



1.5uA I_Q , 500mA Adjustable Low-Dropout Linear Regulator

General Description

The VD8102 ultra-low quiescent current regulator features low dropout voltage and low current in the standby mode. With less than 1.5uA quiescent current at no load, the VD8102 is ideally suited for standby micro-control-unit systems, especially for always-on applications like portable, and other battery-operated systems. The VD8102 retains all the features that are common to low dropout regulators including a low dropout PMOS pass device, short circuit protection, and thermal shutdown.

The VD8102 has a 6V maximum operating voltage limit, a -40°C to 125°C operating temperature range, and $\pm 2\%$ output voltage tolerance. The VD8102 is available in SOT23-5 surface mount packages.

Ordering Information

Part Number	Package	Vout
VD8102	SOT23-5	Adjustable

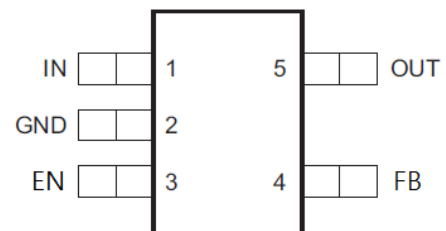
Features

- V_{IN} Range up to 6V
- Output Voltage Tolerances of $\pm 2\%$
- Output Current of 500mA
- Ultra Low Quiescent Current ($I_Q = 1.5\mu\text{A}$)
- Dropout Voltage Typically 660mV at $I_{OUT} = 500\text{mA}$
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limit
- Ceramic Capacitor Stable

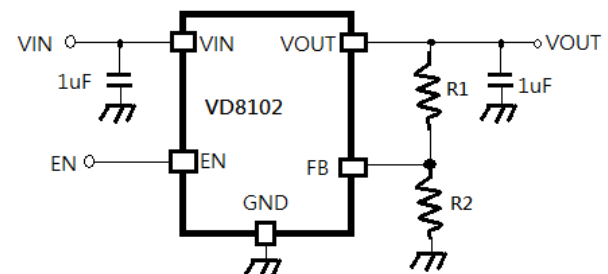
Applications

- Portable, Battery Powered Equipment
- Ultra Low Power Microcontroller
- Notebook computers

Pin Configuration



Typical Application Circuit



Ceramic Capacitor Stable

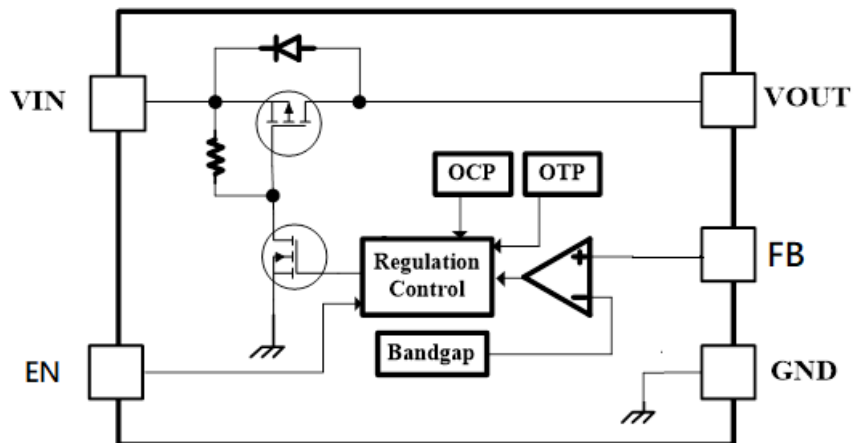
Vout	R1	R2
3.3	1162K	330K
3.0	1026K	330K
2.5	800K	330K
1.8	484K	330K



Pin Assignment

Pin Name	Pin No. SOT23-5	Pin Function
VOUT	5	Output Voltage Pin
GND	2	Ground
VIN	1	Input Voltage pin.
EN	3	Enable
FB	4	Feedback

Function Block Diagram





Absolute Maximum Ratings (Note1)

- V_{IN} ----- -0.3V to +6.5V
- Junction Temperature----- 150°C
- Lead Temperature (Soldering, 10 sec.)----- 300°C
- Storage Temperature ----- -65°C to 150°C

Recommended Operating Conditions

- Input Voltage, V_{IN} ----- +2.5V to +5.5V
- Junction Temperature ----- -40°C to 125°C

Electrical Characteristics

$V_{IN} = V_{OUT} + 1V$, $I_{OUT} = 1mA$, $C_{IN} = C_{OUT} = 1\mu F$, $T_J = 25^\circ C$, unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Feedback Voltage Accuracy	V_{FB}		0.715	0.73	0.745	V
Line Regulation	ΔV_{LINE}	$V_{IN} = V_{OUT} + 1V$ to 5.5V		0.6	1.5	%
Load Regulation	ΔV_{LOAD}	$I_{OUT} = 1mA$ to 250mA			1	%
		$I_{OUT} = 1mA$ to 500mA			1.5	
Dropout Voltage	V_{DROP}	$I_{OUT} = 100mA$, $V_{OUT} = 3.3V$		130		mV
		$I_{OUT} = 500mA$, $V_{OUT} = 3.3V$		660		mV
		$I_{OUT} = 100mA$, $V_{OUT} = 1.8V$		200		mV
Quiescent Current	I_Q	$T_J = 25^\circ C$		1.5	3	uA
Current Limit	I_{CL}		510	610		mA
Enable high level	V_{ENHI}		0.7			V
Enable low level	V_{ENLO}				0.2	V
Power-supply rejection ratio	PSRR	$f = 1kHz$		60		dB
Thermal Shutdown	T_{SD}			150		°C
Thermal Shutdown Hy	T_{SDHY}			20		°C



Typical Characteristics

$V_{IN} = V_{OUT} + 1V$, $I_{OUT} = 1mA$, $V_{OUT} = 3.3V$, $C_{IN} = C_{OUT} = 1\mu F$, $T_J = 25^\circ C$, unless otherwise specified

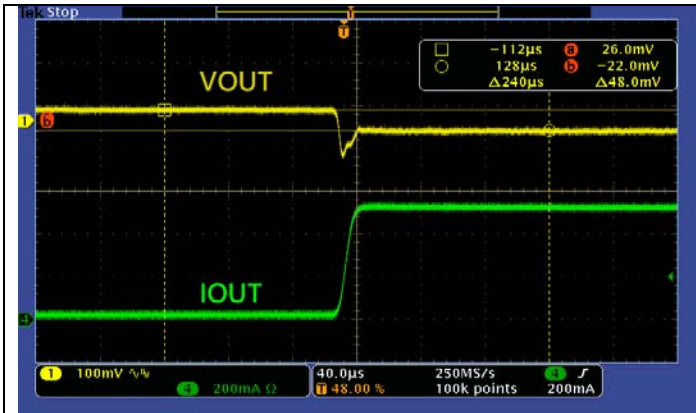


Fig 1. Load Transient (1mA to 500mA)

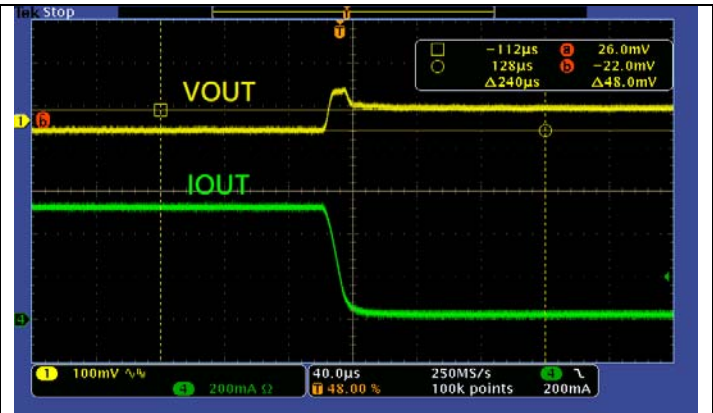


Fig 2. Load Transient (500mA to 1mA)

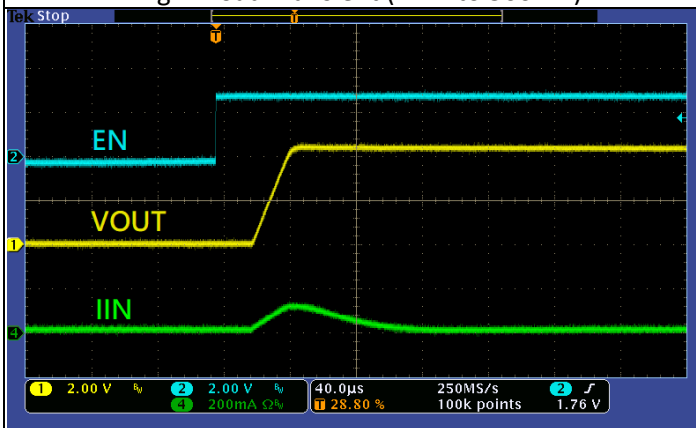


Fig 3. EN Start up (no load)

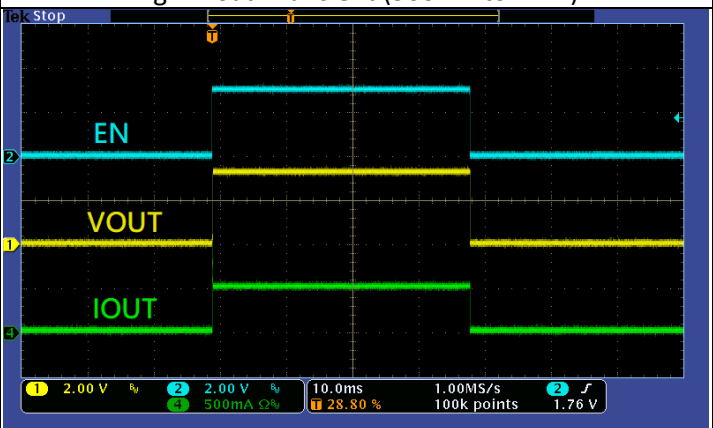


Fig 4. EN Start up (500mA load)

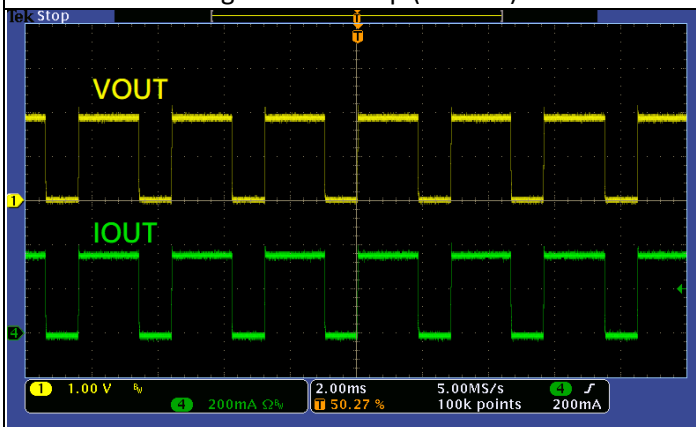


Fig 5. $V_{IN} = 5V$, $V_{OUT} = 1.8V$, heavy load OTP

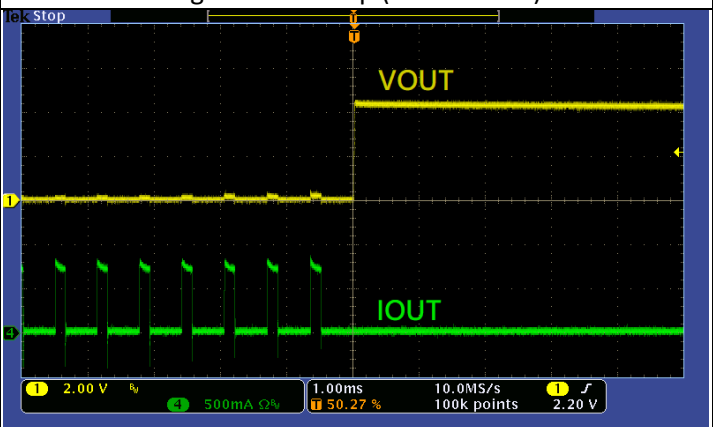


Fig 6. V_{OUT} short to GND and release



VD8102

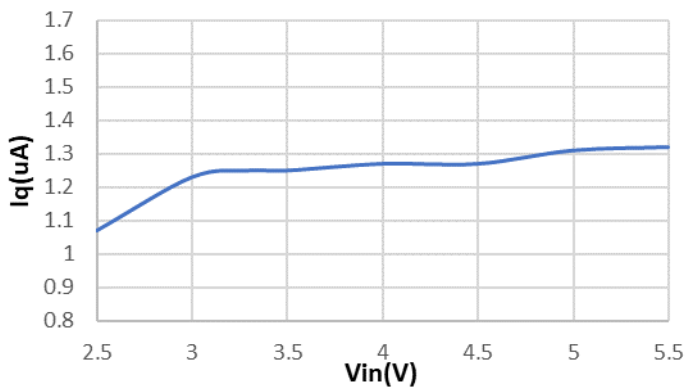


Fig 7. I_Q vs V_{IN} ($I_{OUT} = 0mA$)

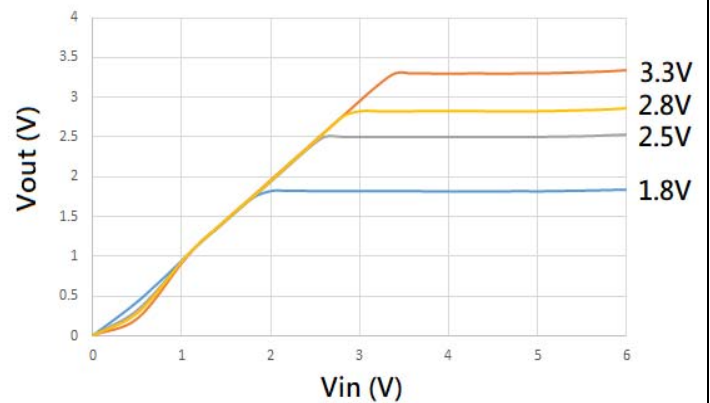


Fig 8. V_{OUT} vs V_{IN} ($I_{OUT} = 1mA$)

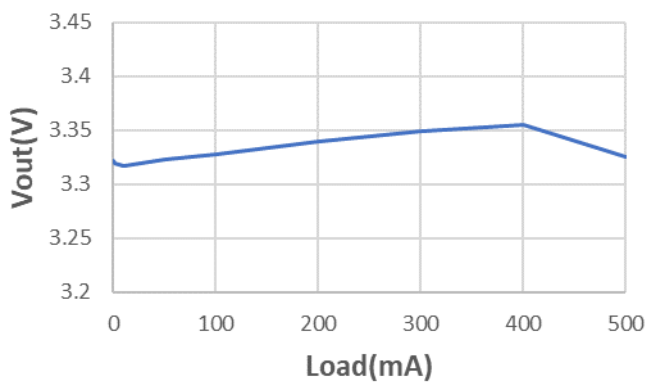


Fig 9. V_{OUT} vs Load

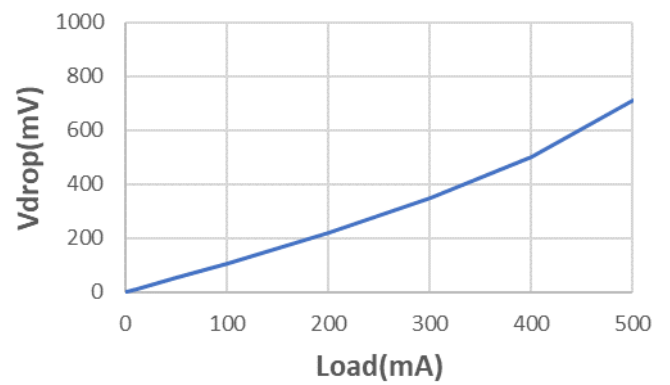
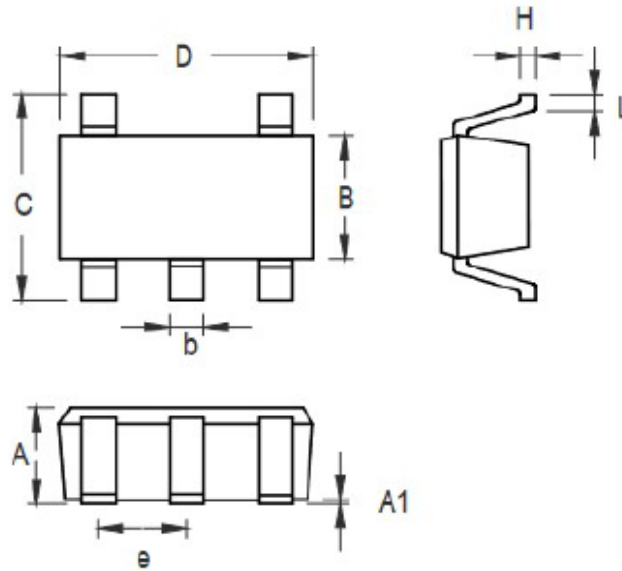


Fig 10. V_{DROP} vs Load



Package Information

SOT23-5

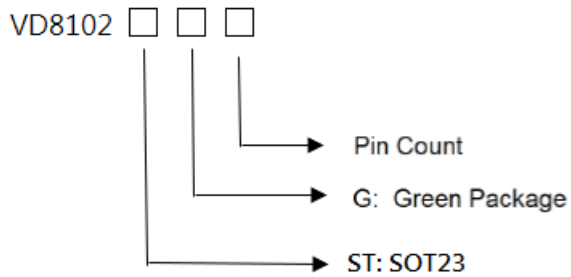


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024



VD8102

Ordering Information



Part No.	Q`ty/Reel
VD8102STG3	4000

Contact Information

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