ACE555

400mA LDO Dropout Voltage Regulator

Description

ACE555 is a series of low dropout three terminal regulators with a dropout of 1.22V at 400mA load current.

Other than a fixed version（Vout＝1.8V,2.5V,2.85V,3.3V,5V）, ACE555 has an adjustable version, which can provide an output voltage from 1.25 to 13.8V with only two external resistors.

ACE555 offers thermal shut down and current limit functions, to assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

ACE555 is available in SOT-89-3 power Package. Lead free package is also available on command.

Features

- Other than a fixed version and an adjustable version, output value can be customized on command.
- Maximum output current is 400mA
- Output voltage accuracy is within ±1%
- Range of operation input voltage: Max 18V
- Line regulation: 0.2%
- Load regulation: 0.4%
- Environment Temperature: -50℃~140℃

Application

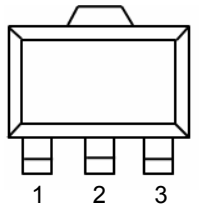
- Power Management for Computer Mother Board, Graphic Card
- LCD Monitor and LCD TV
- DVD Decode Board

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Input voltage	V_{IN}	18	V
Power Dissipation SOT-89-3		0.5	W
Junction temperature	T_J	150	°C
Environment Temperature	T_A	140	°C
Storage temperature	T_S	65 to 150	°C

Packaging Type

SOT-89-3



Pin	SOT-89-3(A)	SOT-89-3(B)	SOT-89-3(C)
V_{OUT}	1	3	2
GND	2	1	1
V_{IN}	3	2	3

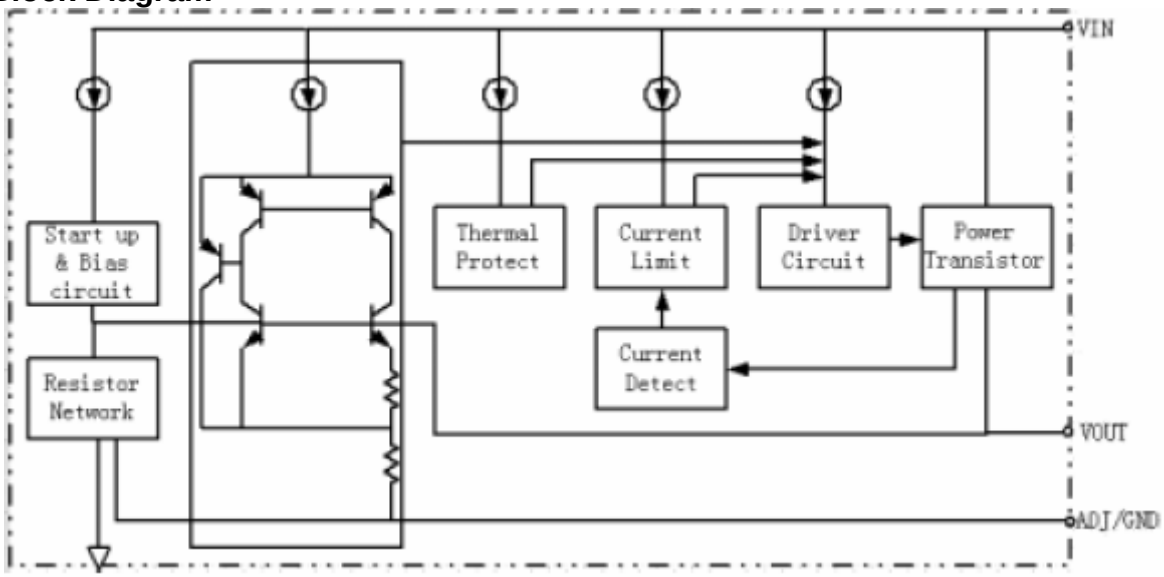
Ordering information

Selection Guide

ACE555 XX XXX + H

- Halogen - free
- Pb - free
- AMA: SOT-89-3
  AMB: SOT-89-3
  AMC: SOT-89-3
- Output Voltage :
  1.8V / 2.5V ….. 5.0V

Block Diagram



Recommended Work Conditions

Item	Min	Nom	Max	Unit
Input Voltage Range			18	V
Ambient Temperature	-50		140	°C

Electrical Characteristics

Symbol	Prameter	Condition	Min	Typical	Max	Units
Vout	Output Voltage	ACE555-1.8V	1.764	1.80	1.836	V
		ACE555-2.5V	2.45	2.5	2.55	V
		ACE555-2.85V	2.793	2.85	2.907	V
		ACE555-3.3V	3.234	3.3	3.366	V
		ACE555-5.0V	4.9	5	5.1	V
ΔVout	Line Regulation（note1）	Vin=5V～15V		0.2	0.4	%
		ACE555-5.0V (Vin=7V~15V)		0.2	0.4	%
ΔVout	Load Regulatiion（note1,2）	IL＝0～400mA		0.2	0.4	%
Dropout Voltage	Input-Output Voltage Differentia（note3）	ΔVout, ΔVref,=1%，Iout=400mA		1.22	1.3	V
Current Limit	Max Load Current	Vin-Vout=2V, Tj=25℃	600			mA
Iq	Quiescent Current			4	8	mA
ΔVout/ ΔT· Vout	Temperature Stability				0.5	%

Note：1.The Parameters of Line Regulation and Load Regulation in Table1 are tested under constant junction temperature. The Curve of Load Regulation vs. Temperature is shown in typical parameter curve that follows.

2.When Iout varies between 0~400mA,Vin-Vout varies between 1.5V~12V under constant junction temperature，the parameter is satisfied the criterion in table. If temperature varies between -50℃≤TA≤140℃，it needs output current to be larger than 10mA to satisfy the criterion.

3.Dropout Voltage is specified over the full output current range of the device, and it is tested under following testing conditions: First step is to find out the Vout value (Vout1) when Vin1=Vout+1.5V, second step is to decrease Vin(Vin2) until Vout value is equal to 99%*Vout1(Vout2). Vdropout=Vin2-Vout2.

4.Minimum Load Current is defined as the minimum output current required to maintain regulation. When 1.5V≦Vin-Vout≦12V，the device is guaranteed to regulate if the output current is greater than 10mA.

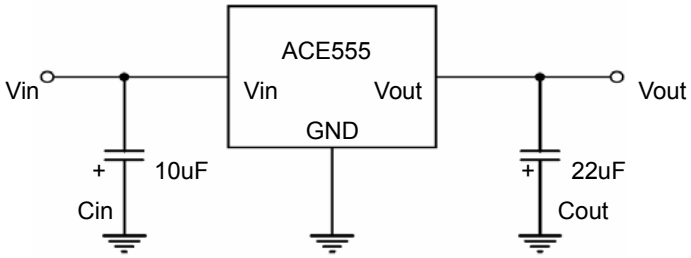
Detailed Description

ACE555 is a series of low dropout voltage, three terminal regulators. Its application circuit is very simple: the fixed version only needs two capacitors and the adjustable version only needs two resistors and two capacitors to work. It is composed of some modules including start-up circuit, bias circuit, bandgap, thermal shutdown, current limit, power transistors and its driver circuit and so on.

The thermal shut down and current limit modules can assure chip and its application system working safety when the environment temperature is larger than 140℃ or output current is larger than 600mA. The bandgap module provides stable reference voltage, whose temperature coefficient is compensated by careful design considerations. The temperature coefficient is under 100ppm/℃. And the accuracy of output voltage is guaranteed by trimming technique,

Typical Application

ACE555 has an adjustable version and five fixed versions, Chart1 is its typical application.



Application Hints

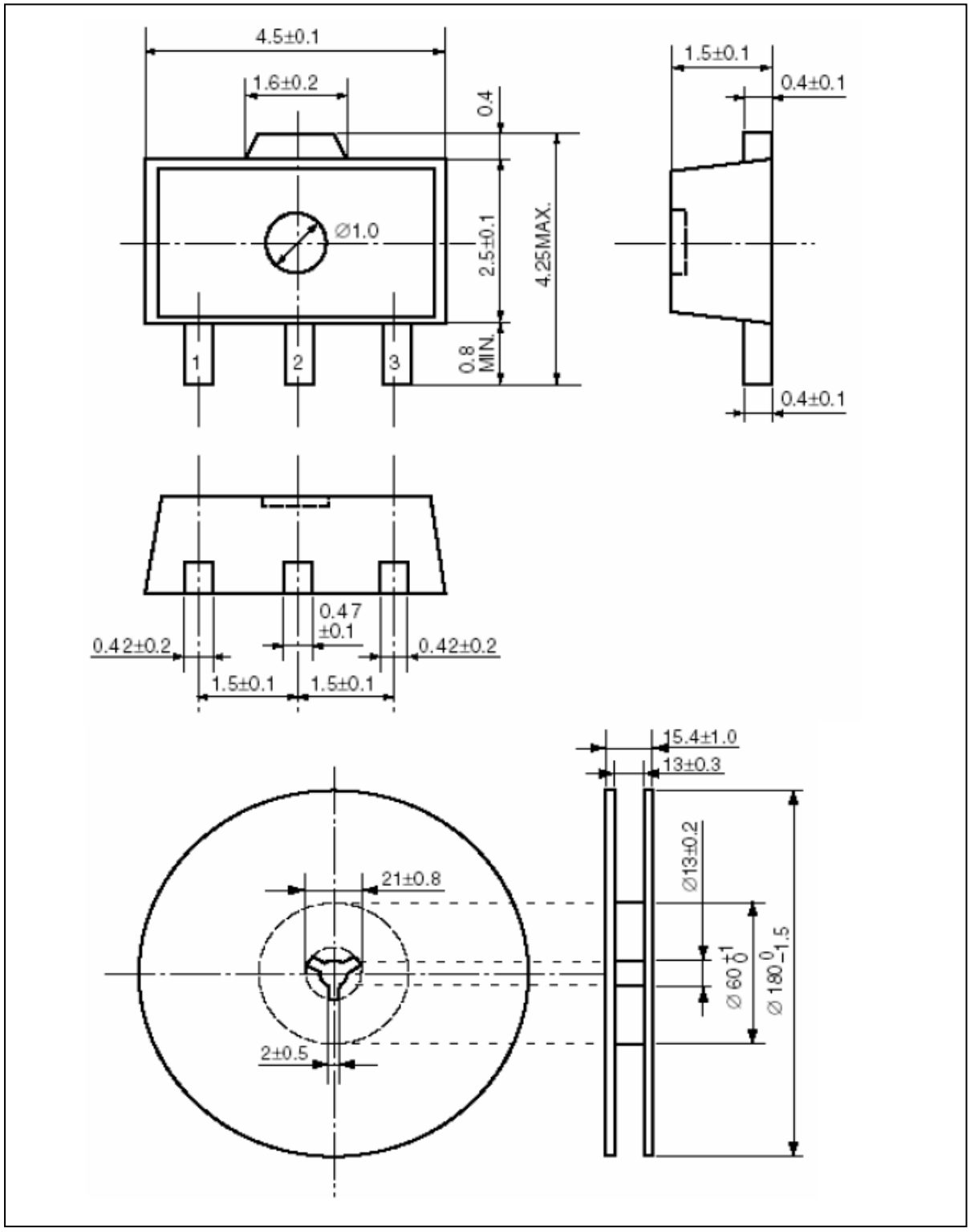
1.Recommend using 10uF tan capacitor as bypass capacitor(C1) for all application circuit.

2.Recommend using 22uF tan capacitor to assure circuit stability.

3.Using a bypass capacitor(CAdj) between the adjust terminal and ground can improve ripple rejection, This bypass capacitor prevents ripple from being amplified as the output voltage is increased.The impedance of CAdj should be less than the resistor's(R1) which is between output and adjust pins to prevent ripple from being amplified at any ripple frequency. As R1 is normally in the range of 200Ω~350Ω,the value of CAdj should satisfy this equation:2*Fripple*CAdj<R1. Recommend using 10uF tan capacitor.

Packing Information

SOT-89-3



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 Electronics 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.

ACE Technology Co., LTD.
http://www.ace-ele.com/