



ACE72241Y

High-Efficiency 3A, 24V Input Synchronous Step Down Converter

Description

The ACE72241Y is high-efficiency, high frequency synchronous step-down DC-DC regulator ICs capable of delivering up to 3A output currents. The ACE72241Y family operate over a wide input voltage range from 4.5V to 24V and integrate main switch and synchronous switch with very low $R_{DS(ON)}$ to minimize the conduction loss.

ACE72241Y adopts the pure COT architecture to achieve fast transient responses for high step-down applications. In addition. The ACE72241Y is stable with extremely low ESR, high capacitance.

ACE72241Y always operate in continuous conduction mode, which reduces the output ripple voltage in light load compared to discontinuous conduction mode.

Features

- 3.0A max output current
- 4.5-24V input voltage range
- High-Efficiency Synchronous-Mode
- Internal soft start limits the inrush current
- Over Current protection
- Output short circuit protection with hiccup mode
- Thermal shutdown
- Available in TSOT23-6 packages

Application

- Portable Navigation Device
- Set Top Box
- Portable TV
- LCD TV



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Absolute Maximum Ratings

Parameter	Rating	Unit	
Supply Voltage (V+ – V-)	-0.3 to 26	V	
EN, LX Voltage	-0.3 to $V_{IN}+0.3$	V	
FB Voltage	-0.3 to 6	V	
BS Voltage	-0.3 to SW+6	W	
Package Thermal Resistance	θ_{JA}	87.9	°C/W
	θ_{JC}	42.2	
Storage Temperature Range	-65 to 150	°C	
Junction Temperature Range	150	°C	
Lead Temperature Range	260	°C	

Stresses beyond those listed under “Absolute Maximum Rating” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Recommended Work Conditions

Parameter	Rating	Unit
Supply Voltage	4.5 to 24	V
Junction Temperature Range	-40 to 125	°C
Ambient Temperature Range	-40 to 85	°C

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended Operating conditions are specified to ensure optimal performance to the datasheet specifications.



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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 used 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 whose 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.