



78L05U Three-Terminal Positive Voltage Regulator

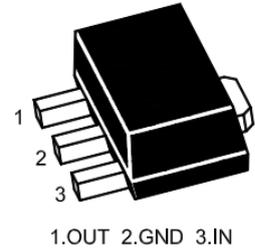
Features

Maximum Output current I_o : 0.1A

Output Voltage V_o : 5V

Continuous Total Dissipation P_d : 0.5W ($T_a = 25^\circ\text{C}$)

Marking:78L05



SOT-89-3L

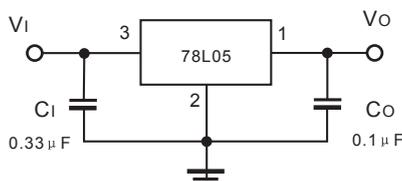
Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

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	ΔV_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	ΔV_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	ΔI_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		μV
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

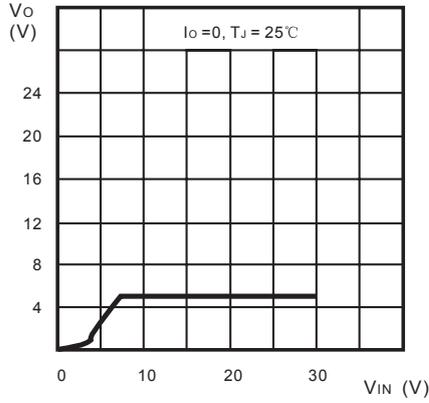
Typical Application



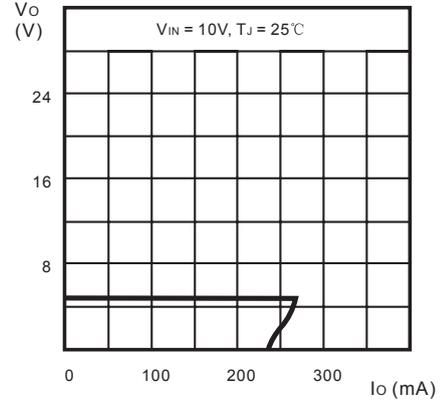
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.



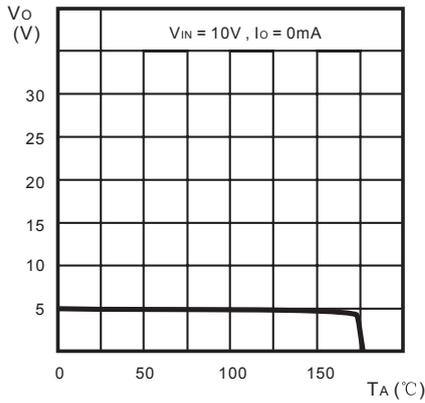
Typical Characteristics



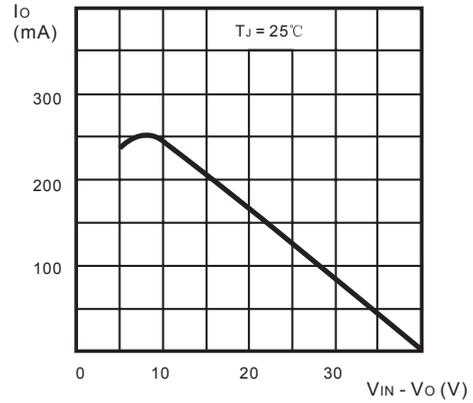
Output Characteristics



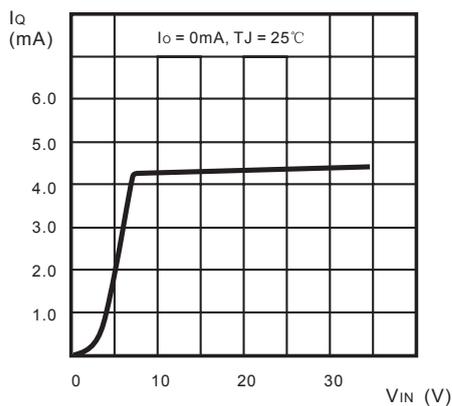
Load Characteristics



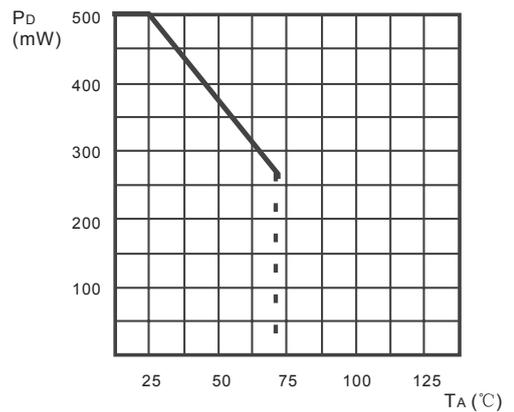
Thermal Shutdown



Short Circuit Output Current



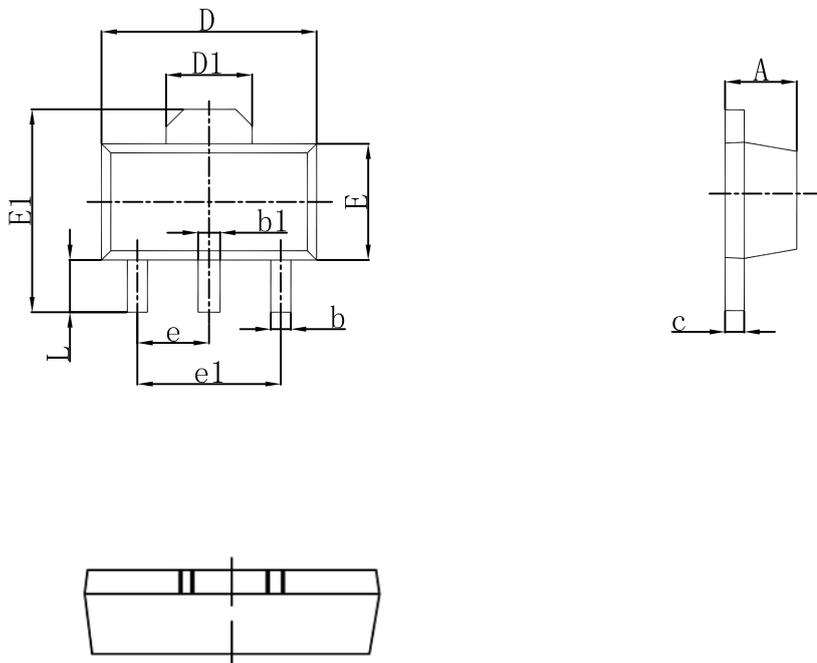
Quiescent Current vs Input Voltage



Power Dissipation vs. Ambient Temperature



SOT-89-3L Outlines Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047