ACE74530RT

30V 3A 500KHz ECOT PSM Sync Step-Down Regulator

Description

The ACE74530RT is a high-efficiency, synchronous, DC-to-DC step down switching regulator with internal power MOSFETs capable of delivering up to 3A output current.

The ACE74530RT operates in a wide input supply voltage range from 4.5V to 30V with excellent load and line regulation. It provides different FB versions, which can be selected according to different applications. The ACE74530RT ECOT PSM control operation provides very fast transient response and easy loop design as well as very tight output regulation. It requires a minimal number of readily available, external components

The ACE74530RT is available in an ESOP8 package.

Features

- Wide Input Voltage Range 4.5 ~ 30V
- Maximum Output Current: 3A
- Switching Frequency: 500KHz
- Feedback Voltage: 0.6/0.8/0.765/0.923V
- PSM Mode for High Efficiency in Light Load
- ECOT Mode Control with Fast Transient Response
- Built-in Over Current Limit
- Built-in Over Voltage Protection
- Internal Soft-Start
- No Schottky Diode Required
- Short Protection with Hiccup-Mode
- Integrated internal compensation
- Thermal Shutdown

Application

- Automotive Systems
- Network Terminal Equipment
- Security Monitoring Camera
- Printer Systems
- Industrial Power Systems
- Distributed Power Systems

Absolute Maximum Ratings (1)(2)

Item	Min	Max	Unit
VIN voltage	-0.3	32	V
EN voltage	-0.3	32	V
SW voltage	-0.3	VIN+1V	V
SW voltage (10ns transient)	-5	VIN+2V	V
BS voltage	-0.3	Vsw+5V	V
FB voltage	-0.3	6	V
Power dissipation	Internally Limited		
Operating junction temperature, TJ	-40	150	°C
Storage temperature, Tstg	-55	150	°C
Lead Temperature (Soldering, 10sec.)		260	°C

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

Note (2): The device is not guaranteed to function outside of its operating conditions.

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 (1)(2)	48.7	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	52.4	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	25.5	°C/W
ψ_{JT}	Junction-to-top characterization parameter	8.4	°C/W
ψ_{JB}	Junction-to-board characterization parameter	25.2	°C/W
θ_{JCbot}	Junction-to-case (bottom) thermal resistance	6.5	°C/W

Note (1): The package thermal impedance is calculated in accordance to JESD 51-7.

Note (2): Thermal Resistances were simulated on a 4-layer, JEDEC board.

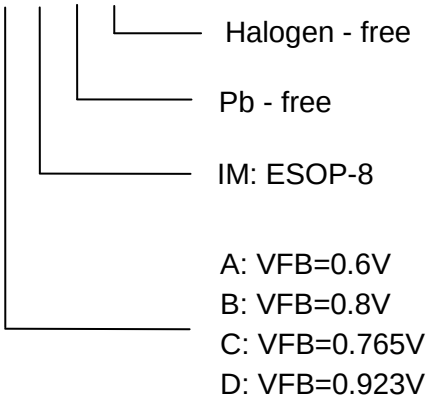
Recommended Operating Conditions

Item	Min	Max	Unit
Operating junction temperature (1)	-40	125	°C
Operating temperature range	-40	85	°C
Input voltage VIN	4.5	30	V
Output current	0	3	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).

Ordering Information

ACE74530RT X XX + H



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.