

# MC78L05AB

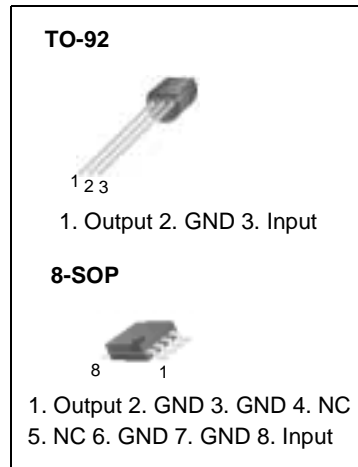
## 3-Terminal 0.1A 5V Positive Voltage Regulator

### Features

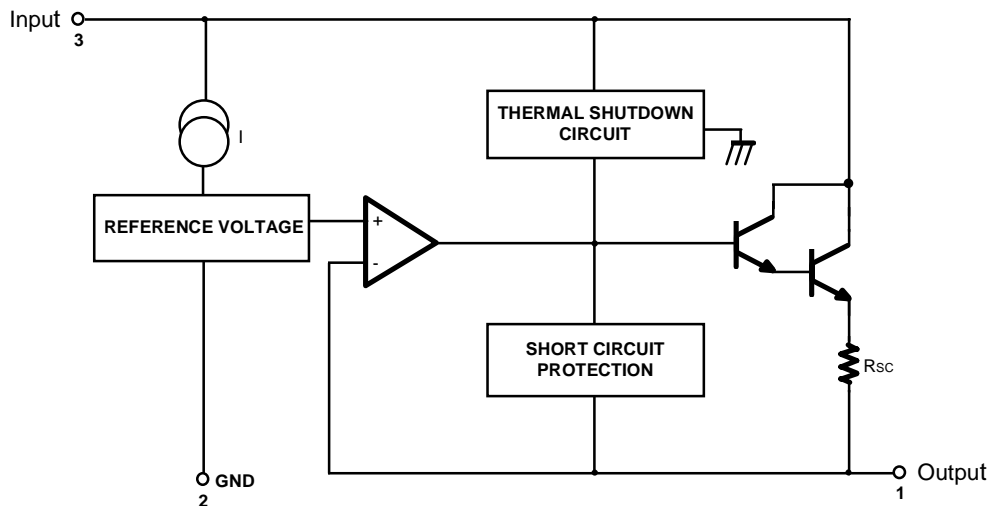
- Maximum Output Current of 100mA
- Output Voltage of 5V
- Thermal Overload Protection
- Short Circuit Current Limiting
- Output Voltage Offered in  $\pm 5\%$  Tolerance

### Description

The MC78L05AB series of fixed voltage monolithic integrated circuit voltage regulators are suitable for application that required supply current up to 100mA.



### Internal Block Diagram



## Absolute Maximum Ratings

( $T_a=25^\circ\text{C}$ , Unless otherwise noted, Note 5)

Parameter	Symbol	Value	Unit
Input Voltage	$V_I$	30	V
Maximum Operating Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

## Electrical Characteristics

( $V_I = 10\text{V}$ ,  $I_O = 40\text{mA}$ ,  $-40^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$ ,  $C_I = 0.33\mu\text{F}$ ,  $C_O = 0.1\mu\text{F}$ , unless otherwise specified. (Note 1))

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Output Voltage	$V_O$	$T_J = 25^\circ\text{C}$	4.8	5.0	5.2	V	
Line Regulation (Note1)	$\Delta V_O$	$T_J = 25^\circ\text{C}$	$7\text{V} \leq V_I \leq 20\text{V}$	-	8	150	mV
			$8\text{V} \leq V_I \leq 20\text{V}$	-	6	100	mV
Load Regulation (Note1)	$\Delta V_O$	$T_J = 25^\circ\text{C}$	$1\text{mA} \leq I_O \leq 100\text{mA}$	-	11	60	mV
			$1\text{mA} \leq I_O \leq 40\text{mA}$	-	5.0	30	mV
Output Voltage	$V_O$	$7\text{V} \leq V_I \leq 20\text{V}$	$1\text{mA} \leq I_O \leq 40\text{mA}$	-	-	5.25	V
		$7\text{V} \leq V_I \leq V_{MAX}$ (Note 2)	$1\text{mA} \leq I_O \leq 70\text{mA}$	4.75	-	5.25	V
Quiescent Current	$I_Q$	$T_J = 25^\circ\text{C}$	-	2.0	5.5	mA	
Quiescent Current Change	with line	$\Delta I_Q$	$8\text{V} \leq V_I \leq 20\text{V}$	-	-	1.5	mA
	with load	$\Delta I_Q$	$1\text{mA} \leq I_O \leq 40\text{mA}$ (Note3)	-	-	0.5	mA
Output Noise Voltage(Note3)	$V_N$	$T_A = 25^\circ\text{C}$ , $10\text{Hz} \leq f \leq 100\text{kHz}$	-	40	-	$\mu\text{V}/V_o$	
Temperature Coefficient of $V_O$ (Note3)	$\Delta V_O/\Delta T$	$I_O = 5\text{mA}$	-	-0.65	-	$\text{mV}/^\circ\text{C}$	
Ripple Rejection(Note3,4)	RR	$f = 120\text{Hz}$ , $8\text{V} \leq V_I \leq 18\text{V}$ , $T_J = 25^\circ\text{C}$	41	80	-	dB	
Dropout Voltage	$V_D$	$T_J = 25^\circ\text{C}$	-	1.7	-	V	

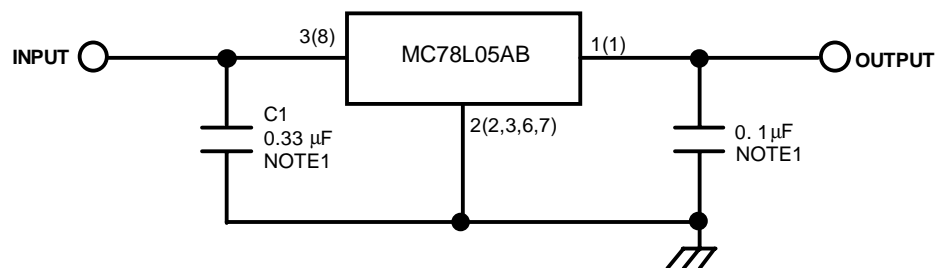
### Note:

- The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.
- Power dissipation  $P_D \leq 0.75\text{W}$ .
- These parameters although guaranteed over the recommended operating conditions are not 100% tested in production.
- Recommend minimum load capacitance of  $0.01\mu\text{F}$  to limit high frequency noise.
- Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Electrical specifications do not apply when operating the device outside of its stated operating conditions.

\*  $C_I$  is required if regulator is located an appreciable distance from power supply filter.

\*\*  $C_O$  is not needed for stability; however, it does improve transient response.

## Typical Application



'( )' : 8SOP Type

**Note:**

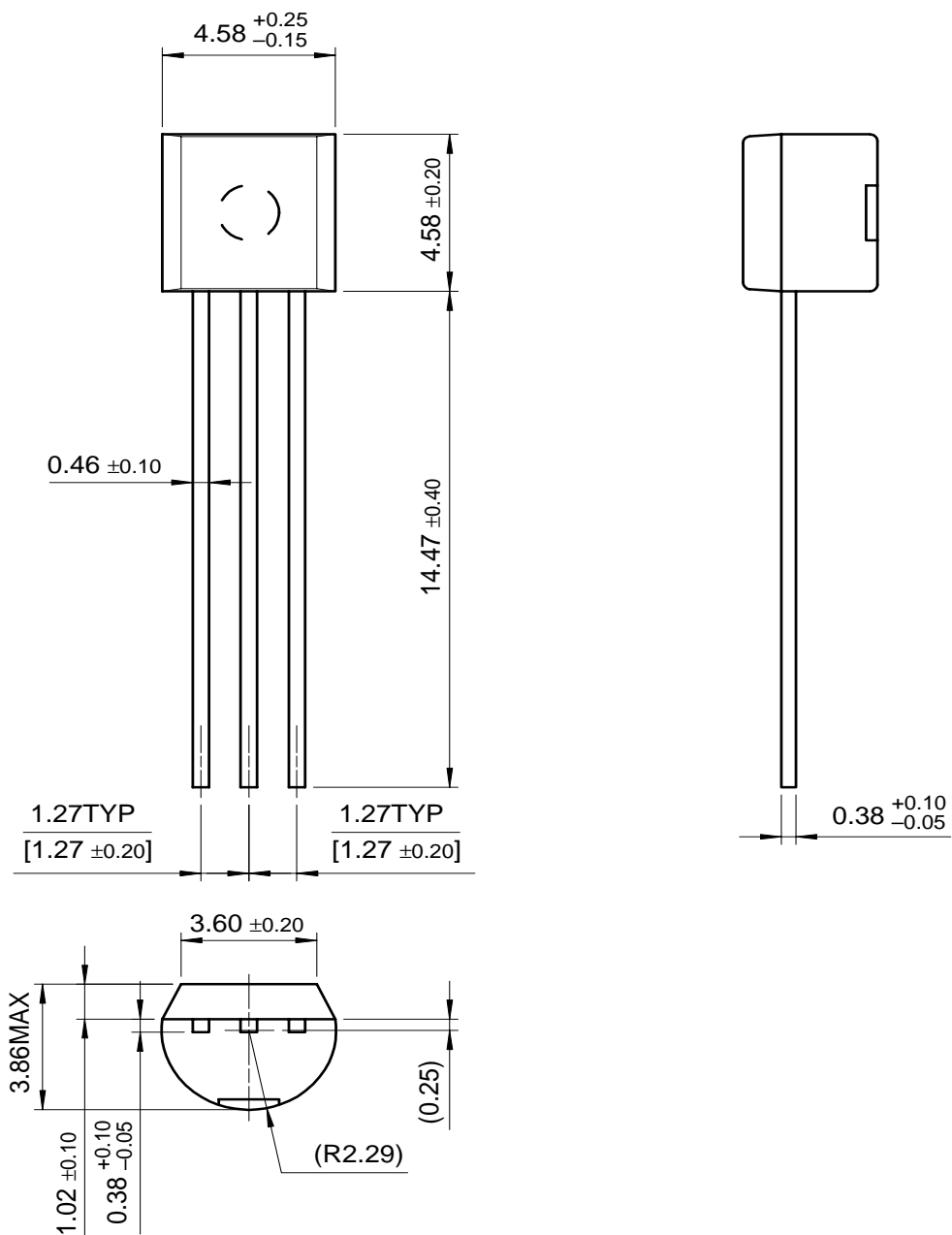
1. Bypass Capacitors are recommend for optimum stability and transient response and should be located as close as possible to the regulator

# Mechanical Dimensions

## Package

Dimensions in millimeters

### TO-92

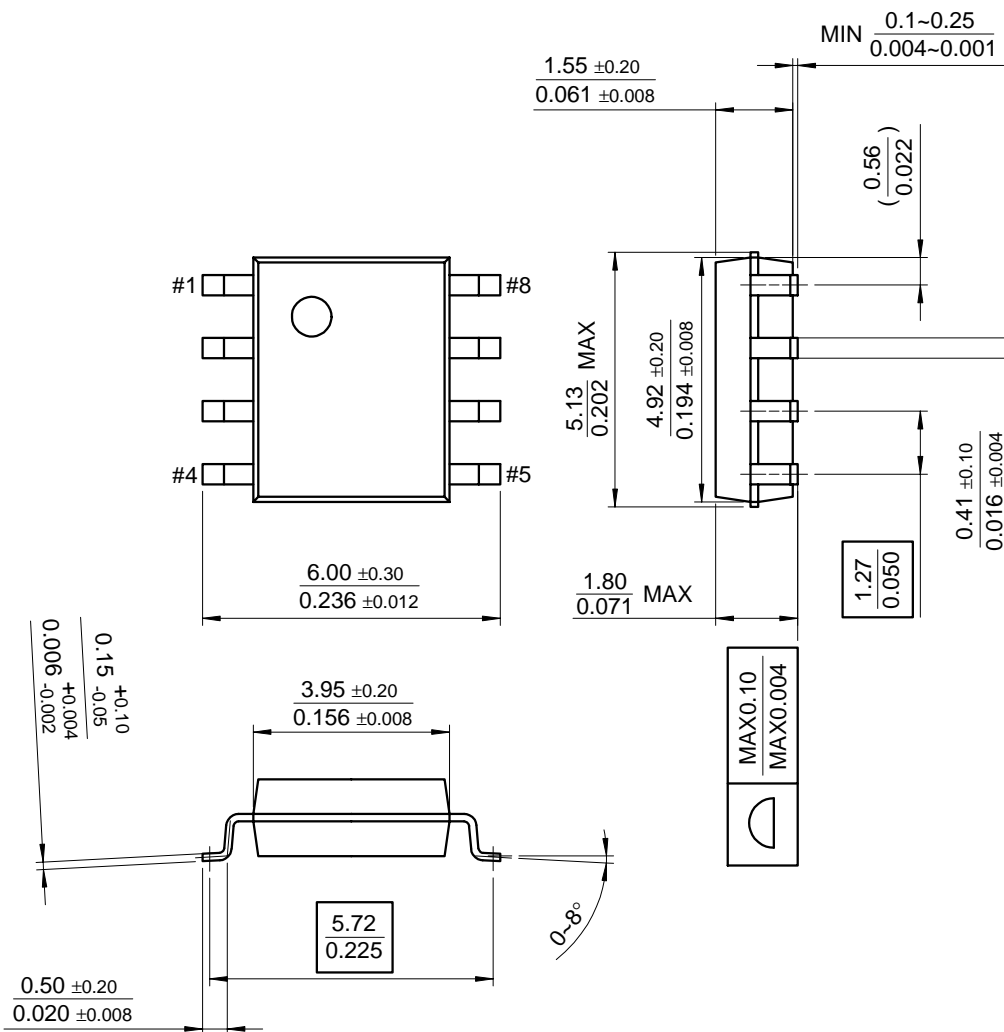


Mechanical Dimensions (Continued)

Package

Dimensions in millimeters

8-SOP



## Ordering Information

Product Number	Package	Output Voltage Tolerance	Operating Temperature
MC78L05ABP	TO-92	5%	-40 ~ +125°C
MC78L05ABD	8-SOP		

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