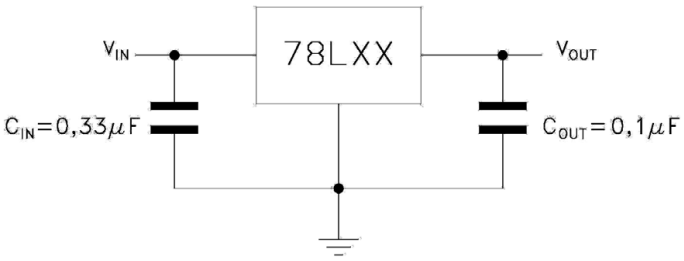
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Positive-Vol tage Regulators
78L33

Features

- 3-Terminal Positive-Vol tage Regulators
- Output Current up to 150 mA
- Internal Thermal-Overload Protection
- Internal Short-Circuit Current Limiting
- No External Components
- Output voltages of 3.3V
- Available in plastic TO-92 ,SOT-89 and SOT-23 packages

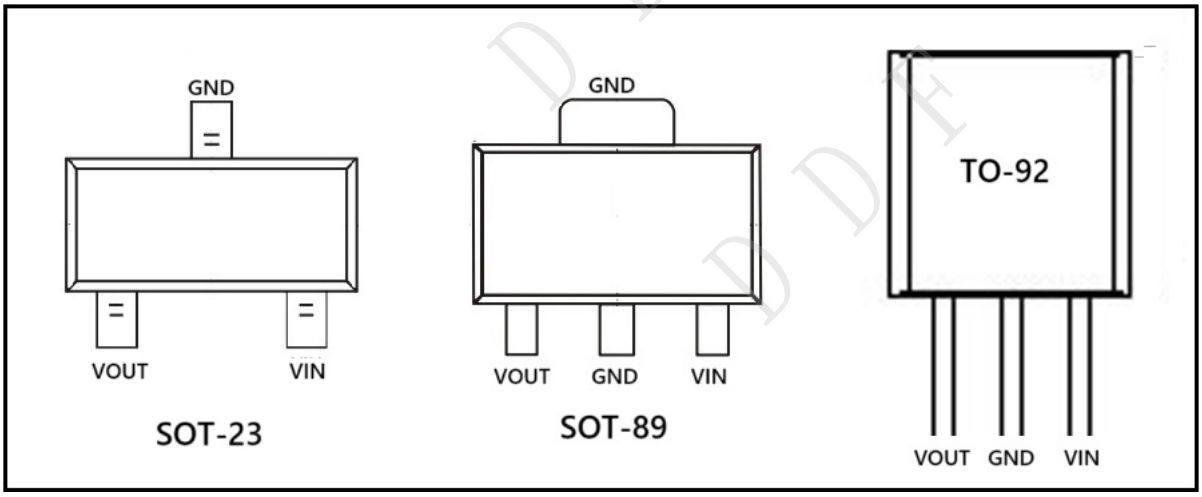


Equivalent Circuit or Test Circuit

Description

The 78L05is three-terminal positive regulators. One of these regulators can deliver up to 150 mA of output current. The internal limiting and thermal -shutdown features of the regulator make them essentially immune to overload. When used as a replacement for a zener diode-resistor combination, an effective improvement in output impedance can be obtained, together with lower quiescent current.

Available Packages and Pin Configuration



Thermal Information

Thermal Metric	Symbol	TO-92	SOT-89	SOT-23	Unit
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	160	200	330	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	40	50	84	°C/W

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Input voltage	V_I	30	V
Output current	I_O	150	mA
Power Dissipation	P_D	Internally Limited (*)	W
Storage Temperature	T_{STG}	-65~ 150	°C
OperatingTemperature （Operating free-air, case, or virtual junction temperature range）	T_{OP}	-40~+125	°C

（*）Refer to Thermal Information for details.

Recommended operating condition

Parameter	Min	Max	Unit
Input voltage	7	20	V
Output current		100	mA
OperatingTemperature	-25	125	℃

Electrical characteristics

78L33 （VI=8.3V, IO=40mA,CI = 0.33 μF, CO = 0.1 μF，unless otherwise noted）

Parameter	Symbol	Test Conditions		Min	Typ	Max	Uint
Output voltage	V_O		25°C	3.168	3.3	3.432	V
		I_O=1mA to 40mA V_I=5.3V to 18V	0 to 125 °C	3.135	3.3	3.465	
		I_O=1mA to 70mA		3.135	3.3	3.465	
Input regulation	△Vo	V_I=5.3V to 18V	25°C			150	mV
		V_I=6.3V to 18V				100	
Ripple rejection	RR	V_I=6.3Vto16.3V, f=120Hz	25°C	41			dB
Output regulation	△Vo	I_O=1mA to 100mA	25°C			60	mV
		I_O=1mA to 40mA				30	
Output noise voltage	V_N	f=10Hz-100Hz	25°C		42		μV
Dropout voltage	V_D	Io=100mA	25°C		2.0		V
Bias current	I_Q		25°C			6	mA
			125°C			5.5	
Bias current change	△I_Q	V_I=6.3V to 18V	0 to 125 °C			1.5	
		I_O=1mA to 40mA				0.1	

*Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible.Thermal effects must be taken into account separately.

**This specification applies only for dc power dissipation permitted by absolute maximum ratings