# ACE72550X

## 1A 2MHz 5.5V Synchronous Buck Converter

## Description

The ACE72550X is a high-efficiency monolithic synchronous buck regulator using a constant frequency, current mode architecture. The device is available in an adjustable version. Supply current with no load is 70μA and drops to <1uA in shutdown. The 2.5V to 5.5V input voltage range makes the ACE72550X ideally suited for single Li-Ion battery powered applications. 100% duty cycle provides low dropout operation, extending battery life in portable systems. PWM/PFM mode operation provides very low output ripple voltage for noise sensitive applications. Switching frequency is internally set at 2MHz, allowing the use of small surface mount inductors and capacitors. Low output voltages are easily supported with the 0.6V feedback reference voltage. The ACE72550X is available in SOT-23-5 package.

## Features

- High Efficiency: Up to 96%
- 2.5V to 5.5V Input Voltage Range
- 2MHz Constant Frequency Operation
- No Schottky Diode Required
- Low Dropout Operation: 100% Duty Cycle
- PFM Mode for High Efficiency in Light Load
- Over temperature Protected
- Low Quiescent Current: 70μA
- Short Circuit Protection
- Over Voltage Protection
- Inrush Current Limit and Soft Start
- RoHS and Halogen free compliance

## Application

- Digital Still and Video Cameras
- PC Card
- Cellular and Smart Phones
- Wireless and DSL Modems
- Portable Instruments

## Absolute Maximum Ratings

| Parameter | | | Value |
|---|---|---|---|
| $V_{IN}$ (1) | | | -0.3V to 7.0V |
| EN Voltage | | | -0.3V to 6.0V |
| SW Voltage | | | -0.3V to (Vin+0.3V) |
| Peak SW Sink and Source Current | | | 2.2A |
| Continuous Power Dissipation ($T_A$ = 25℃) (2) | | SOT-23-5 | 0.5W |
| Junction Temperature | | | -40℃ to 165℃ |
| Lead Temperature | | | 260℃ |
| Storage Temperature | | | -65℃ to 150℃ |
| Thermal Resistance (3) | SOT-23-5 | $\theta_{JA}$ | 170℃/W |
| | | $\theta_{JC}$ | 75℃/W |

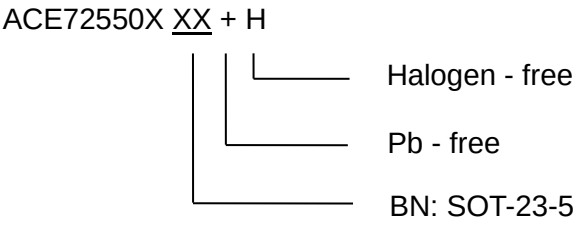
Note:

(1). Exceeding these ratings may damage the device.

(2). The maximum allowable power dissipation is a function of the maximum junction temperature $T_J$(MAX), the junction-to-ambient thermal resistance $\theta_{JA}$, and the ambient temperature $T_A$. The maximum allowable continuous power dissipation at any ambient temperature is calculated by $P_D$(MAX)=($T_J$(MAX)-$T_A$)/$\theta_{JA}$. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.

(3). Measured on JESD51-7, 4-layer PCB.

## Ordering Information



Notes

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.