

1.5MHz 1A, Synchronous Step-Down Regulator

General Description

EML3023 is a high efficiency step down DC/DC converter. It features an extremely low quiescent current, which is suitable for reducing standby power consumption, especially for portable applications.

The device can accept input voltage from 2.5V to 5.5V and deliver up to 1A output current. High 1.5MHz switching frequency allows the use of small surface mount inductors and capacitors to reduce overall PCB board space. Furthermore, the built-in synchronous switch improves efficiency and eliminates external Schottky diode. EML3023 uses different modulation algorithms for various loading conditions: (1) Pulse Width Modulation (PWM) for low output voltage ripple and fixed frequency noise, (2) Pulse Frequency Modulation (PFM) for improving light load efficiency, and (3) Low Dropout (LDO) Mode for providing 100% duty cycle operation during heavy loading. Adopting low reference voltage design reduces regulated output to 0.6V. The adjustable version of this device is available in both of TDFN-6 2x2mm and SOT-23-5 package.

Features

- Achieve 97% efficiency
- Input voltage : 2.5V to 5.5V
- Output current up to 1A
- Reference voltage: 0.6V
- Quiescent current $15\mu\text{A}$ with no load
- Internal switching frequency: 1.5MHz
- No Schottky diode needed
- Low dropout operation: 100% duty cycle
- Shutdown current $< 1\mu\text{A}$
- Excellent line and load transient response
- Over-temperature protection

Applications

- Blue-Tooth devices
- Cellular and Smart Phones
- Personal Multi-media Player (PMP)
- Wireless networking
- Digital Still Cameras
- Portable applications

Typical Application

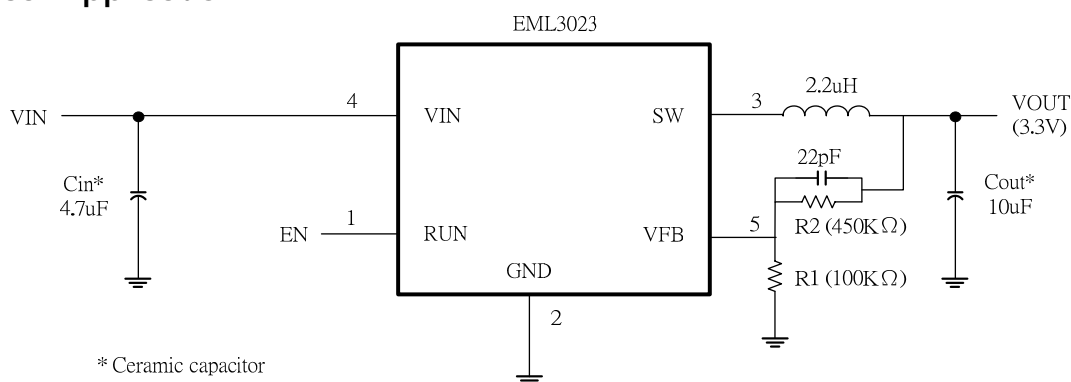
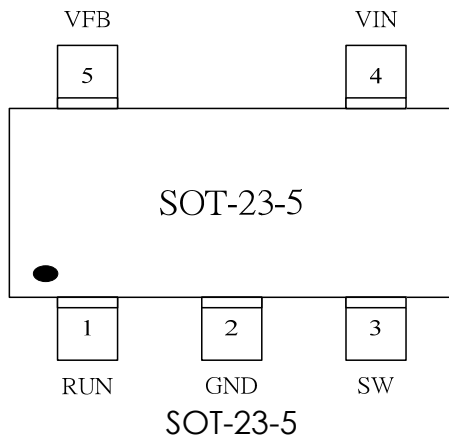


Fig. 1

Package Configuration



EML3023-00VF05NRR

- 00 Adjustable
- VF05 SOT-23-5 Package
- NRR RoHS & Halogen free package
- Commercial Grade Temperature
- Rating: -40 to 85°C
- Package in Tape & Reel

Order, Mark & Packing information

Package	Vout(V)	Product ID	Marking	Packing
SOT-23-5	adjustable	EML3023-00VF05NRR		Tape & Reel 3K units

Pin Functions

Pin Name	SOT-23-5	Function
RUN	1	Enable Pin. Minimum 1.2V to enable the device. Maximum 0.4V to shut down the device.
VIN	4	Power Input Pin. Must be closely decoupled to GND pin with a 4.7μF or greater ceramic capacitor.
SW	3	Switch Pin. Must be connected to Inductor. This pin connects to the drains of the internal main and synchronous power MOSFET switches.
GND	2	Ground Pin.
VFB (Adjustable)	5	Feedback Pin. Receives the feedback voltage from an external resistive divider across the output.