



ACE71224RT

24V, 1.2MHz Boost Regulator

Description

The ACE71224RT is a constant frequency, current mode step-up converter intended for small, low power applications. The ACE71224RT switches at 1.2MHz and allows the use of tiny, low cost capacitors and inductors 2mm or less in height. Internal soft-start results in small inrush current and extends battery life. The ACE71224RT includes under-voltage lockout, current limiting, and thermal overload protection to prevent damage in the event of an output overload.

Features

- Maximum Output Voltage: 24V
- Output Adjustable from 0.6V
- Fixed Switching Frequency: 1.2MHz
- Input Voltage Range: 2.3V ~ 12V
- Operating Temperature Range: -40°C to 85°C
- Internal 4A Switch Current Limit
- Internal 1.5mS Soft Start Time
- Power Save Operation Mode at Light Load
- Output Short Circuit Protection
- Output Over-Voltage Protection
- Thermal Shutdown Protection
- Available in SOT-23-6 Package

Application

- Battery-Powered Equipment
- Portable Media Player (PMP)
- Digital Set-top Box (STB)
- Tablet Personal Computer
- General Purposes
- LCD Bias Supply



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Absolute Maximum Ratings ^{Note(1)(2)}

Item	Min	Max	Unit
VIN EN Voltage	-0.3	30	V
SW Voltage	-0.3	30	V
All Other Pins	-0.3	6	V
Power Dissipation ^{Note(3)}	Internally Limited		
Operating Junction Temperature, T _J	-40	150	°C
Storage Temperature, T _{stg}	-65	150	°C
Lead Temperature (Soldering, 10sec.)		260	°C

Note:

- (1). Exceeding these ratings may damage the device.
- (2). The device is not guaranteed to function outside of its operating conditions.
- (3). The maximum allowable power dissipation is a function of the maximum junction temperature, T_{J(MAX)}, the junction-to-ambient thermal resistance, R_{θJA}, and the ambient temperature, T_A. The maximum allowable power dissipation at any ambient temperature is calculated using: $P_{D(MAX)} = (T_{J(MAX)} - T_A) / R_{\theta JA}$. Exceeding the maximum allowable power dissipation causes excessive die temperature, and the regulator goes into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage. Thermal shutdown engages at T_J=160°C (typical) and disengages at T_J=130°C (typical).

Recommended Operating

Item	Min	Max	Unit
Operating Junction Temperature ^{Note(1)}	-40	125	°C
Operating Temperature Range	-40	85	°C
Input Voltage, V _{IN}	2.3	12	V
Output Voltage, V _{OUT}		24	V
Typical Output Current, I _{OUT}	0	1	A

Note:

- (1). All limits specified at room temperature (T_A=25°C) unless otherwise specified. All room temperature limits are 100% production tested. All limits at temperature extremes are ensured through correlation using standard Statistical Quality Control (SQC) methods. All limits are used to calculate Average Outgoing Quality Level (AOQL).



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ESD Ratings

Item	Description	Value	Unit
$V_{(ESD-HBM)}$	Human Body Model (HBM) ANSI/ ESDA/JEDEC JS-001-2014 Classification, Class: 2	±2000	V
$V_{(ESD-CDM)}$	Charged Device Mode (CDM) ANSI/ESDA/JEDEC JS-002-2014 Classification, Class: C0b	±200	V
$I_{LATCH-UP}$	JEDEC STANDARD NO.78E APRIL 2016 Temperature Classification, Class: I	±150	mA

Thermal Information

Item	Description	Value	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^{Note(1)(2)}	105	°C/W
$R_{\theta JC(TOP)}$	Junction-to-Case (TOP) Thermal Resistance	55	°C/W
$R_{\theta JB}$	Junction-to-Board Thermal Resistance	17.5	°C/W
Ψ_{JT}	Junction-to-Top Characterization Parameter	3.5	°C/W
Ψ_{JB}	Junction-to-Board Characterization Parameter	17.5	°C/W

Note:

- (1). The package thermal impedance is calculated in accordance to JESD 51-7.
- (2). Thermal Resistances were simulated on a 4-layer, JEDEC board.



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Ordering Information

ACE71224RT XX + H

└──┬──	Halogen - free
└──┬──	Pb - free
└──┬──	GM: SOT-23-6



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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.

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