

[mt3608 dc voltage regulator module](#) id: 8097980137

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The MT3608 is a 6-pin SOT-23, constant-frequency step-up regulator designed for compact, low-power applications. It switches at **1.2 MHz**, which permits the use of tiny, inexpensive inductors and capacitors (≤ 2 mm tall). An internal soft-start limits inrush current, extending battery life.

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- **Automatic shift to PWM mode** at light loads for higher efficiency
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- **Under-voltage lockout, current limiting, and thermal overload protection** to guard against overloads
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- **Peak-current mode, fixed-frequency architecture** that regulates voltage via the feedback (FB) pin
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Operating Principle

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During each oscillator cycle the control circuit turns the power MOSFET on. A stabilizing ramp added to the current-sense amplifier output prevents sub-harmonic oscillations when the duty cycle exceeds 50 %. When this ramp-adjusted voltage equals the error-amplifier output (which amplifies the difference between the 0.6 V band-gap reference and the FB voltage), the MOSFET turns off, maintaining regulation.

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If the output voltage falls, the error-amplifier output rises, increasing MOSFET current and restoring the output level. The soft-start also curbs startup surge and output overshoot.

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Typical Performance

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- **Input range:** 2 V – 24 V
- **Adjustable output:** 0.6 V – 28 V (set with the feedback divider)
- **Maximum output current:** up to 2 A (depends on input voltage and inductor choice)
- **Efficiency:** often > 90 % thanks to the high switching frequency and Schottky diode

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The MT3608's compact size, built-in protections, and ability to operate with very small passive components make it ideal for portable devices, LED drivers, and other battery-powered systems where space and efficiency are critical.

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