



# ACE78L05S

## 5V 3-Terminal Positive Voltage Regulator

### Description

ACE78L05S circuit is a three-terminal positive voltage regulator, with a 5V fixed output voltage. It can be used as a regulator in many of electrical equipment.

### Features

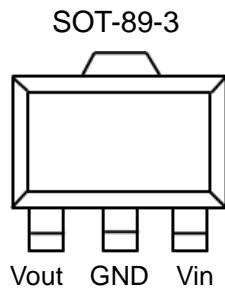
- Few external components and high flexibility
- Internal thermal and overload protection
- Output current up to 100mA

### Absolute Maximum Ratings

Unless otherwise specified,  $T_{amb}=25^{\circ}C$

Parameter	Max	Unit
Input Voltage ( $V_{IN}$ )	35	V
Output current ( $I_O$ )	200	mA
Operating Temperature	-30 ~ 80	$^{\circ}C$
Storage Temperature	- 55 ~ 150	$^{\circ}C$
Power Dissipation ( $P_D$ )	650	mW

### Packaging Type



### Ordering information

ACE78L05 S XX + H

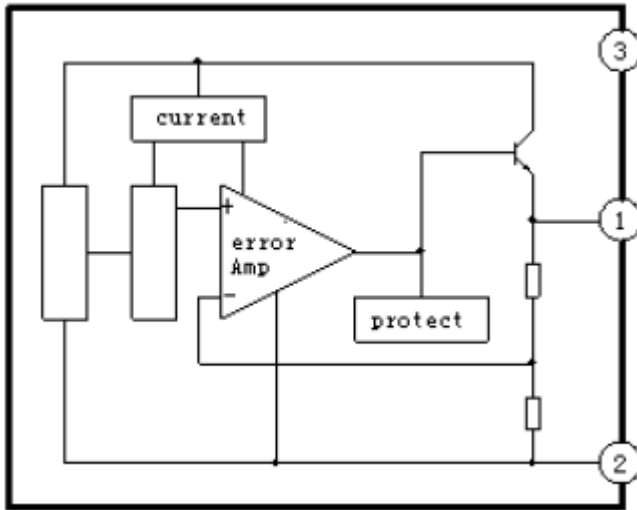
- └─ Halogen-free
- └─ Pb-free
- └─ AM : SOT-89-3



# ACE78L05S

## 5V 3-Terminal Positive Voltage Regulator

### Block Diagram



### Electrical Characteristics

$T_{amb}=25^{\circ}\text{C}$ ,  $I_o=40\text{mA}$ ,  $V_{IN}=10\text{V}$  unless otherwise noted

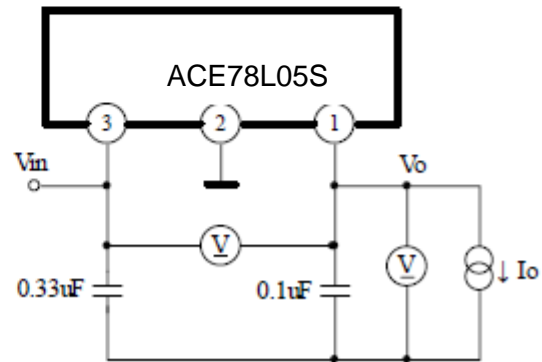
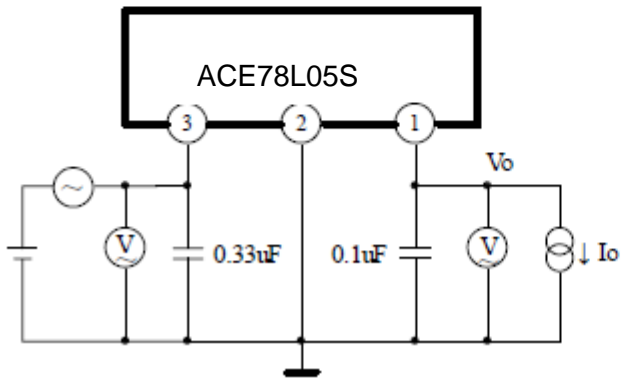
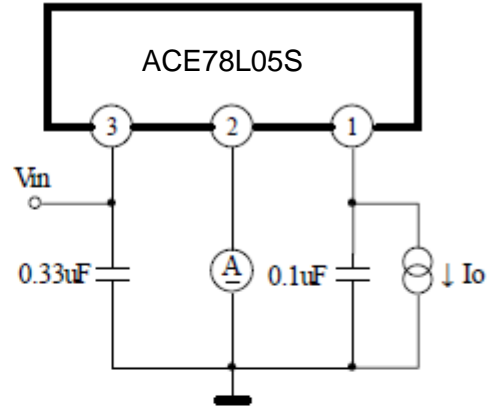
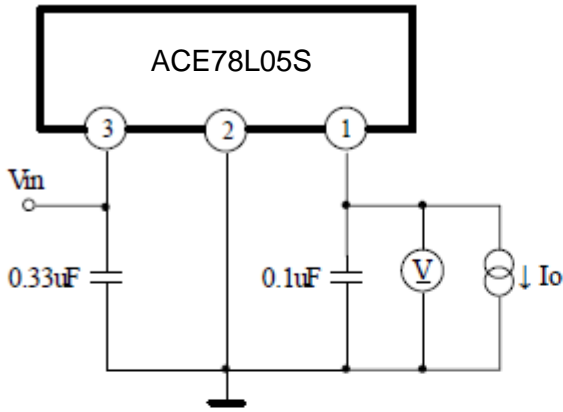
Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage ( $V_o$ )		4.9	5.0	5.1	V
	$V_{in}=7.5\sim 20\text{V}$ $I_o=1\sim 70\text{mA}$	4.85		5.15	
Line Regulation ( $REG_V$ )	$V_{in}=7.5\sim 20\text{V}$		55	150	mV
	$V_{in}=8.0\sim 20\text{V}$		45	100	
Load Regulation ( $REG_L$ )	$I_o=1\sim 100\text{mA}$		11	60	mV
	$I_o=1\sim 40\text{mA}$		5	30	
Quiescent Current ( $I_B$ )			3	6	mA
Quiescent Current Change	$\Delta I_{BV}$	$V_{in}=8.0\sim 20\text{V}$		1.0	mA
	$\Delta I_{BL}$	$I_o=1\sim 40\text{mA}$		0.1	
Output Noise Voltage ( $V_{NO}$ )	$f=10\text{Hz}\sim 100\text{kHz}$		40		$\mu\text{V}$
Ripple Rejection (R.R)	$V_{in}=8.0\sim 18\text{V}$ $f=120\text{Hz}$	47	57		dB
Dropout Voltage ( $V_{DIFmin}$ )			1.7		V
Short Circuit Current Limit ( $I_{OS}$ )	$V_{in}=35\text{V}$		140		mA
Average Temperature Coefficient of Output Voltage ( $\Delta V_o/\Delta T$ )	$I_o=5\text{mA}$ $T_j=0\sim 125^{\circ}\text{C}$		-0.6 5		$\text{mA}/^{\circ}\text{C}$



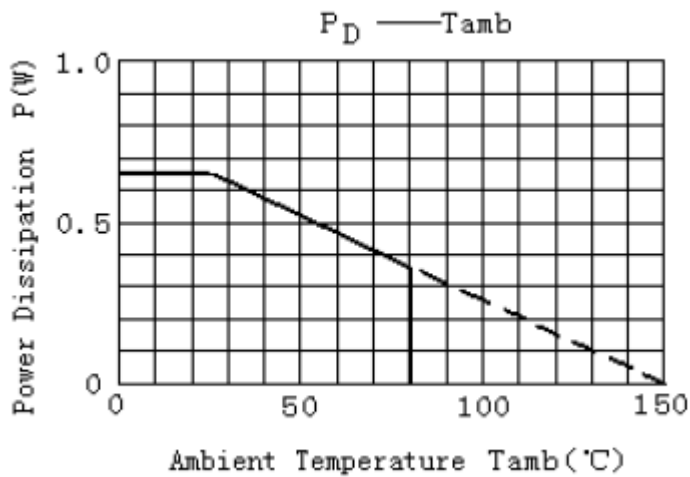
# ACE78L05S

## 5V 3-Terminal Positive Voltage Regulator

### Test Circuit



### Characteristics Curve

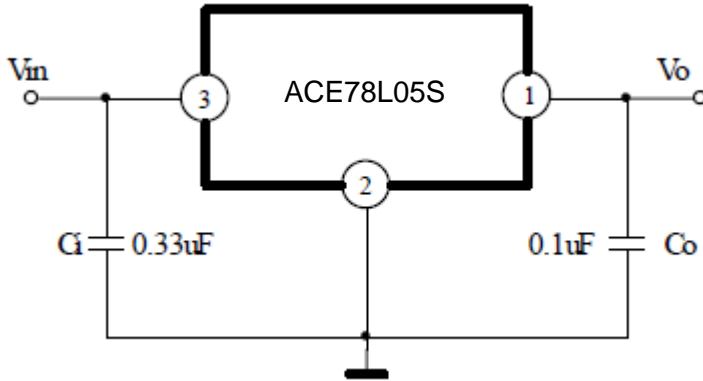




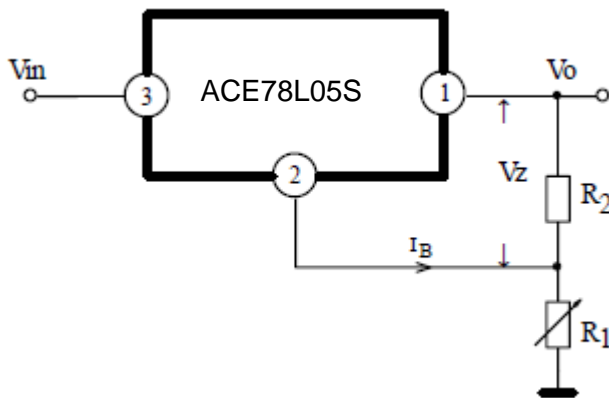
# ACE78L05S

## 5V 3-Terminal Positive Voltage Regulator

### Typical Application Circuit

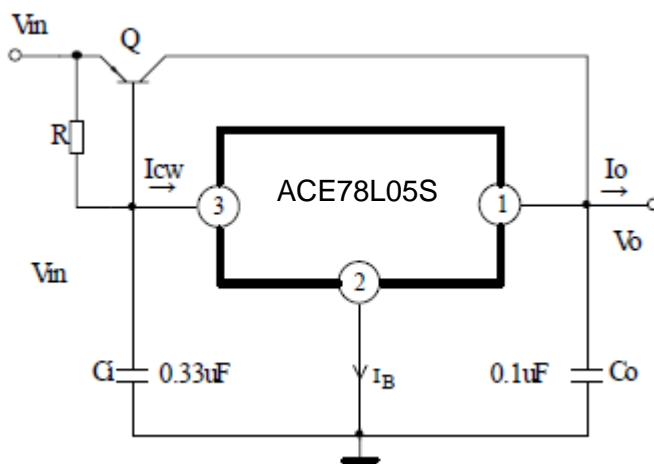


### Voltage Boost Regulator



$$V_o = V_z(1 + R_1/R_2) + R_1 I_B$$

### Current Boost Regulator



$$I_o = (1 + \beta) I_{cW} - \beta V_{BE} - R - I_b$$

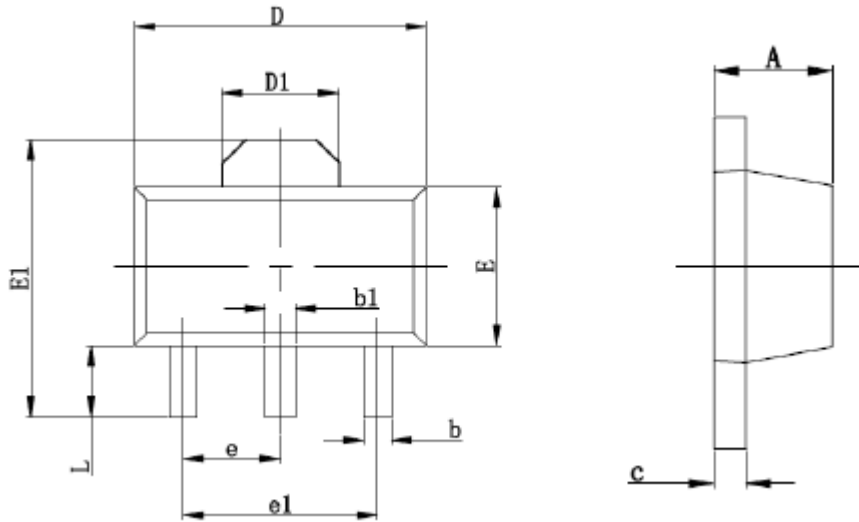


# ACE78L05S

## 5V 3-Terminal Positive Voltage Regulator

### Packing Information

#### SOT-89-3



Symbol	Min. (mm)	Max. (mm)	Symbol	Min. (mm)	Max. (mm)
A	1.40	1.60	E	2.35	2.55
b	0.35	0.52	E1	3.94	4.25
b1	0.40	0.58	e	1.50TYP	
c	0.35	0.44	e1	3.00TYP	
D	4.40	4.60	L	0.90	1.10
D1	1.55 (Reference value)				



# ACE78L05S

## 5V 3-Terminal Positive Voltage Regulator

### 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 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.

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