

# SOT-89 Plastic-Encapsulate Regulators

## 78L05

Three-terminal positive voltage regulator

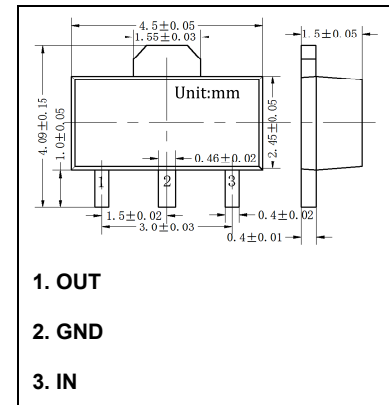
### Features:

Maximum Output current  $I_{OM}$ : 0.1A

Output voltage  $V_O$ : 5V

Continuous total dissipation

$P_D$ : 0.8W ( $T_a = 25^\circ\text{C}$ )



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

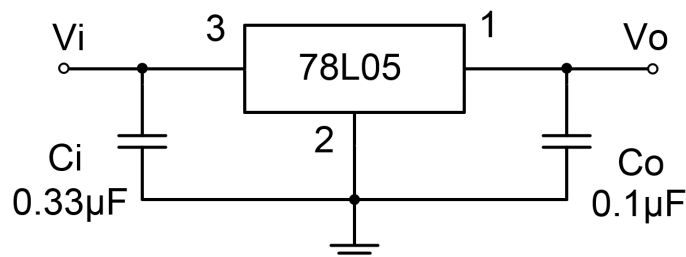
Symbol	Parameter	Value	Unit
$V_i$	Input Voltage	30	V
$T_{OPR}$	Operating Junction Temperature Range	0 to +150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

### Electrical Characteristics at Specified Virtual Junction Temperature

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

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

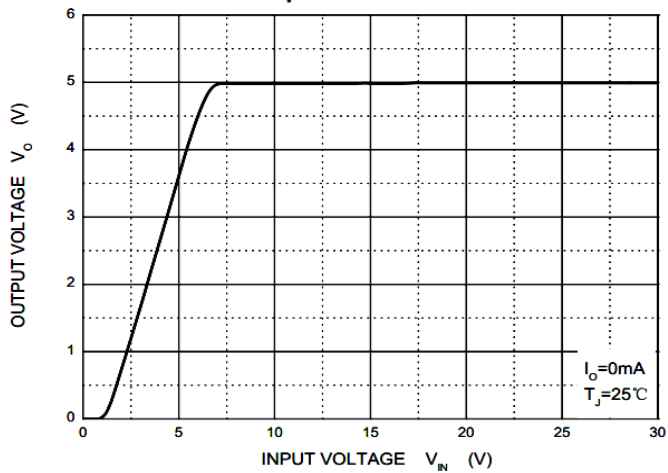
### Typical Application



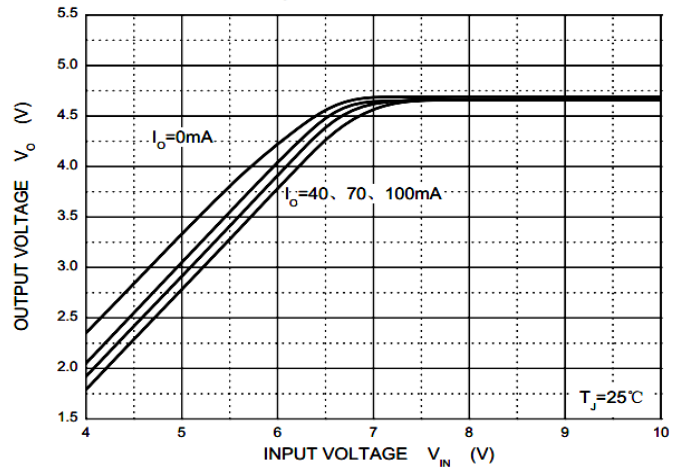
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as Possible to the regulators.

# Typical Characteristics

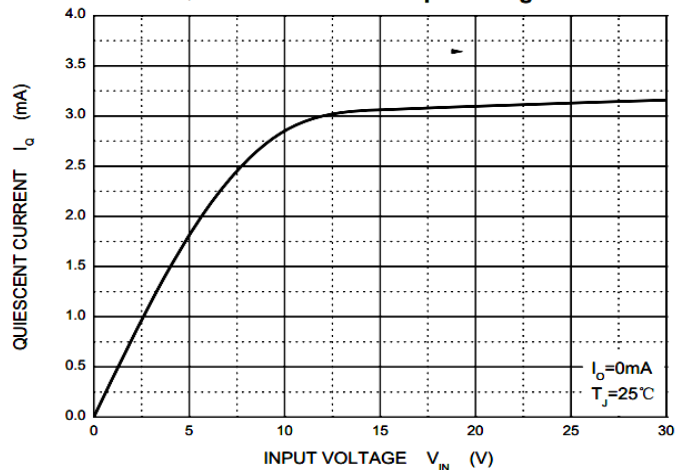
**Output Characteristics**



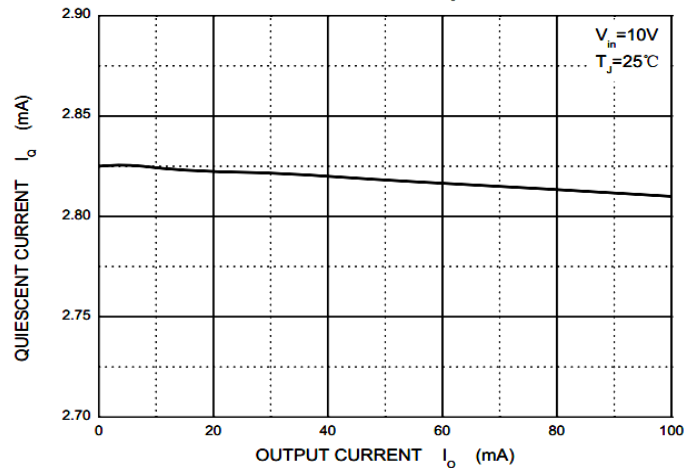
**Dropout Characteristics**



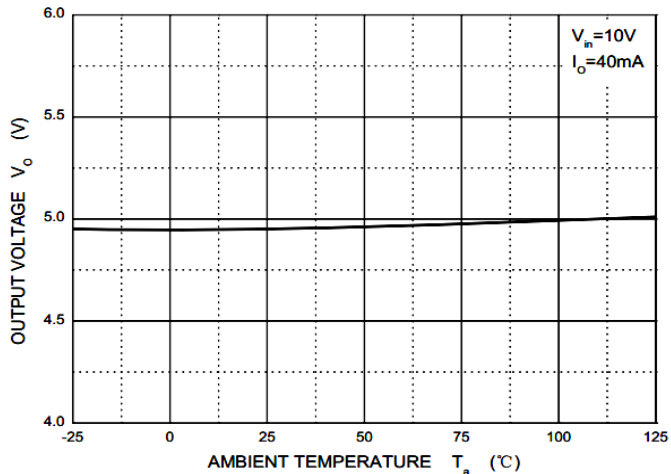
**Quiescent Current vs Input Voltage**



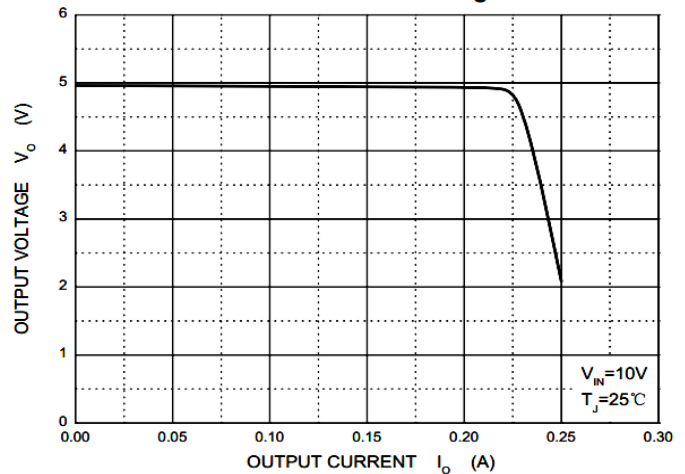
**Quiescent Current vs Output Current**



**Output Voltage vs Ambient Temperature**



**Current Cut-off Grid Voltage**



**Power Derating Curve**

