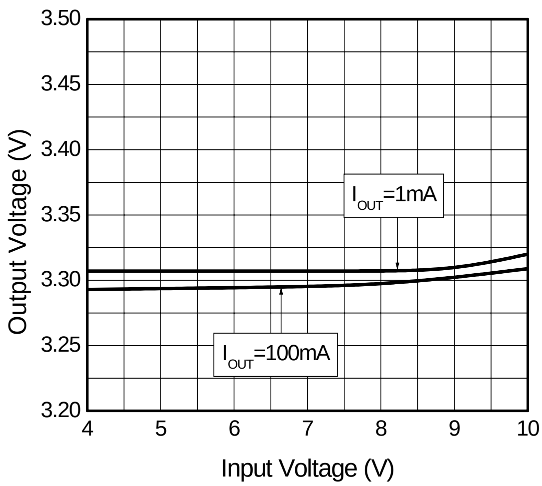


Figure4. Output Voltage vs. Input Voltage

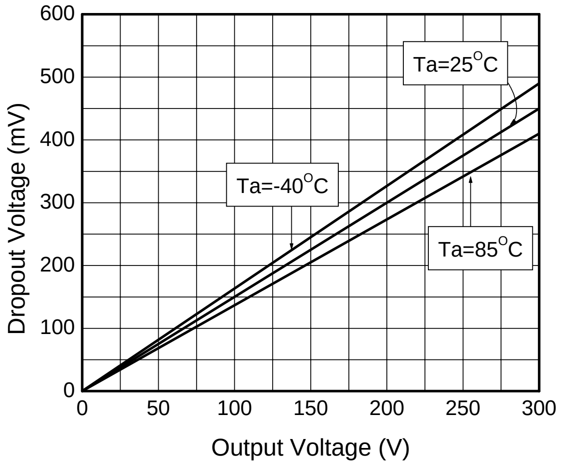


Figure5.Dropout Voltage vs. Output Current

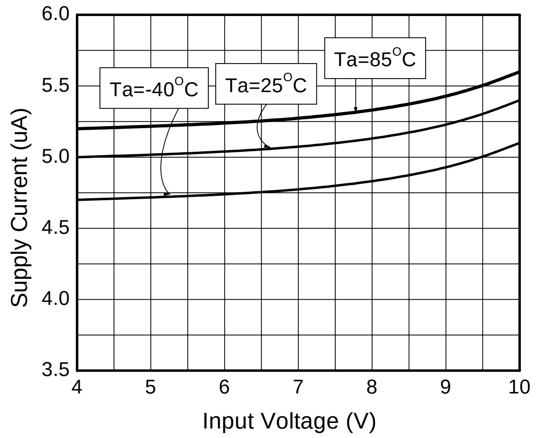


Figure6. Supply Current vs. Input Voltage

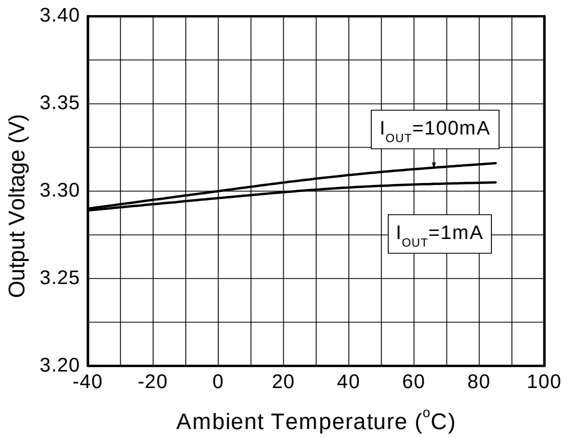


Figure7.Output Voltage vs. Ambient Temperature

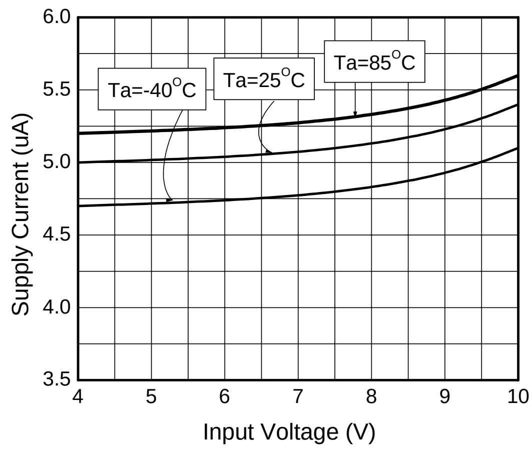


Figure8.Supply Current vs. Ambient Temperature

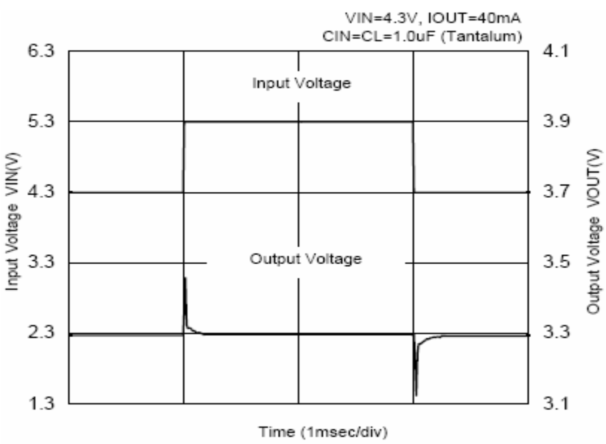


Figure 9. Input Transient Response

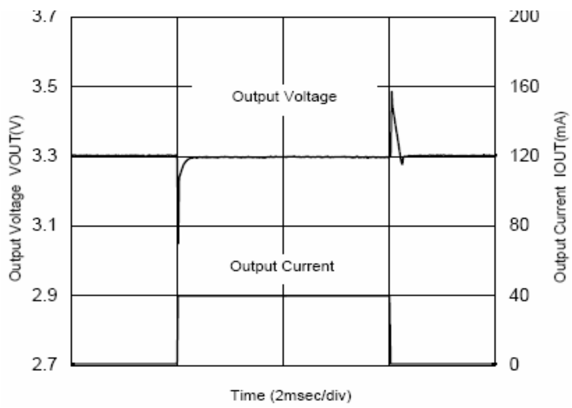


Figure 10. Load Transient Response

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