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## PWM/VFM Step-Down DC/DC Controller

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### FEATURES

- Wide Range Of Input Voltage: 2.5V~18V
- Built-in Soft-start and Protection Function
- High Efficiency: Typ. 90%
- Oscillation Frequency: 500kHz
- High Accuracy Output Voltage:  $\pm 2\%$
- Low Temperature Coefficient of Output Voltage: Typ.  $\pm 100\text{ppm}/^\circ\text{C}$
- Standby Current: Typ. 0.1 $\mu\text{A}$
- Output Voltage:
  - Stepwise Setting with a step of 0.1V in the range of 1.2V to 6.0V as fixed voltage type.
  - Reference Voltage of Adjustable type is 1.0V.
- Small Package: SOT-23-5
- CMOS Output Capability

### APPLICATION

- Hand-held communication equipment, cameras, video instruments such as VCRs, camcorders
- Battery-powered equipment
- Household electrical appliances

### GENERAL DESCRIPTION

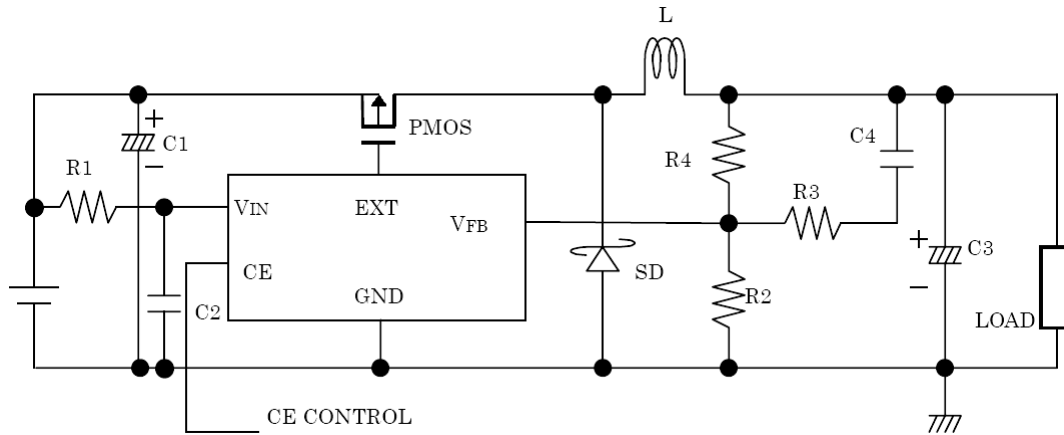
The PT1101 Series are CMOS-based PWM step-down DC/DC Controllers with low supply

current. A low ripple, high efficiency step-down DC/DC converter can be easily composed of with additional several external components such as a power-transistor, an inductor, a diode and capacitors. Output voltage is fixed or can be adjusted with external resistors. (PWM/VFM alternative circuit is disabled in adjustable types) The PT1101 Series consist of a PWM control circuit, a high precision band-gap voltage reference, a soft-start circuit, a protection circuit, a PWM/VFM alternative circuit, an oscillator, an error amplifier with internal compensation network and input/output voltage detection circuits.

With its internal state-of-art control algorithm, the PT1101 Series based DC/DC converter can achieve high performance while maintaining stability. For example, with its PWM/VFM alternative circuit, when the load current is small, the operation is automatically switched into the VFM mode to improve the efficiency. Further, if the term of maximum duty cycle keeps on a certain time, the embedded protection circuits restart the operation with soft-start and repeat until the maximum duty cycle condition is released. Finally, built-in UVLO function blocks potentially unstable output when the input voltage is equal or less than UVLO threshold and makes this IC standby for low power consumption.

## TYPICAL APPLICATIONS

- PT1101E23E-10, Adjustable Output Voltage Type. For example, Output Voltage=3.2V



PMOS: IRF7406 (IR)

C3: 47 $\mu$ F, Tantalum Type

C4: 1000pF, Ceramic Type

R3: 2.7 k $\Omega$

L: CR105-270MC (Sumida, 27 $\mu$ H)

C1: 10 $\mu$ F, Ceramic Type

R1: 10 $\Omega$

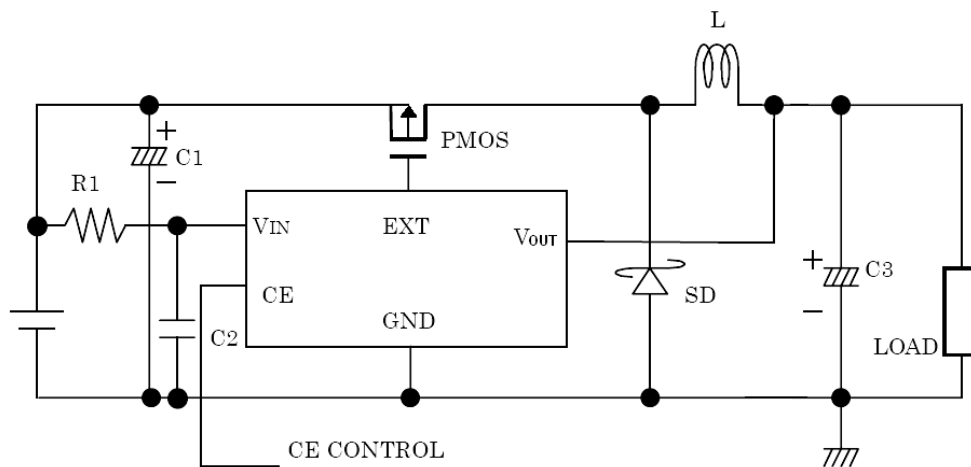
R4: 22 k $\Omega$

SD1: RB063L-30(Rohm)

C2: 0.1 $\mu$ F, Ceramic Type

R2: 10k $\Omega$

- PT1101E23E-xx, Fixed Output Voltage Type



PMOS: IRF7406 (IR)

C3: 47 $\mu$ F, Tantalum Type

R1: 10 $\Omega$

L: CR105-270MC (Sumida, 27 $\mu$ H)

C1: 10 $\mu$ F, Ceramic Type

SD1: RB063L-30(Rohm)

C2: 0.1 $\mu$ F, Ceramic Type