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 ±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.

TO-92



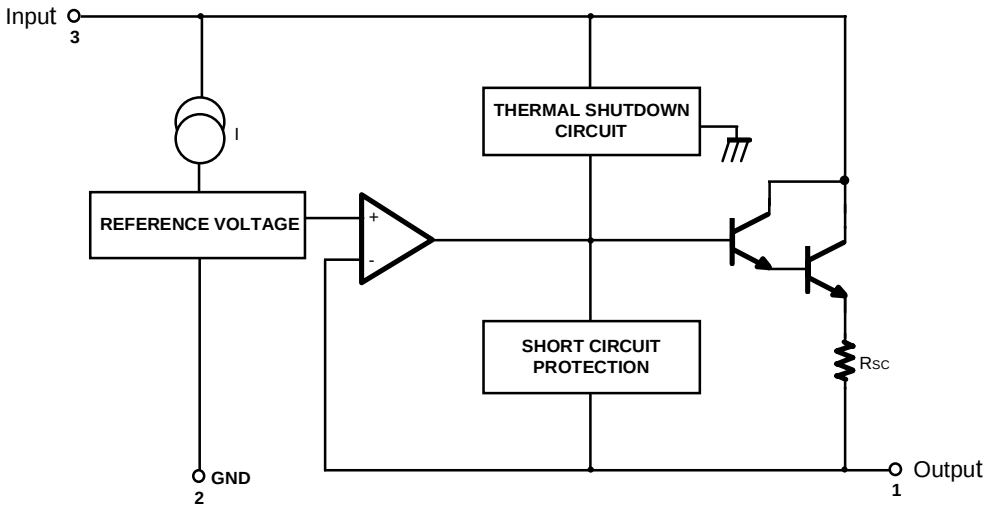
1. Output 2. GND 3. Input

8-SOP



1. Output 2. GND 3. GND 4. NC
5. NC 6. GND 7. GND 8. Input

Internal Block Diagram



Rev. 1.0.0

©2002 Fairchild Semiconductor Corporation

Absolute Maximum Ratings

(Ta=25°C, Unless otherwise noted, Note 5)

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

Electrical Characteristics

(V_I = 10V, I_O = 40mA, -40°C ≤ T_J ≤ 125°C, C_I = 0.33μF, C_O = 0.1μF, unless otherwise specified. (Note 1))

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

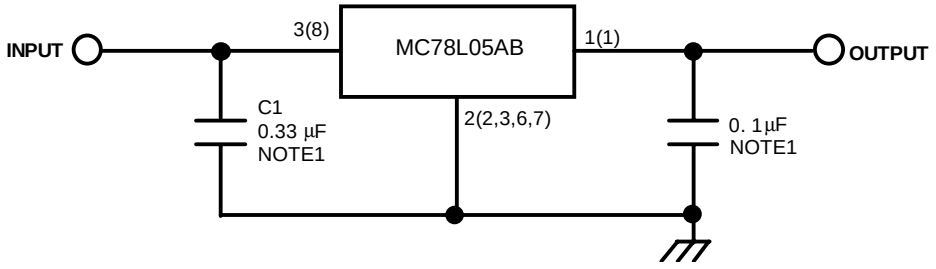
Note:

1. 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.
2. Power dissipation P_D ≤ 0.75W.
3. These parameters although guaranteed over the recommended operating conditions are not 100% tested in production.
4. Recommend minimum load capacitance of 0.01uF to limit high frequency noise.
5. 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:

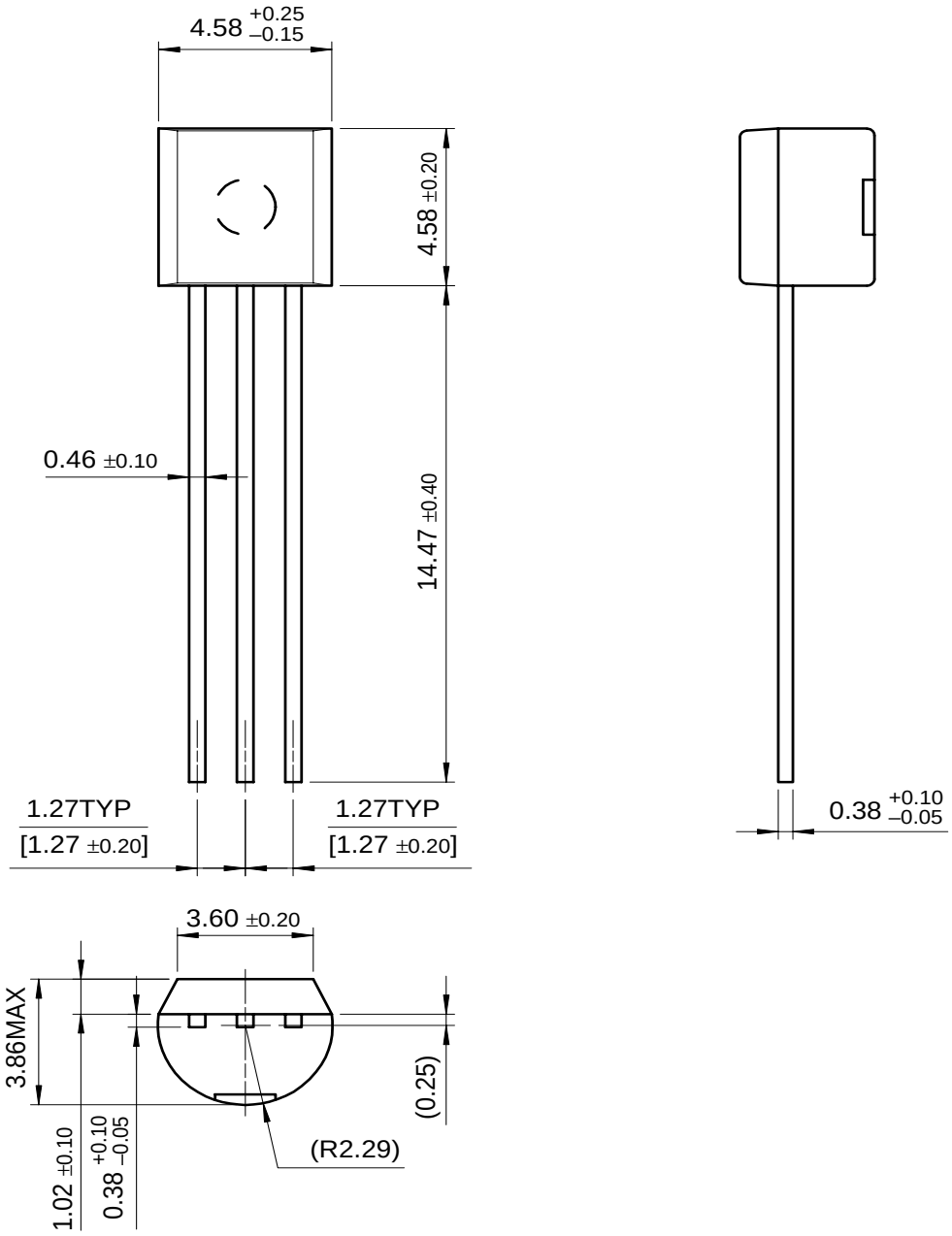
1. Bypass Capacitors are recommend for optimum stability and transient response and should be located as close as possible to the regulator

Mechanical Dimensions

Package

Dimensions in millimeters

TO-92

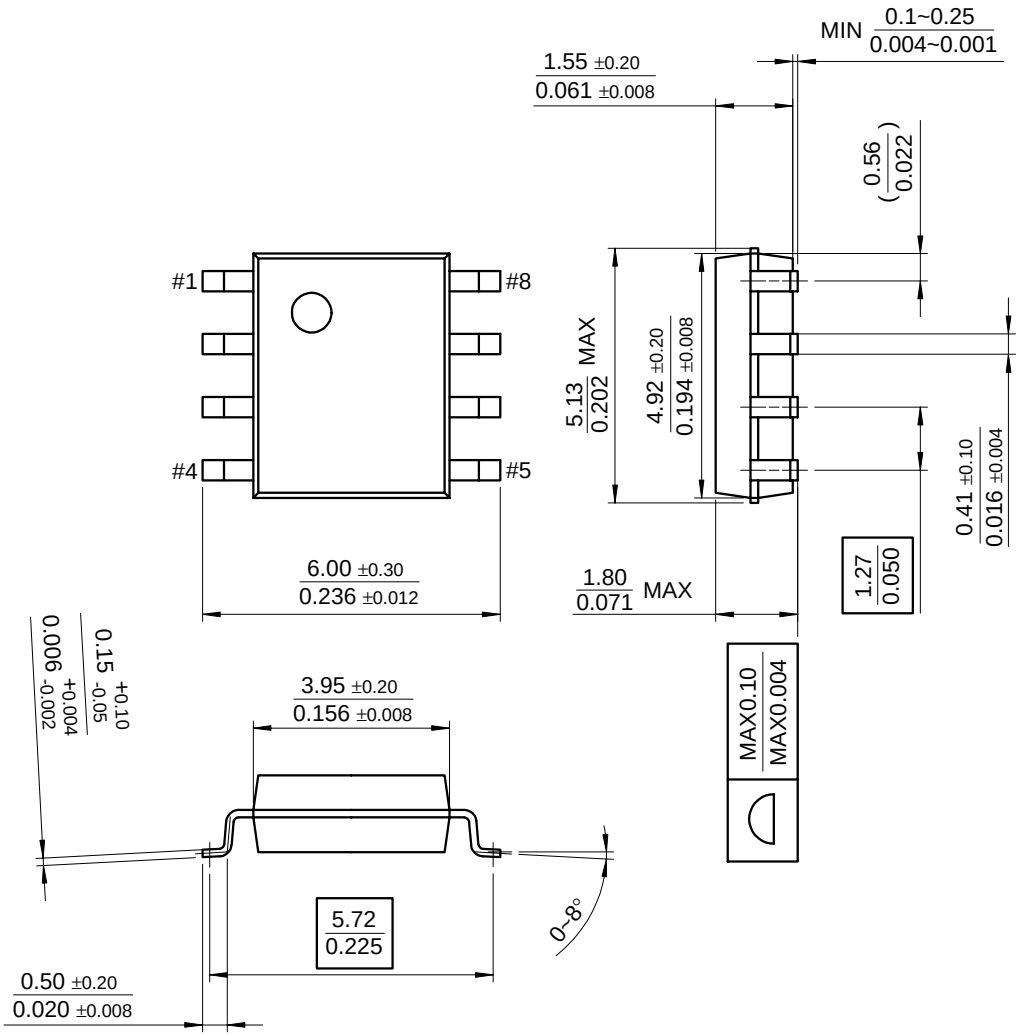


Mechanical Dimensions (Continued)

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		

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used 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 (c) 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 of the user.
2. A critical component in 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.

© 2002 Fairchild Semiconductor Corporation