ACE45591P

0.1mA Termination 300mA Single Cell Li-ion Battery Charger

Description

The ACE45591P series of devices are highly integrated Li-Ion and Li-Pol linear chargers targeted at small capacity battery for portable applications. It is a complete constant-current/ constant voltage linear charger. No external sense resistor is needed, and no blocking diode is required due to the internal MOSFET architecture. It can deliver up to 300mA of charge current (using a good thermal PCB layout) with a final float voltage accuracy of ±1%. The charge voltage is fixed at 4.2V, 4.35V or 4.4V, and the charge current can be programmed externally with a single resistor. The charger function has high accuracy current and voltage regulation loops and charge termination.

The ACE45591P automatically terminates the charge cycle when the charge current drops to 1/10 the programmed value after the final float voltage is reached.

When the input supply (wall adapter or USB supply) is removed, the ACE45591P will shut off, only 40nA leakage current coming from battery at sleep mode when ambient temperature is 85℃, so it can save energy and improve standby time.

The ACE45591P is available in a small package with TDFN1X1-6L. Standard product is Pb-Free and Halogen- free.

Features

Charging

- 1% Charge Voltage Accuracy
- 5% Charge Current Accuracy
- Support Application for Very Low Charge Currents – 1mA to 300mA
- Support minimum 0.1mA Charge Termination Current
- 50nA Maximum Battery Output Leakage Current @ 0℃~85℃
- High Voltage Chemistry Support: up to 4.4V

Others

- Output Short-Circuit Protection
- Soft-Start Limits Inrush Current
- Charge Status Output Pin
- Automatic Recharge

Application

- Fitness Accessories
- Smart Watches
- Bluetooth Handsets
- Wireless Low-Power Handheld Devices

Absolute Maximum Ratings

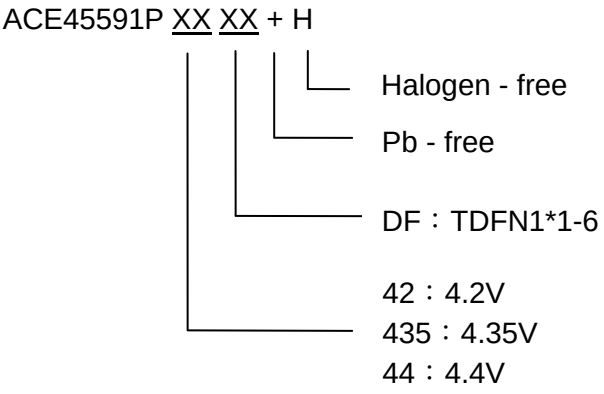
Symbol	Items	Value	Unit
V_{CC}	Input Voltage	-0.3～7	V
V_{PROG}	PROG Voltage	-0.3～7	V
V_{BAT}	BAT Voltage	-0.3～7	V
V_{CHGb}	CHGb Voltage	-0.3～7	V
I_{BAT}	Battery Charge Current	300	mA
P_{DMAX}	Power Dissipation	0.5	W
T_J	Junction Temperature	-40~125	℃
Tstg	Storage Temperature	-55 to 150	℃
Tsolder	Package Lead Soldering Temperature	260℃, 10s	

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

Recommended Operating Conditions

Symbol	Items	MIN	NOM	MAX	UNIT
V_{CC}	Input operating voltage range	4.5	5	5.5	V
I_{BAT}	Battery charge current range	1	50	150	mA
T_J	Junction temperature	0		125	℃
R_{PROG}	CC mode charge current programming resistor	0.4	2	100	KΩ

Ordering information



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.