



KEY FEATURES

- Maximum Differential Output Voltage: ± 25 V
- Input Operating Voltage: 2.3V to 5.5V
- Ultra-Low Shutdown Current: 0.4 μ A (Typ.)
- Auto-Sweep Function: Full Range from 20kHz to 40kHz (8kHz Lock Acquisition Bandwidth)
- Adjustable High-Level Output Voltage:
Controlled via EN pin voltage, EN PWM duty cycle, or Internal registers
- Up to 85% Efficiency at Typical Operating Conditions
- I²C interface and Selectable Device Address
- Start Up Time: less than 500 μ s
- Frequency Lock Time: 30ms
- Synchronized Clock Output and Synchronizes to external clock
- Programmable Max Output Power Limit: 1W
- Input Under Voltage Lockout and Power-On-Reset
- Output Open-Circuit Protection
- Short-Circuit Protection
- Thermal Shutdown
- Compact Footprint in a WLCSP (1.35mm $\times$ 1.35mm) Package
- Minimal total solution size: 20mm²

APPLICATIONS

- Air Pump and Micro-blower control
- Medical and Healthcare Equipment:
Smartwatches, Injection pumps
- Aroma diffusers
- High-Efficiency Electronics Cooling:
Cellphone/notebook

GENERAL DESCRIPTION

The AWP1766 is a high-efficiency, highly-compact, fully-differential air-pump driver. It can drive the air pump with square waveforms up to ± 25 V with the 2.3V to 5.5V input voltage range. It provides a high efficiency solution in a compact package.

The AWP1766 features an automatic frequency sweep-and-lock function. It autonomously tracks and locks onto the piezo pump's resonant frequency in real time, without requiring MCU intervention. In case of a sudden resonant frequency shift—caused by factors such as water ingress—the system can rapidly re-lock within 10ms.

The AWP1766 boosts the piezo air pump's operating efficiency from 70% up to 85%. This feature optimizes power consumption for lithium battery-powered applications.

An I²C interface configures the AWP1766 and monitors the status of all registers.

The AWP1766 is available in a 1.35mm $\times$ 1.35mm 16-ball WLCSP package, with a minimal total solution size of 20 mm².