ACE7241Z

COT Synchronous Step-Down Converter

Description

The ACE7241Z is a high-efficiency, DC-to-DC step-down switching regulator, capable of delivering up to 4A of output current. The devices operate from an input voltage range of 2.4V to 5.5V and provide output voltages from 0.6V to VIN, making the ACE7241Z ideal for low voltage power conversions. ACE7241Z adopts an adaptive COT control scheme that enables very fast transient response and provides a very smooth transition when the output varies from light load to heavy load. During light load, ACE7241Z goes into a PFM mode that saves switching loss to achieve a high efficiency. The adaptive COT control also maintains a constant switching frequency across line and load. Running at a fixed frequency of 2.4MHz allows the use of small inductance value and low DCR inductors, thereby achieving a higher efficiency. Other external components, such as ceramic input and output caps, can also be small due to higher switching frequency, while maintaining exceptional low-noise output voltages. Internal soft-start control circuitry reduces inrush current. Short-circuit and thermal-overload protection improves design reliability.

Features

- Input Voltage Range: 2.4V-5.5V
- Output Current: Up to 4A (Max)
- Low Quiescent Current: 26 μA
- Switching Frequency: 2.4MHz
- Feedback Accuracy: 1%
- 100% duty cycle for lowest dropout
- Adjustable Output Voltage from 0.6V
- Output Auto Discharge Function
- Ultra-fast Load Transient Response
- Cycle-by-cycle Over Current Protection
- Hiccup Mode for Short Circuit Protection
- Available in FCDFN1.5*1.5-6 Package

Application

- Hard Disk Drives (HDD)/Solid State Drives (SSD)
- Battery-Powered Applications
- Point-of-Load
- Processor Power Supplies

Absolute Maximum Ratings(1)

Parameter			Value
IN, EN, FB, PG Voltage			–0.3V to 7V
SW Voltages			-0.3V(-3V <10ns) to 7V(9V <10ns)
Thermal Resistance	FCDFN1.5*1.5-6	θ_{JA}	40.3 °C/W
		θ_{JC}	9.2 °C/W
Junction Temperature Range			150°C
Lead Temperature (Soldering, 10 sec.)			260°C
Storage Temperature Range			–55°C to 150°C

Note:

(1).Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.

Recommended Operating Conditions(1)

Parameter	Value
Ambient Temperature Range	–40°C to 85°C
Junction Temperature Range	–40°C to 125°C

Note:

(1).The device is not guaranteed to function outside its operating conditions.

Ordering Information

ACE7241Z XX + H

- Halogen - free
- Pb - free
- CD: FCDFN1.5*1.5-6

Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Technology Co., LTD. As sued herein:

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.