

# SOT-89 Encapsulate Three Terminal Voltage Regulator

## 78L05 Three-terminal positive voltage regulator

### FEATURES

Maximum Output current  $I_O$ : 0.1 A

Output voltage  $V_O$ : 5 V

Continuous total dissipation

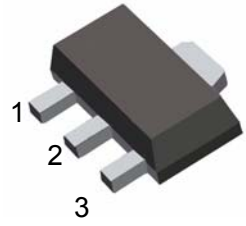
$P_D$ : 0.5 W ( $T_a = 25^\circ\text{C}$ )

### SOT-89

1. OUT

2. GND

3. IN



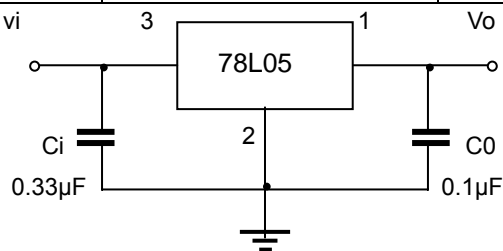
### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	$V_I$	30	V
Operating Junction Temperature Range	$T_{OPR}$	0~+125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55~+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)

Parameter	Symbol	Test conditions		MIN	TYP	MAX	UNIT
Output voltage	$V_O$		25 $^\circ\text{C}$	4.8	5.0	5.2	V
		7V $\leq V_I \leq 20\text{V}$ , $I_O=1\text{mA} \sim 40\text{mA}$	0-125 $^\circ\text{C}$	4.75	5.0	5.25	V
		$I_O=1\text{mA} \sim 70\text{mA}$		4.75	5.0	5.25	V
Load Regulation	$\Delta V_O$	$I_O=1\text{mA} \sim 100\text{mA}$	25 $^\circ\text{C}$		15	60	mV
		$I_O=1\text{mA} \sim 40\text{mA}$	25 $^\circ\text{C}$		8	30	mV
Line regulation	$\Delta V_O$	7V $\leq V_I \leq 20\text{V}$			32	150	mV
		8V $\leq V_I \leq 20\text{V}$	25 $^\circ\text{C}$		26	100	mV
Quiescent Current	$I_q$		25 $^\circ\text{C}$		3.8	6	mA
Quiescent Current Change	$\Delta I_q$	8V $\leq V_I \leq 20\text{V}$	0-125 $^\circ\text{C}$			1.5	mA
	$\Delta I_q$	1mA $\leq I_O \leq 40\text{mA}$	0-125 $^\circ\text{C}$			0.1	mA
Output Noise Voltage	$V_N$	10Hz $\leq f \leq 100\text{kHz}$	25 $^\circ\text{C}$		42		$\mu\text{V}$
Ripple Rejection	RR	8V $\leq V_I \leq 20\text{V}$ , $f=120\text{Hz}$	0-125 $^\circ\text{C}$	41	49		dB
Dropout Voltage	$V_d$		25 $^\circ\text{C}$		1.7		V

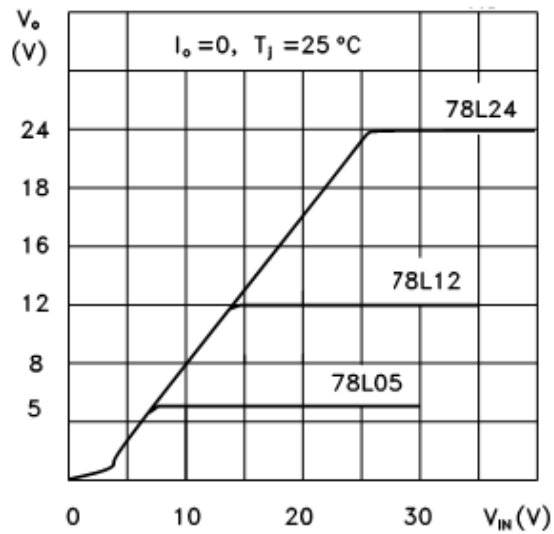
### TYPICAL APPLICATION



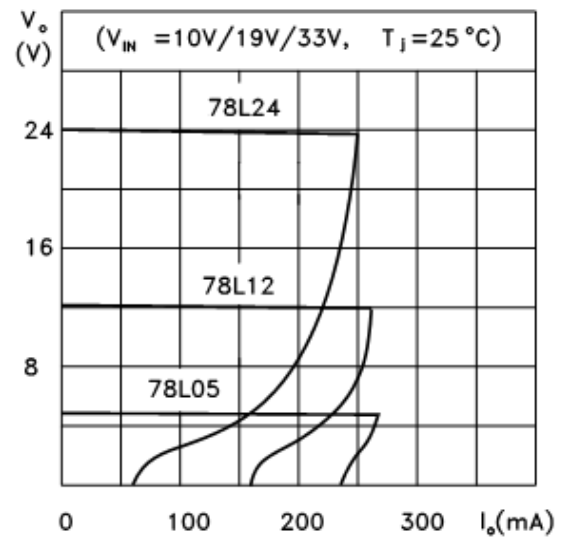
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as Possible to the regulators.

## Typical Characteristics

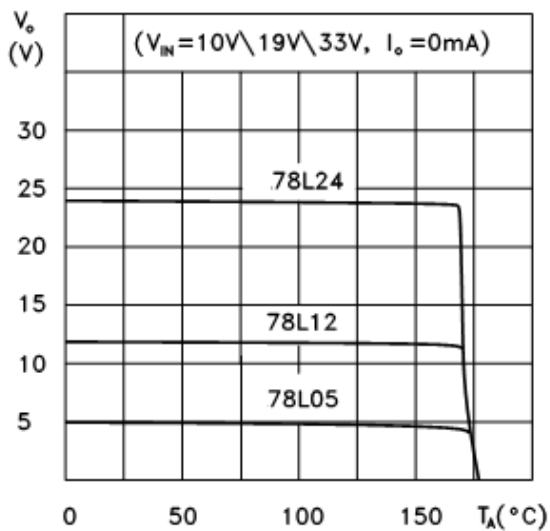
78L05/12/24 Output Characteristics



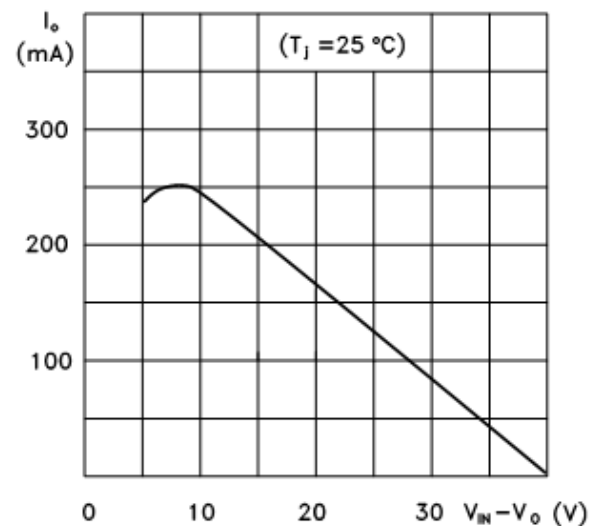
78L05/12/24 Load Characteristics



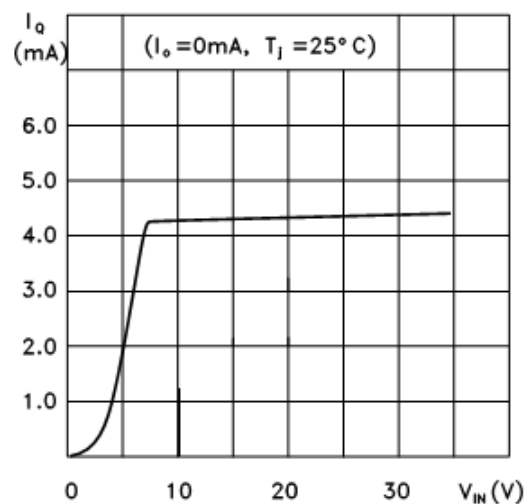
78L05/12/24 Thermal Shutdown



78L00 Series Short Circuit Output Current



78L05 Quiescent Current vs Input Voltage



PD-TA

