

**3-TERMINAL POSITIVE LINEAR REGULATOR****AZ7805****General Description**

The AZ7805 is a monolithic integrated circuit designed as fixed-voltage regulator for a wide variety of applications including local, on-card regulation.

This regulator is complete with internal current limiting, thermal shutdown protection, and safe-area compensation which makes it virtually immune from output overload. If adequate heat sinking is provided, this regulator can deliver output current up to 1.0A.

The AZ7805 is available in two plastic packages: TO-220 and TO-252.

Features

- Output Current up to 1.0A
- Fixed Output Voltage of 5V
- Output Voltage Tolerances of $\pm 5\%$ over the Full Temperature Range
- Internal Short Circuit Current-Limiting
- Internal Thermal Overload Protection

Applications

- Consumer Electronics
- Microprocessor Power Supply
- Mother Board I/O Power Supply

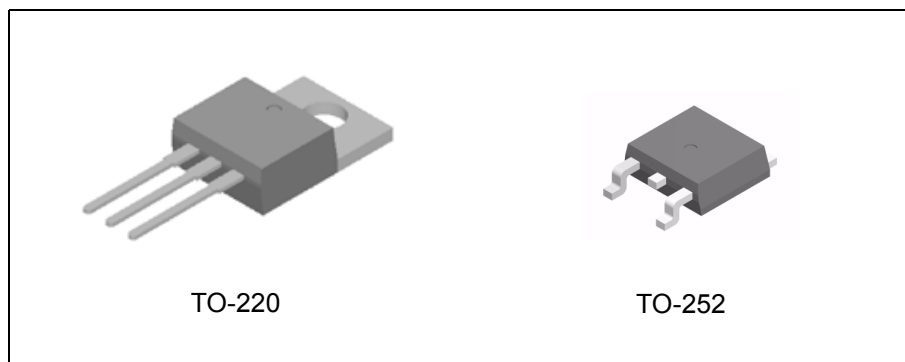
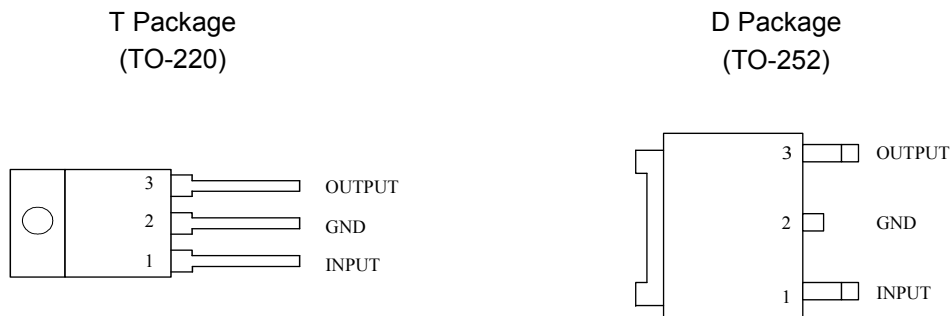


Figure 1. Package Types of AZ7805

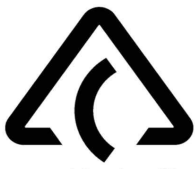
**3-TERMINAL POSITIVE LINEAR REGULATOR****AZ7805****Pin Configuration**

Top View

Figure 2. Pin Configuration of AZ7805

Pin Description

Pin Number	Pin Name	Function
1	INPUT	Voltage Input
2	GND	Ground
3	OUTPUT	Voltage Output



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AZ7805

Functional Block Diagram

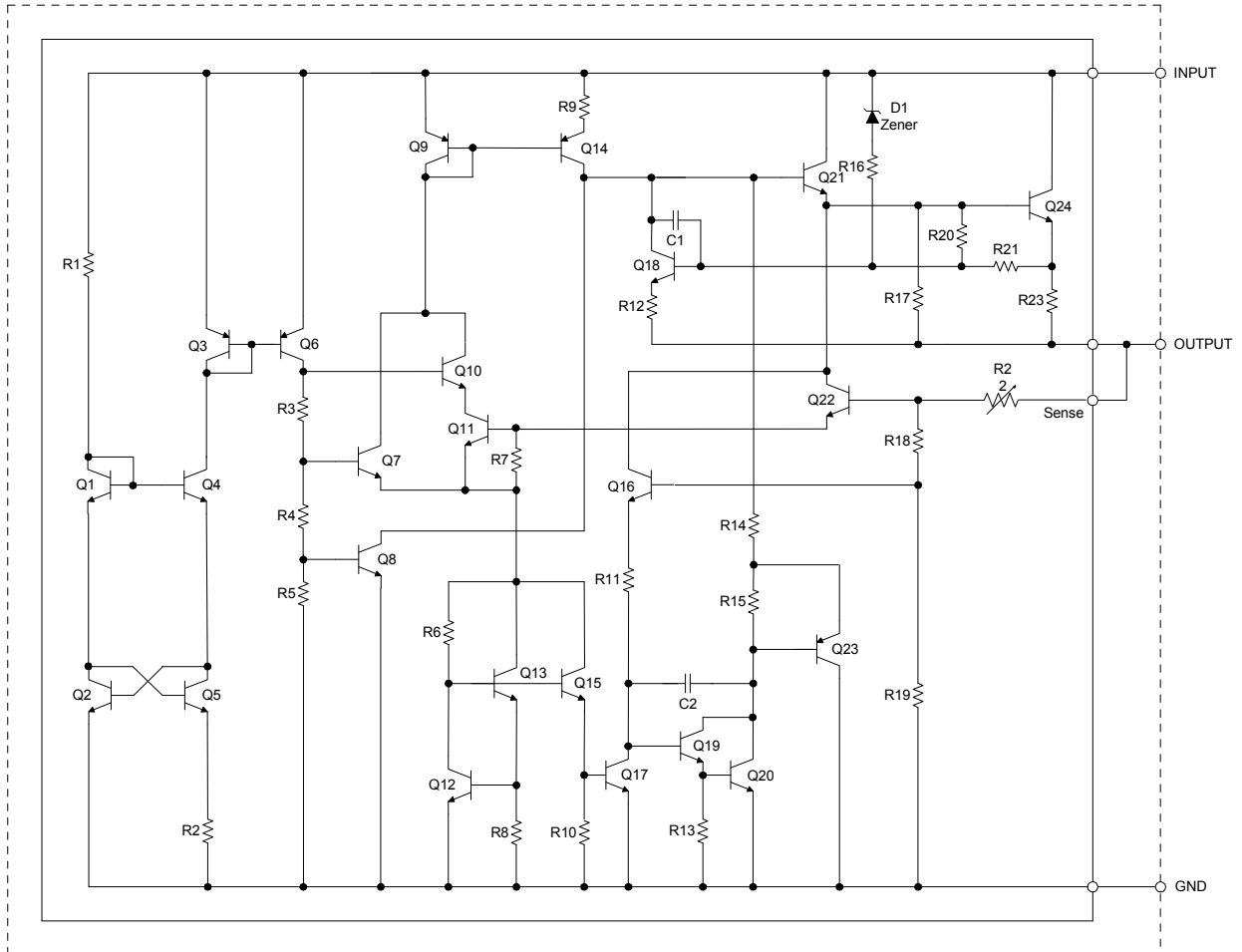
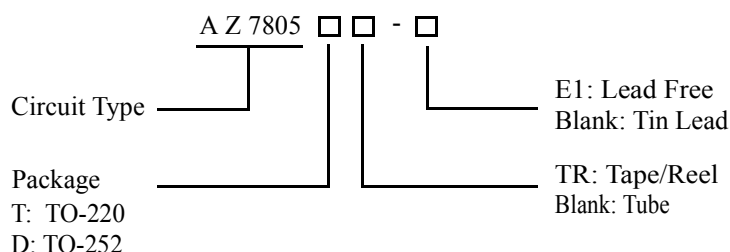


Figure 3. Functional Block Diagram of AZ7805

**3-TERMINAL POSITIVE LINEAR REGULATOR****AZ7805****Ordering Information**

Package	Temperature Range	Part Number		Marking ID		Packing Type
		Tin Lead	Lead Free	Tin Lead	Lead Free	
TO-220	-40 to 125°C	AZ7805T	AZ7805T-E1	AZ7805T	AZ7805T-E1	Tube
TO-252	-40 to 125°C	AZ7805D	AZ7805D-E1	AZ7805D	AZ7805D-E1	Tube
		AZ7805DTR	AZ7805DTR-E1	AZ7805D	AZ7805D-E1	Tape/Reel

The listed part numbers are used during the transition to lead-free products. After the transition completed, lead-free products will be considered as the "standard" and we will resume the original part numbers.

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	20	V
Lead Temperature (Soldering, 10 sec.)		300	°C
Power Dissipation	P_D	Internally Limited	
Storage Temperature Range	T_{STG}	-65 to 150	°C
ESD (Machine Model)	ESD	500	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	7.5	15	V
Operating Junction Temperature Range	T_J	-40	125	°C

**3-TERMINAL POSITIVE LINEAR REGULATOR****AZ7805****Electrical Characteristics** $V_I=10V$, $I_O=1A$, $T_J=-40$ to 125 °C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	$T_J=25^\circ C$	4.9	5.0	5.1	V
		$I_O=5mA$ to $1A$, $V_I=7.5$ to $15V$, $P_D \leq 15W$	4.8	5.0	5.2	
Line Regulation	V_{RLINE}	$V_I=8$ to $15V$, $I_O=1A$, $T_J=25^\circ C$		1	20	mV
Load Regulation	V_{RLOAD}	$V_I=10V$, $I_O=5mA$ to $1A$, $T_J=25^\circ C$		10	35	mV
Quiescent Current	I_Q	$V_I=10V$		3.2	6.0	mA
Quiescent Current Change	ΔI_Q	$V_I=8$ to $15V$, $I_O=500mA$, $T_J=25^\circ C$		0.3	0.8	mA
		$I_O=5mA$ to $1A$, $T_J=25^\circ C$		0.08	0.5	
Ripple Rejection	$\Delta V_I/\Delta V_O$	$V_I=8V$ to $15V$, $f=120Hz$, $I_O=300mA$	63	73		dB
Dropout Voltage	V_I-V_O	$\Delta V_O=1\%$, $I_O=1A$, $T_J=25^\circ C$		2.0		V
Output Noise Voltage	N_O	$f=10Hz$ to $100kHz$, $T_A=25^\circ C$		10		$\mu V/V_O$
Output Resistance	R_O	$f=1.0kHz$		10		$m\Omega$
Short Circuit Current	I_{PK}	$V_I=15V$, $T_A=25^\circ C$		0.8		A
Peak Output Current	I_{MAX}	$V_I=10V$, $T_J=25^\circ C$		2.2		A
Output Voltage Drift	$\Delta V_O/\Delta T$			-0.3		$mV/^\circ C$



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Typical Performance Characteristics

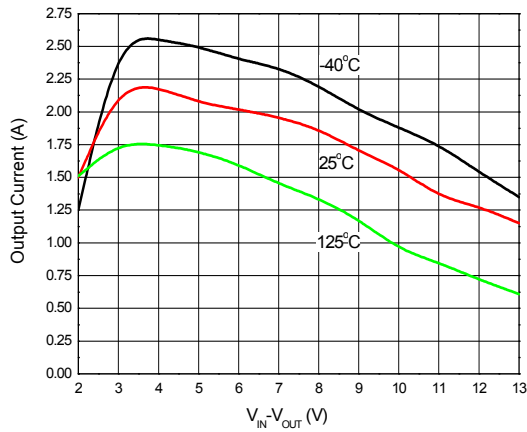


Figure 4. Peak Output Current vs. Input / Output Differential Voltage

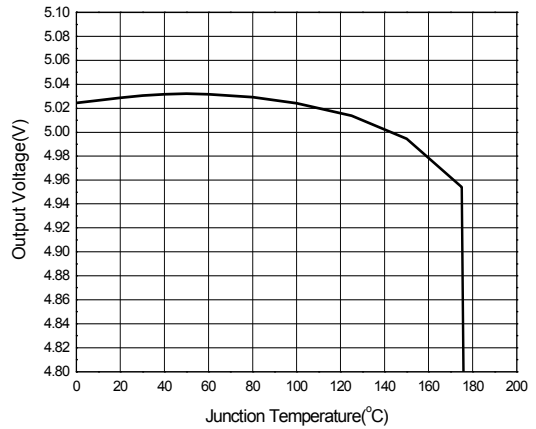


Figure 5. Output Voltage vs. Junction Temperature

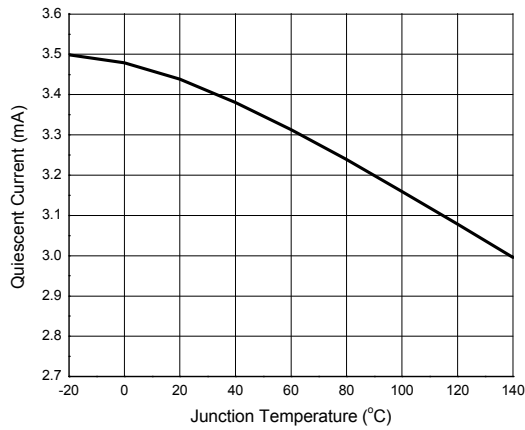


Figure 6. Quiescent Current vs. Junction Temperature

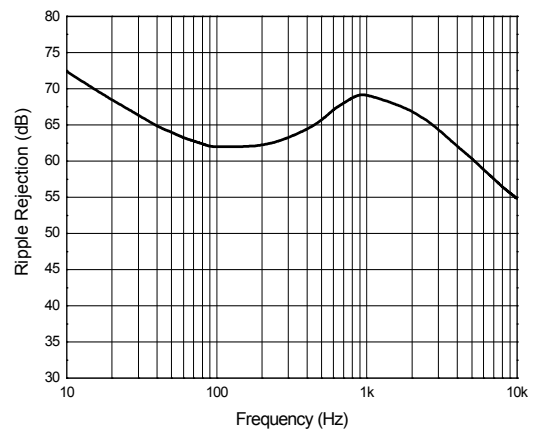


Figure 7. Ripple Rejection vs. Frequency



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Typical Application

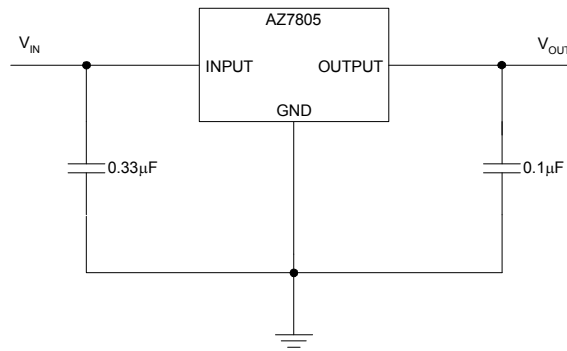


Figure 8. Fixed Output Regulator of AZ7805



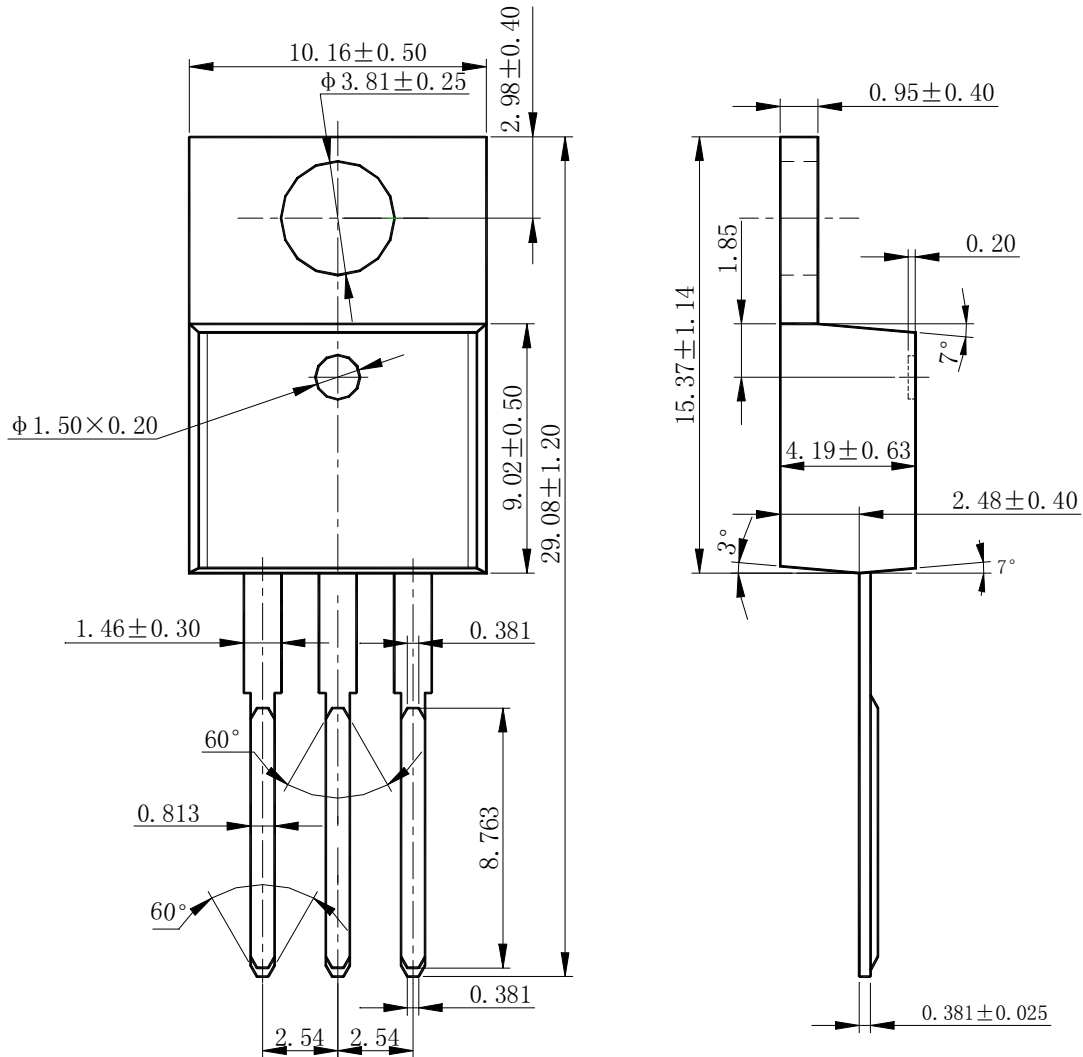
3-TERMINAL POSITIVE LINEAR REGULATOR

AZ7805

Mechanical Dimension

TO-220-3L

Unit: mm





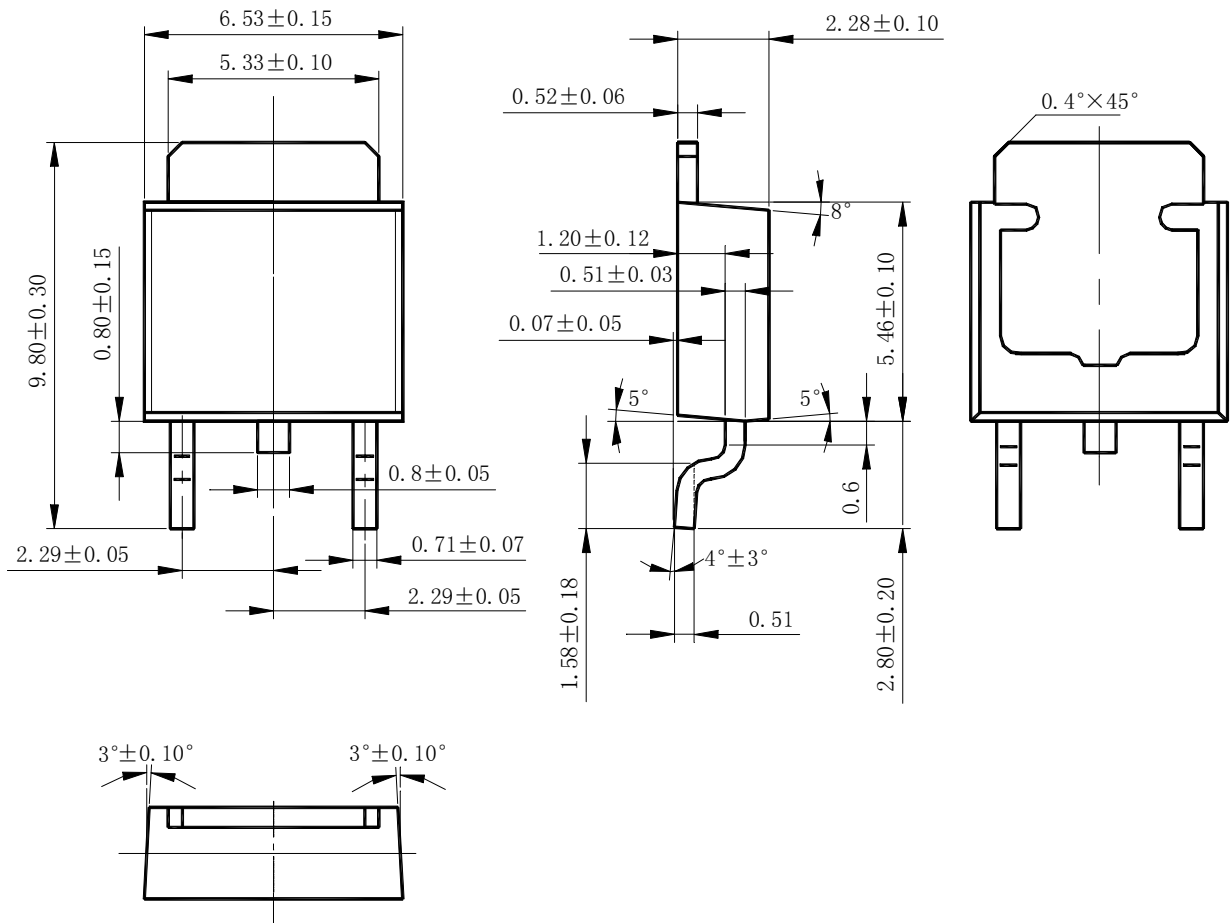
3-TERMINAL POSITIVE LINEAR REGULATOR

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Mechanical Dimension

TO-252-2L

Unit: mm





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