

## 500nA I<sub>Q</sub>, 300mA Low-Dropout Linear Regulator

### General Description

The JY5003 ultra-low quiescent current regulator features low dropout voltage and low current in the standby mode. With less than 500nA quiescent current at no load, the JY5003 is ideally suited for standby micro-control-unit systems, especially for always-on applications like portable, and other battery operated systems. The JY5003 retains all of the features that are common to low dropout regulators including a low dropout PMOS pass device, short circuit protection, and thermal shutdown.

The JY5003 has a 6V maximum operating voltage limit, a 0°C to 100°C operating temperature range, and ±2% output voltage tolerance over the entire output current, input voltage, and temperature range. The JY5003 is available in SOT89-3, SOT23-5, and DFN1X1 surface mount packages.

### Ordering Information

Part Number	Package	Vout
JY5003	SOT89-3	1.3V
	SOT23-5	To
	DFN1X1-4L	5.0V

### Features

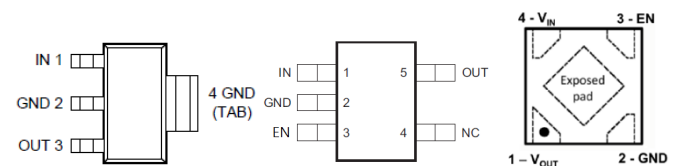
- V<sub>IN</sub> Range up to 6V
- Output Voltage Tolerances of ±2% Over the Temperature Range
- Output Current of 300mA, Supports 450mA peak Output

- Ultra Low Quiescent Current (I<sub>Q</sub> = 500nA)
- Dropout Voltage Typically 400mV at I<sub>OUT</sub> = 300mA
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limit
- Ceramic Capacitor Stable

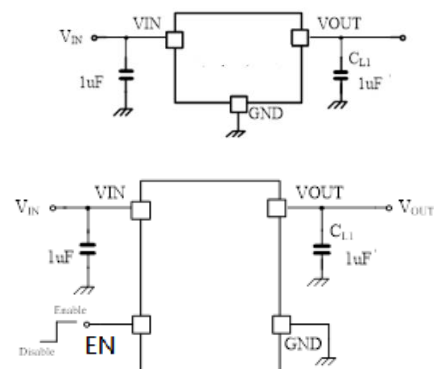
### Applications

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

### Pin Configuration



### Typical Application Circuit

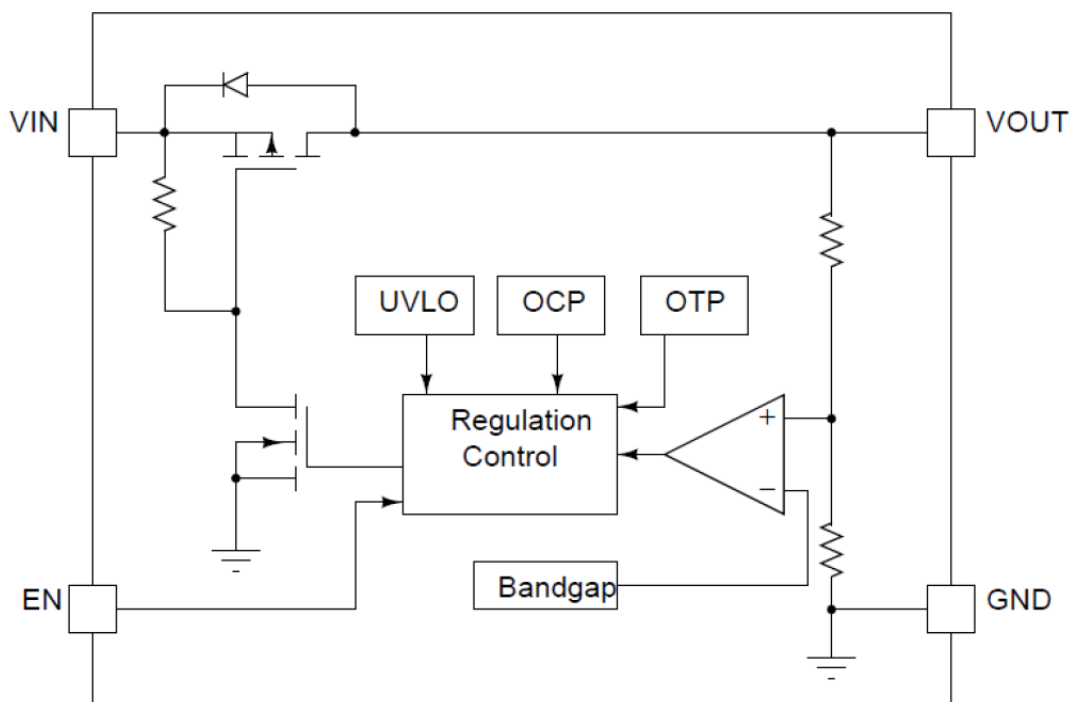


**Ceramic Capacitor Stable**

### Pin Assignment

Pin Name	Pin No. SOT89-3	Pin No. SOT23-5	Pin No. DFN1X1	Pin Function
VOUT	3	5	1	Output Voltage Pin
GND	2,4	2	2	Ground
VIN	1	1	4	Input Voltage pin.
EN	--	3	3	Enable

### Function Block Diagram



### Absolute Maximum Ratings (Note1)

- $V_{IN}$  ----- -0.3V to +6.5V
- Junction Temperature----- 125°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 ----- 0°C to 125°C

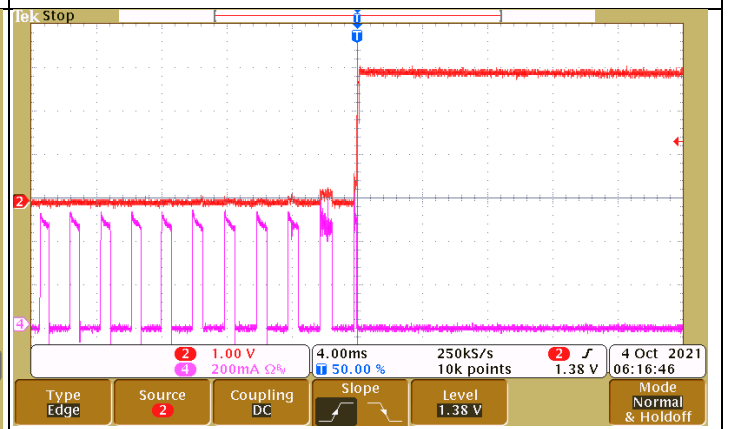
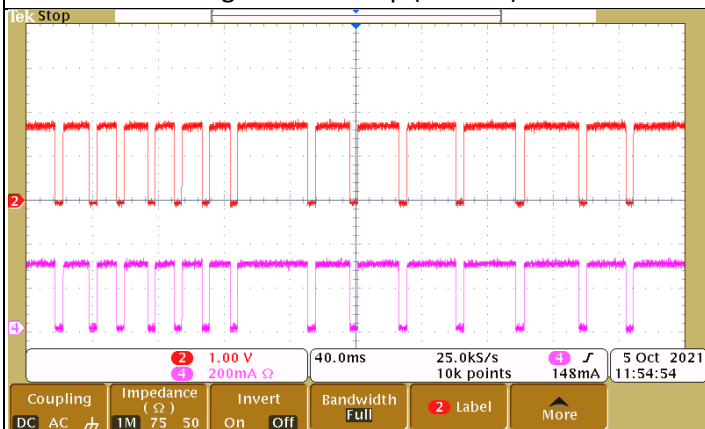
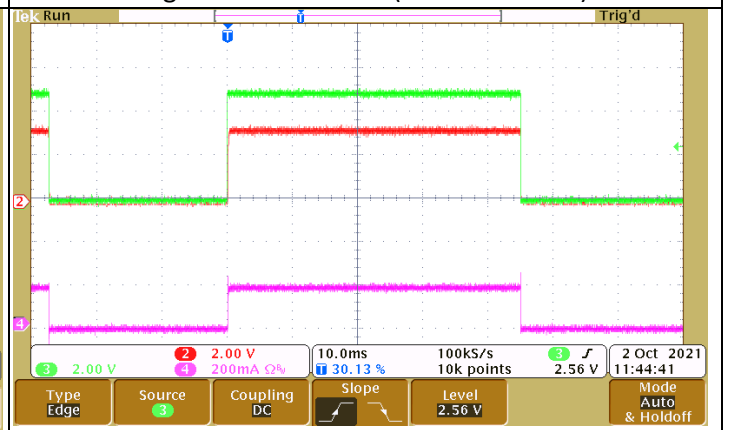
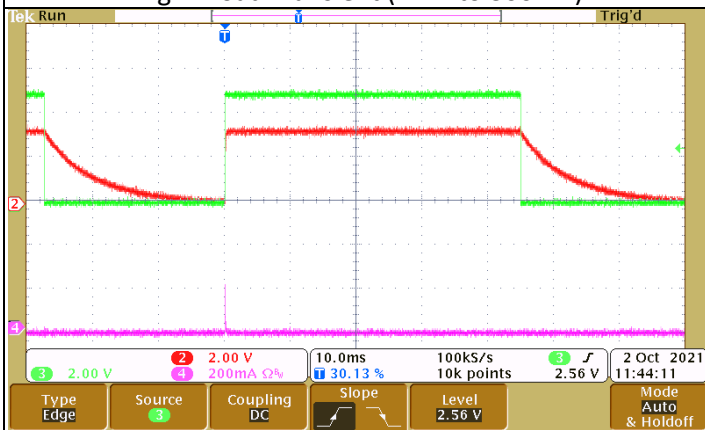
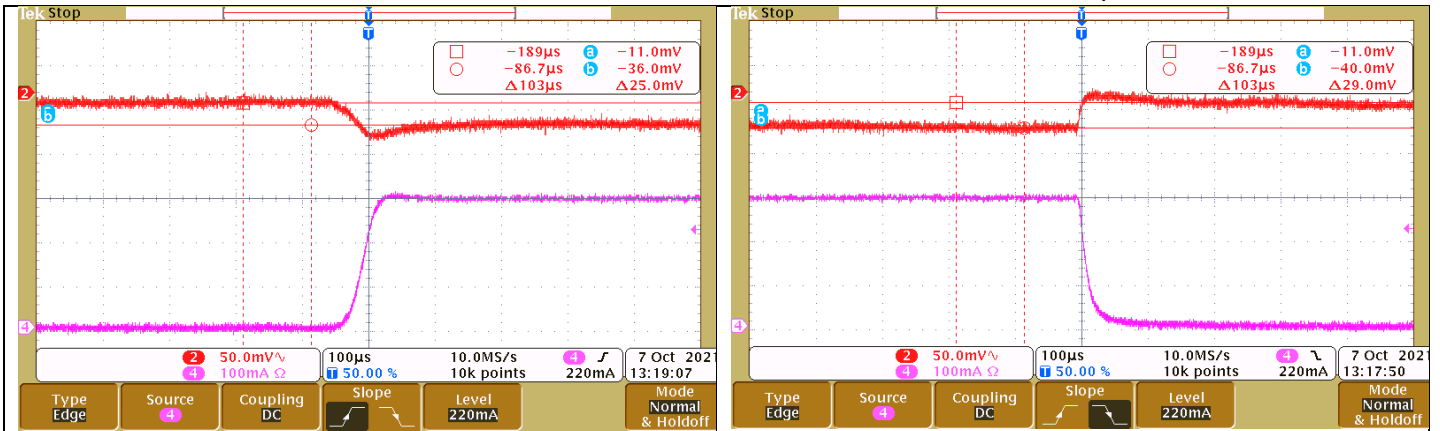
### Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Voltage Accuracy	$\Delta V_{OUT}$		-2%		2%	V
Line Regulation	$\Delta V_{LINE}$	$V_{IN} = V_{OUT} + 1V$ to 5.5V		20	50	mV
Load Regulation	$\Delta V_{LOAD}$	$I_{OUT} = 1mA$ to 150mA		13	25	mV
		$I_{OUT} = 1mA$ to 300mA		25	40	
Dropout Voltage	$V_{DROP}$	$I_{OUT} = 100mA$ , $V_{OUT} = 3.3V$		130		mV
		$I_{OUT} = 300mA$ , $V_{OUT} = 3.3V$		400		mV
Quiescent Current	$I_Q$	$T_J = 25^\circ C$		0.5	1	uA
Current Limit	$I_{CL}$		360	560		mA
Enable high level	$V_{ENHI}$		0.6			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



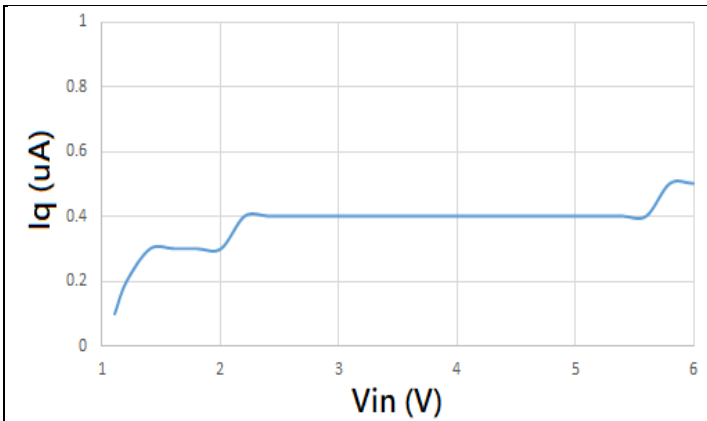


Fig 7.  $I_Q$  vs  $V_{IN}$  ( $I_{OUT} = 0mA$ )

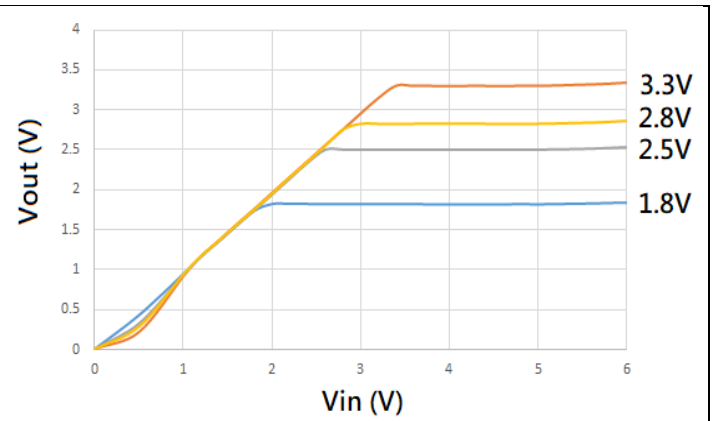


Fig 8.  $V_{OUT}$  vs  $V_{IN}$  ( $I_{OUT} = 1mA$ )

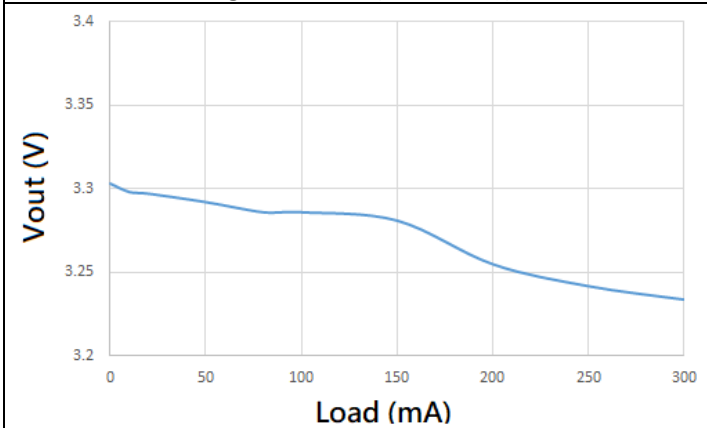


Fig 9.  $V_{OUT}$  vs Load

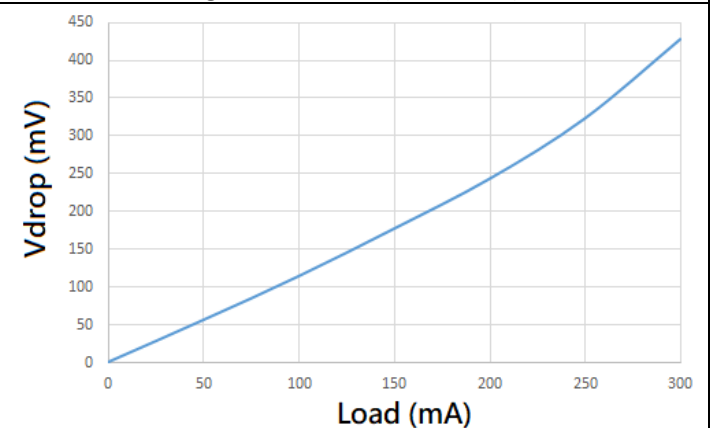


Fig 10.  $V_{DROP}$  vs Load

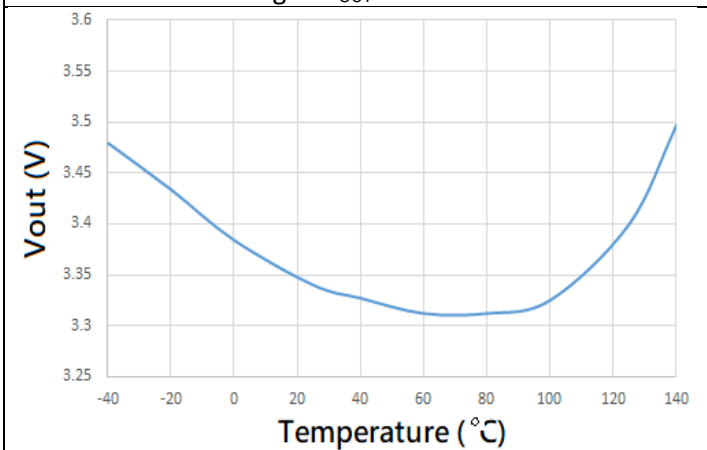


Fig 11.  $V_{OUT}$  vs Temperature ( $I_{OUT} = 1mA$ )

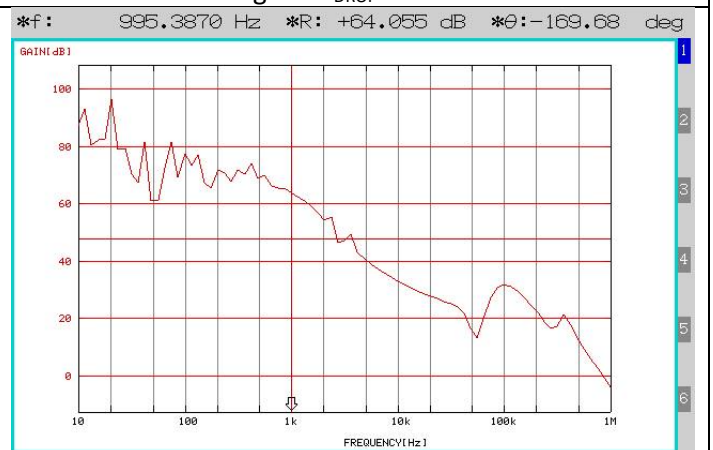


Fig 12. PSRR vs Frequency ( $V_{IN} = 4.8V$ ,  $V_{OUT} = 1.8V$ )

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