



# THE DATASHEET OF 78L05S



## D`UghjWEncapsulate Voltage Regulators

Three-terminal positive voltage regulator

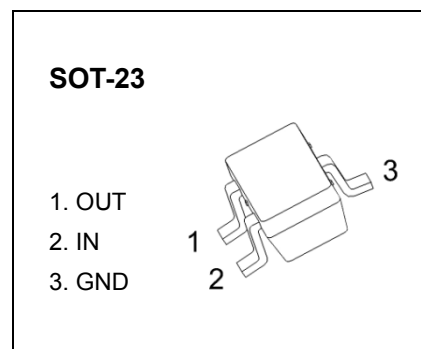
### FEATURE

Maximum Output Current  $I_o$ : 0.1 A

Output Voltage  $V_o$ : 5 V

Continuous Total Dissipation

$P_D$ : 0.25 W ( $T_a = 25^\circ\text{C}$ )



Solid dot = Green molding compound device,  
if none, the normal device.

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

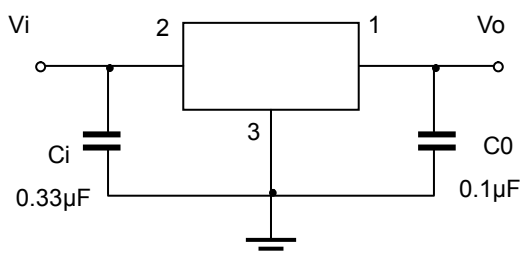
Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	30	V
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	160	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_{OPR}$	-40~+125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65~+150	$^\circ\text{C}$

### 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		
Voltage Regulation			25 $^\circ\text{C}$	4%	4.80	5.0	5.20	V
				3%	4.85	5.0	5.15	V
				2%	4.90	5.0	5.10	V
Output voltage	$V_o$	$7\text{V} \leq V_i \leq 20\text{V}, I_o = 1\text{mA} \sim 40\text{mA}$	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	$\Delta V_o$	$7\text{V} \leq V_i \leq 20\text{V}$			32	150	mV	
		$8\text{V} \leq V_i \leq 20\text{V}$	25 $^\circ\text{C}$		26	100	mV	
Quiescent Current	$I_q$		25 $^\circ\text{C}$		3.8	6	mA	
Quiescent Current Change	$\Delta I_q$	$8\text{V} \leq V_i \leq 20\text{V}$	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	
Output Noise Voltage	$V_N$	$10\text{Hz} \leq f \leq 100\text{KHz}$	25 $^\circ\text{C}$		42	$\mu\text{V}/V_o$		
Ripple Rejection	RR	$8\text{V} \leq V_i \leq 20\text{V}, f = 120\text{Hz}$	0-125 $^\circ\text{C}$	41	49	dB		
Dropout Voltage	$V_d$		25 $^\circ\text{C}$		1.7	V		

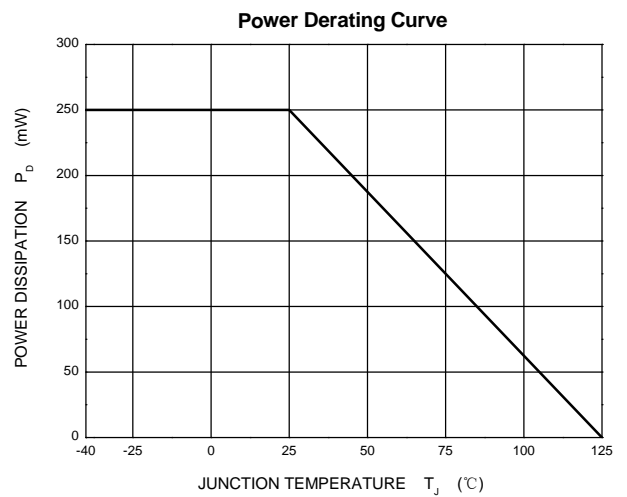
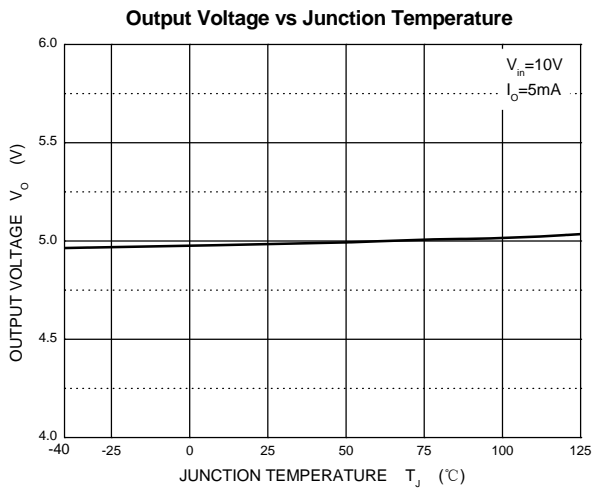
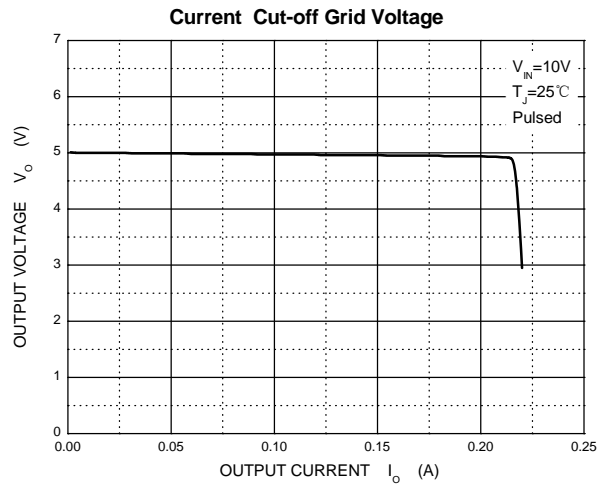
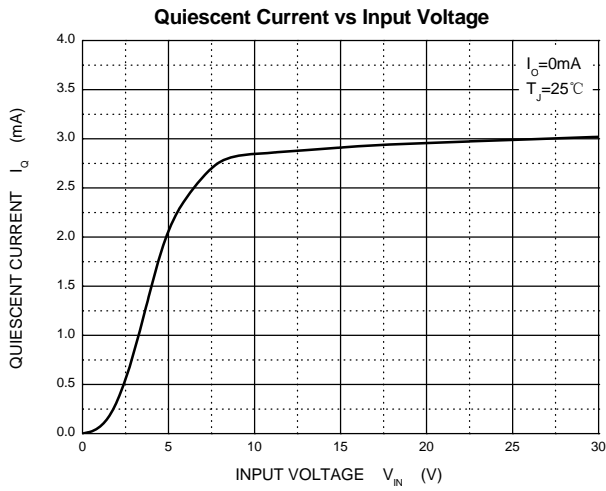
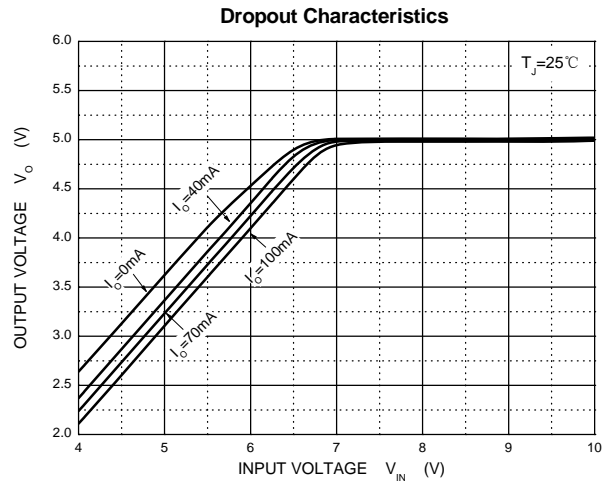
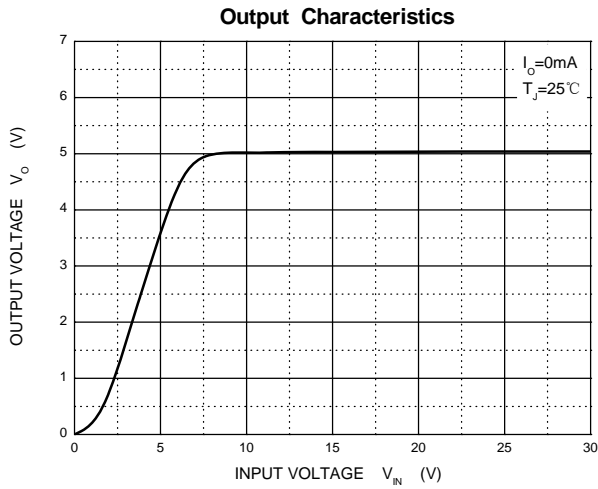
\* Pulse test.

### 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



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