Low Dropout Voltage regulator

RFLDO03

Description

The **RJLDO03,** Low Dropout Linear Regulator is ideal for systems where a low cost solution is critical. This device features extremely low quiescent current which is typically 5uA. Dropout voltage is also very low, typically 600mV. The **RJLDO03** has an Enable pin feature, which when pulled low will enter the LDO regulator into a shutdown mode removing power from its load and offering extended power conservation capabilities for portable battery powered applications. The devices have been optimized to meet the needs of Modern wireless communications design; Low noise, low Dropout, small size, high peak current, high noise immunity.

The device is rated over a **-40°C to +125°C** temperature range. Since only, 18uF ceramic output capacitor is recommended, the **RJLDO03** is a truly cost effective voltage conversion solution. This Building block is designed in **180nm CMOS** technology.

Key Features

- **600 mV Low Dropout Voltage**
- **5 uA Quiescent Current**
- **40 mA average output Current**
- **2.1% High Accuracy**
- **< 100 ppm/ ^{0}C Low Temperature Coefficient**
- **Power-Saving Shutdown Mode**
- **Low Power Consumption**
- **Operating Junction Temperature Range**

  -40°C to +125°C

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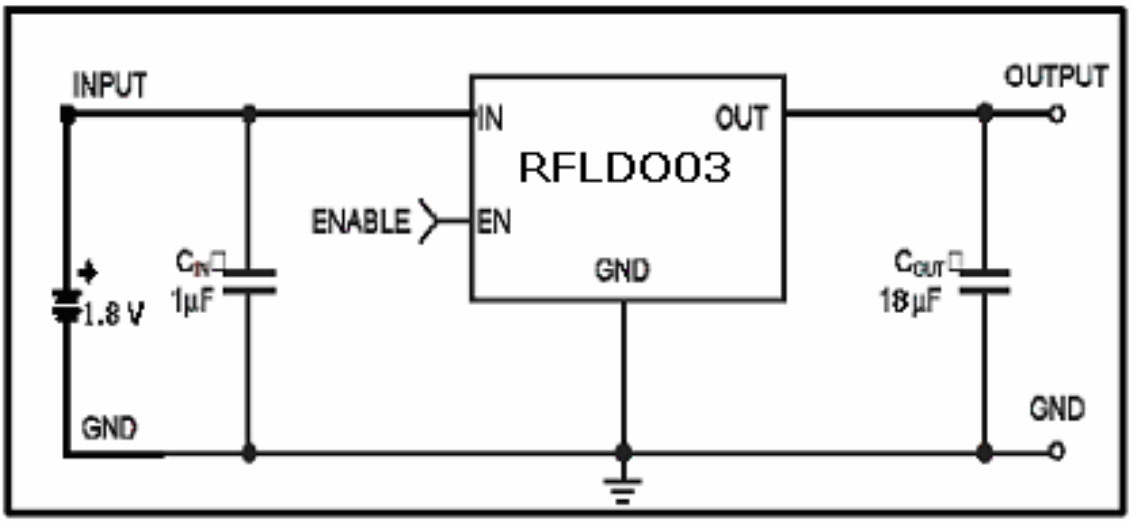
Applications

- General Purpose
- High-Speed Driver Chipset Power
- Networking Backplane Cards
- Network Interface Cards
- PLL

Typical Application



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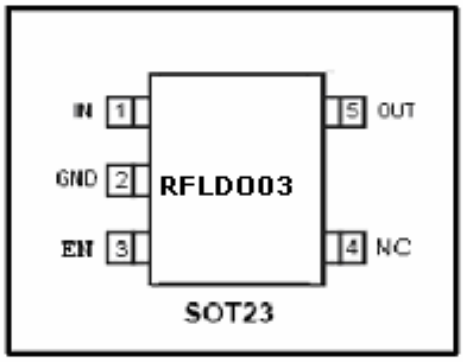
Pin Configuration

Top View



Pin Description

Pin Name	I/O	Description
IN	I	Input Voltage Unregulated
GND	-	Ground Connection
EN	I	Power-up and power-down Control
NC	-	NO Connection
OUY		Regulated Output Voltage

Absolute Maximum Ratings

Symbol	Description	Values	Units
V_{IN}	Input Voltage	1.2 to 1.98	V
V_{EN}	EN to GND Voltage	1.2 to 1.98	V
I_{OUT}	Maximum DC Output Current	$P_D / (V_{IN} - V_{O)}$	mA
T_J	Operating Junction Temperature Range	-40 to +125	°C
T_{LEAD}	Maximum Soldering Temperature	300	°C

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Electrical Characteristics

(Typical values are at T_A = +25 ^{0}C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage	V_{supply}		1.6	1.8	1.98	V
Output Voltage	V_{OUT}	T_A = +125 ^{0}C			1.18	V
Output Current	I_{OUT}	T_A = +25 ^{0}C		35	40	mA
Ground Current	I_{GND}	T_A = +125 ^{0}C			5.2	uA
Dropout Voltage	V_{DO}	T_A = +25 ^{0}C		600		mV
Temperature Coefficient	TCV_{OUT}	-40 ^{0}C < T_A < +125 ^{0}C			71.9	ppm/^{0}C
Initial Accuracy Error					<14	mV
Line Regulation	V_{OUT} / V_{supply}	T_A = +25 ^{0}C			15	mV
Turn-on Settling Time	T_R	T_A = +125 ^{0}C			249	uS
Switching Current	I_{SW}	T_A = -40 ^{0}C			186	mA
Power Dissipation @Power up	PD_{PWR-UP}	T_A = +125 ^{0}C			386	mW
Power Dissipation @DC	PD_{DC}	T_A = +125 ^{0}C			19.4	uW
Power Dissipation @Power down	PD_{PWR-DN}	T_A = +125 ^{0}C			334	mW
Power Dissipation @standby mode	PD_{ST}	T_A = +125 ^{0}C			2.89	nW
Accuracy					2.10%	

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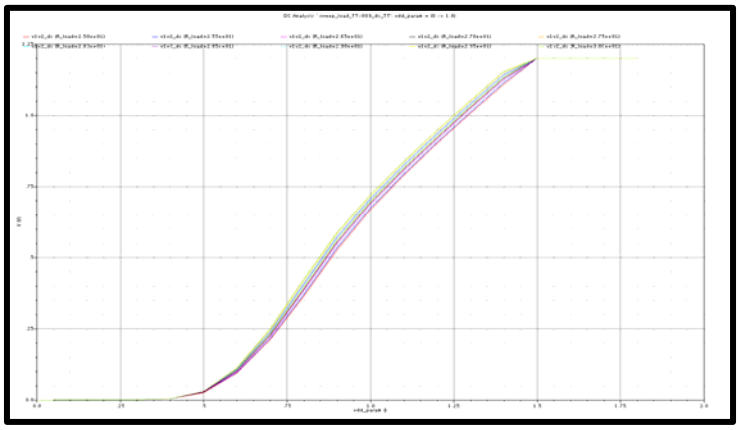
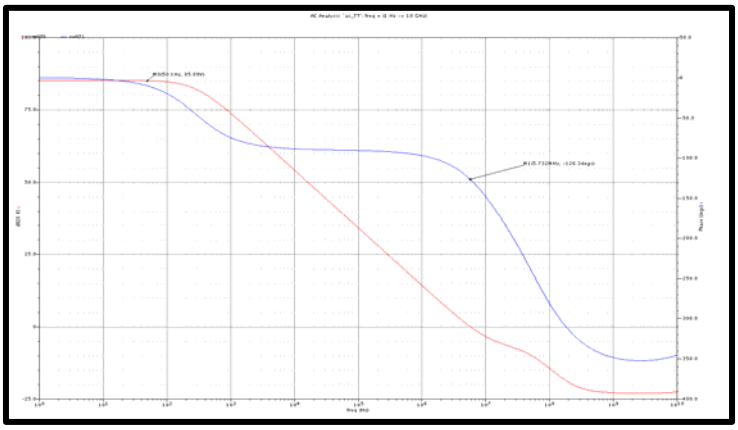
Typical Characteristics

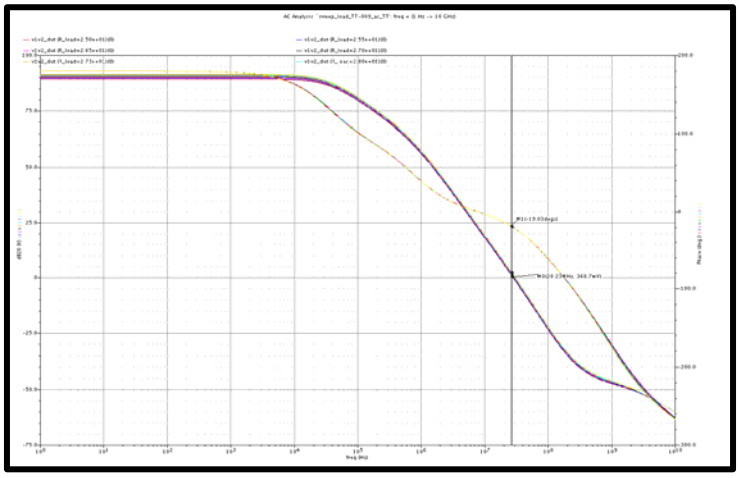
Line Regulation



Gain and PM of Error Amplifier



AC Close Loop Analysis



Transient Simulation