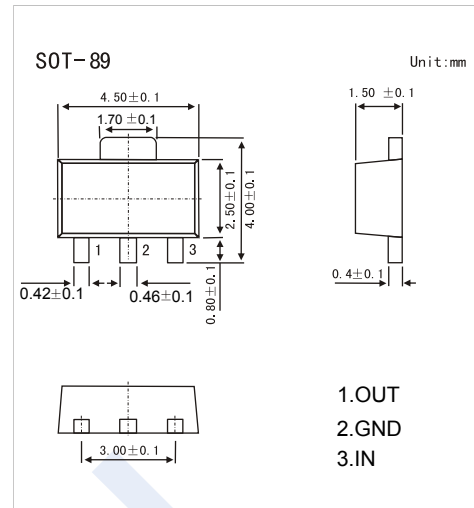


## Three-Terminal Positive Voltage Regulator

## LM78L05



### Features

- Maximum Output current  $I_o$ : 0.1A
- Output Voltage  $V_o$ : 5V
- Continuous Total Dissipation  $P_d$ : 0.5W ( $T_a = 25^\circ\text{C}$ )

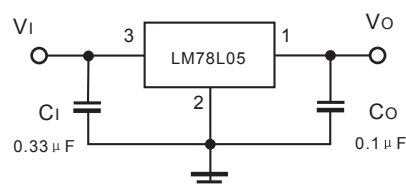
### Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Rating	Unit
Input Voltage	$V_i$	30	V
Operating Junction Temperature Range	$T_{OPR}$	-55 ~ +125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

### Electrical Characteristics ( $V_i=10\text{V}$ , $I_o=40\text{mA}$ , $C_i=0.33\ \mu\text{F}$ , $C_o=0.1\ \mu\text{F}$ , unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Output Voltage	$V_o$	$T_J = 25^\circ\text{C}$	4.8	5.0	5.2	V
		$T_J = 0 \sim 125^\circ\text{C}$ , $7\text{V} \leq V_i \leq 20\text{V}$ , $I_o = 1\text{mA} \sim 40\text{mA}$	4.75	5.0	5.25	V
		$T_J = 0 \sim 125^\circ\text{C}$ , $I_o = 1\text{mA} \sim 70\text{mA}$	4.75	5.0	5.25	V
Load Regulation	$\Delta V_o$	$T_J = 25^\circ\text{C}$ , $I_o = 1\text{mA} \sim 100\text{mA}$		15	60	mV
		$T_J = 25^\circ\text{C}$ , $I_o = 1\text{mA} \sim 40\text{mA}$		8	30	mV
Line Regulation	$\Delta V_o$	$7\text{V} \leq V_i \leq 20\text{V}$		32	150	mV
		$T_J = 25^\circ\text{C}$ , $8\text{V} \leq V_i \leq 20\text{V}$		26	100	mV
Quiescent Current	$I_q$	$T_J = 25^\circ\text{C}$		3.8	6	mA
Quiescent current Change	$\Delta I_q$	$T_J = 0 \sim 125^\circ\text{C}$ , $8\text{V} \leq V_i \leq 20\text{V}$			1.5	mA
		$T_J = 0 \sim 125^\circ\text{C}$ , $1\text{mA} \leq I_o \leq 40\text{mA}$			0.1	mA
Output Noise Voltage	$V_N$	$T_J = 25^\circ\text{C}$ , $10\text{Hz} \leq f \leq 100\text{kHz}$		42		$\mu\text{V}$
Ripple Rejection	RR	$T_J = 0 \sim 125^\circ\text{C}$ , $8\text{V} \leq V_i \leq 20\text{V}$ , $f = 120\text{Hz}$	41	49		dB
Dropout Voltage	$V_D$	$T_J = 25^\circ\text{C}$		1.7		V

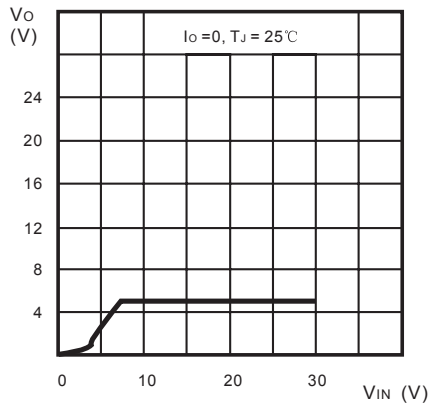
### Typical Application



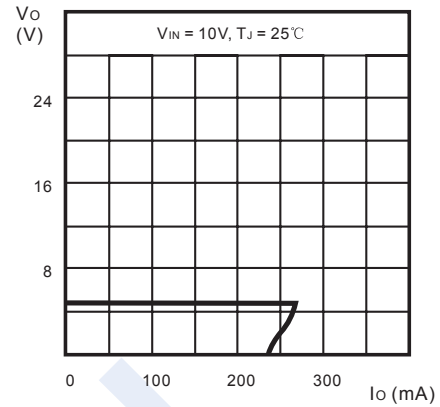
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

# LM78L05

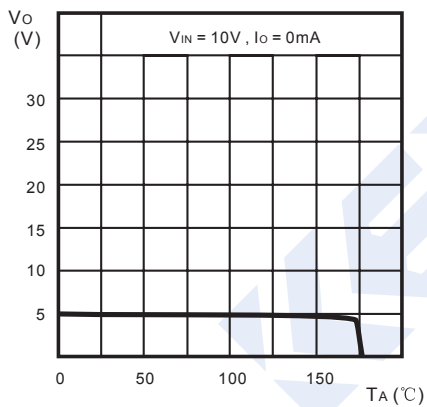
## ■ Typical Characteristics



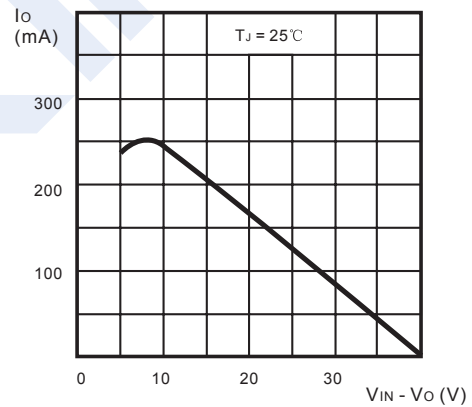
Output Characteristics



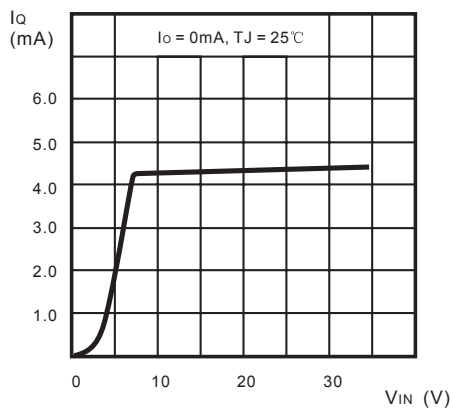
Load Characteristics



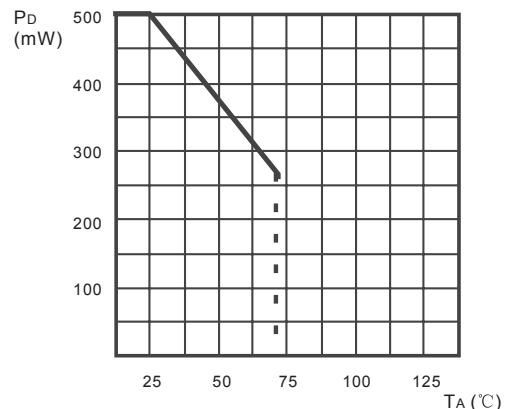
Thermal Shutdown



Short Circuit Output Current



Quiescent Current vs Input Voltage



Power Dissipation vs. Ambient Temperature