

TP78xx Series

1.5A Fixed Voltage Regulators

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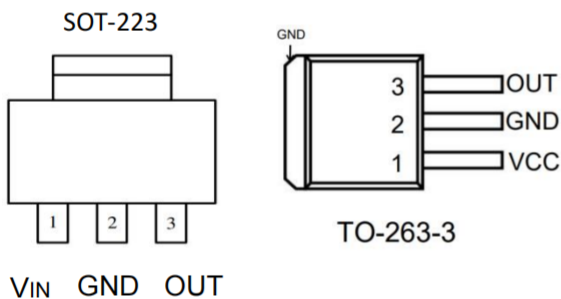
Features

- 3-Terminal regulators
- output current up to 1.5A
- Compact package: SOT-223, TO-263-3
- internal thermal overload protection and short-circuit limiting

Applications

- HVAC Systems
- SMPS Post Regulation
- Test and Measurement Equipment
- Industrial Power Supplies

PIN CONFIGURATION



Pin Number		Pin Name	Pin Function
SOT223	TO-263-3		
1	1	VIN	Input of Supply Voltage
2	2	GND	Ground
3	3	VOUT	Output of the Regulator

Ordering Information

TP78XXXX

PACKAGE TYPE
Y3 :SOT223
W3:TO-263-3

OUTPUT VOLTAGE
05 : 5.0V
12 : 12V

Example: TP7805W3
→ 5.0V Version, in TO-263-3 Package & Tape & Reel Packing Type

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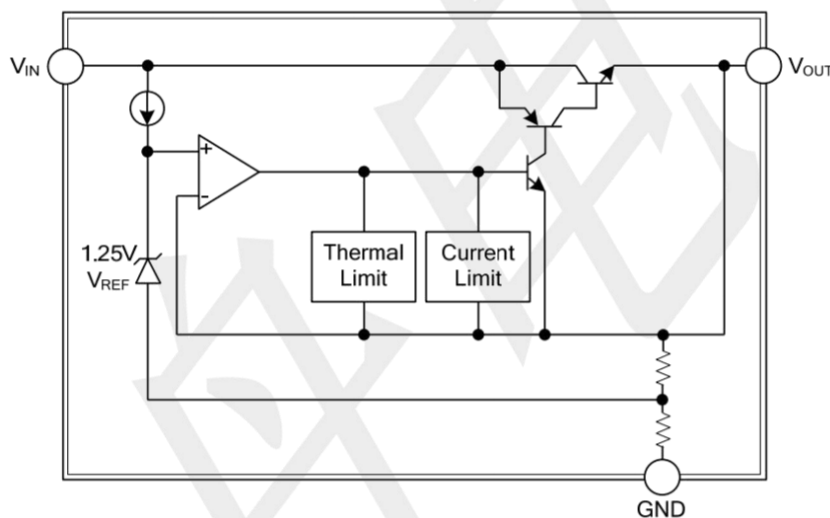
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Absolute Maximum Ratings

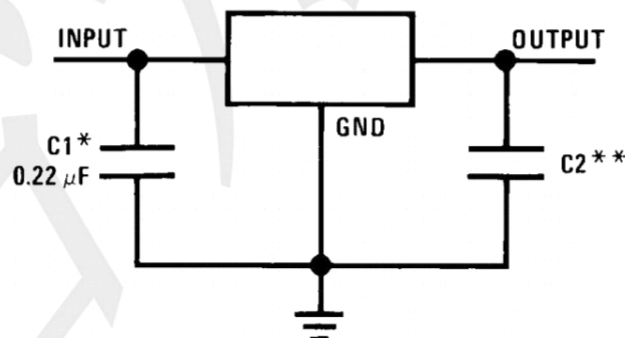
over operating free-air temperature range (unless otherwise noted)

Symbol	Parameter	Rating	UNIT
V _{IN}	Input voltage	35	V
R _{θJA}	Thermal Resistance Junction-ambient	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-case	5.0	°C/W
T _{OPR}	Operating Junction Temperature Range	0~125	°C
T _{stg}	Storage temperature range	-65~150	°C

BLOCK DIAGRAM



Typical Application Circuit



*Required if the regulator is located far from the power supply filter.

**Although no output capacitor is needed for stability, it does help transient response.

(If needed, use 0.1-μF, ceramic disc).

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Electrical Characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
DC Output Voltage	VO	$T_j=25^{\circ}\text{C}$	4.8	5.0	5.2	V
		$V_i=7\text{V}-20\text{V}$ $I_o=5\text{mA}-1\text{A}$ $P_o \leq 15\text{W}$	4.75	5.0	5.25	V
		$T_j=25^{\circ}\text{C}$	11.52	12.0	12.48	V
		$V_i=7\text{V}-20\text{V}$ $I_o=5\text{mA}-1\text{A}$ $P_o \leq 15\text{W}$	12.4	12.0	12.6	V
Load Regulation	ΔV_o	$T_j=25^{\circ}\text{C}$ $I_o=5\text{mA}-1.5\text{A}$	--	--	100	mV
		$T_j=25^{\circ}\text{C}$ $I_o=250\text{mA}-750\text{mA}$	--	--	50	mV
Line regulation	ΔV_o	$T_j=25^{\circ}\text{C}$ $V_i=7\text{V}-25\text{V}$	--	3.0	100	mV
		$T_j=25^{\circ}\text{C}$ $V_i=8\text{V}-12\text{V}$	--	1.0	50	mV
Quiescent Current	I_q	$T_j=25^{\circ}\text{C}$	--	--	8	mA
Quiescent Current Change	ΔI_q	$V_i=7\text{V}-25\text{V}$	--	--	0.8	mA
		$I_o=5\text{mA}-1\text{A}$	--	--	0.5	mA
Output Voltage Drift	$\Delta V_o/\Delta T$	$I_o=5\text{mA}$	--	-1.1	--	mV/ $^{\circ}\text{C}$
Output Noise Voltage	eN	$B=10\text{Hz}-100\text{KHz}$ $T_j=25^{\circ}\text{C}$	--	--	40	$\mu\text{V}/V_o$
Supply Voltage Rejection	SVR	$V_i=8\text{V}-18\text{V}$ $f=120\text{Hz}$	62	--	--	dB
Dropout Voltage	Vd	$I_o=1\text{A}$ $T_j=25^{\circ}\text{C}$	--	2.0	--	V
Output Resistance	R_o	$f=1\text{KHz}$	--	17	--	m Ω
Short Circuit Current	Isc	$V_i=35\text{V}$ $T_j=25^{\circ}\text{C}$	--	0.75	--	A
Short Circuit Peak Current	Iscp	$T_j=25^{\circ}\text{C}$	--	2.2	--	A

Note: All characteristics are measured with a 0.22- μF capacitor from input to ground and a 0.1- μF capacitor from output to ground. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10\text{ ms}$, duty cycle $\leq 5\%$).

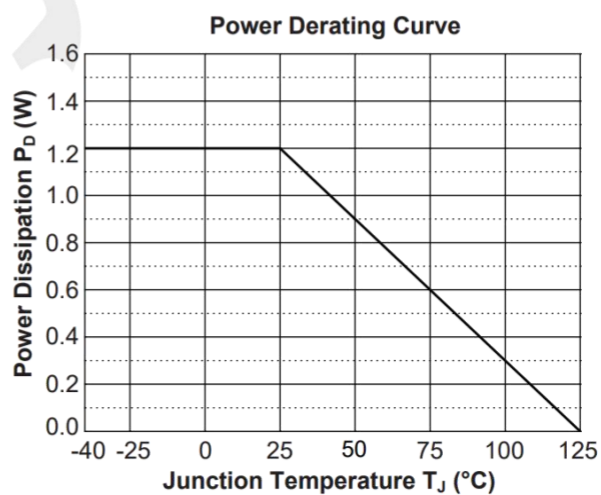
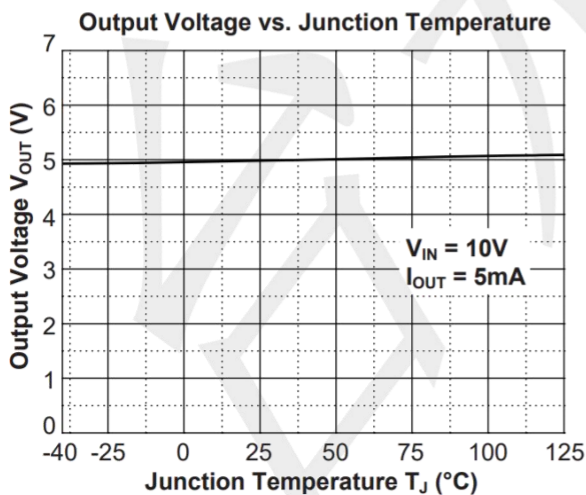
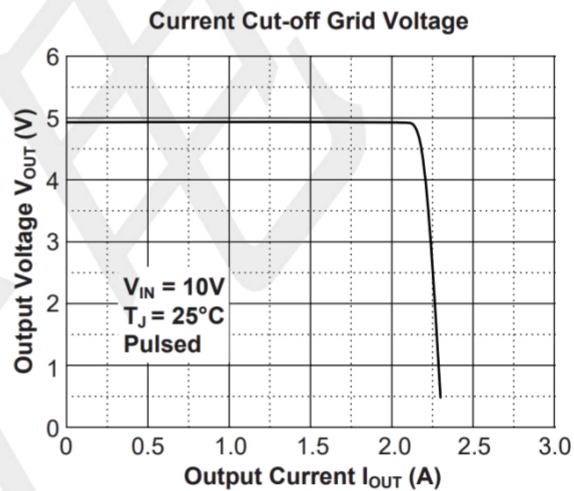
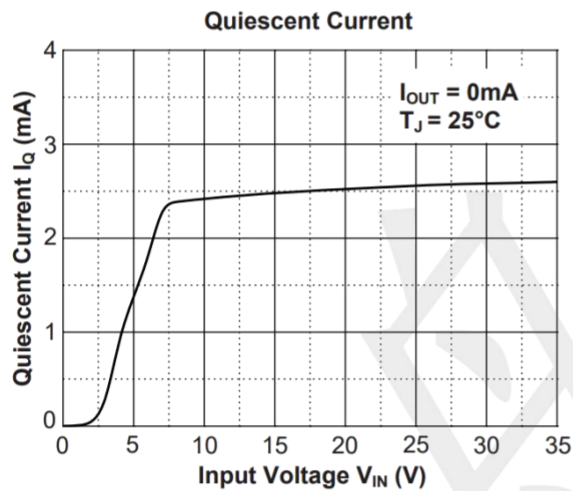
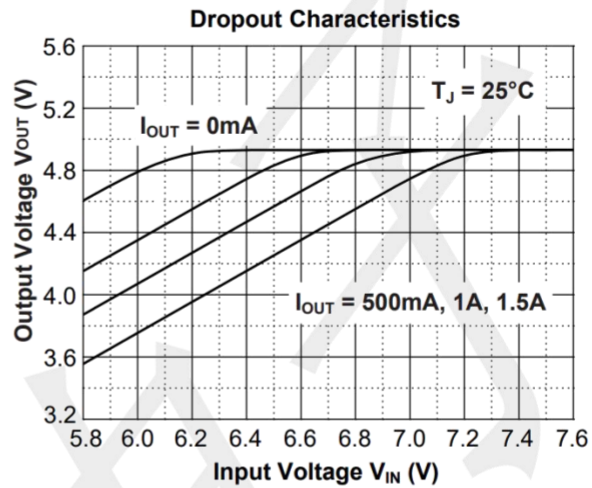
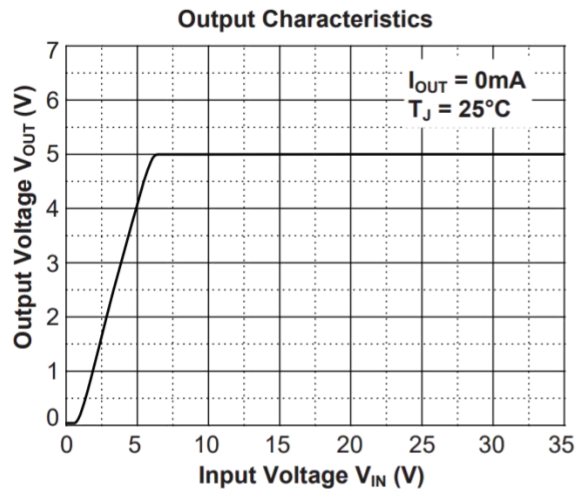
Output voltage changes due to changes in internal temperature must be taken into account separately.

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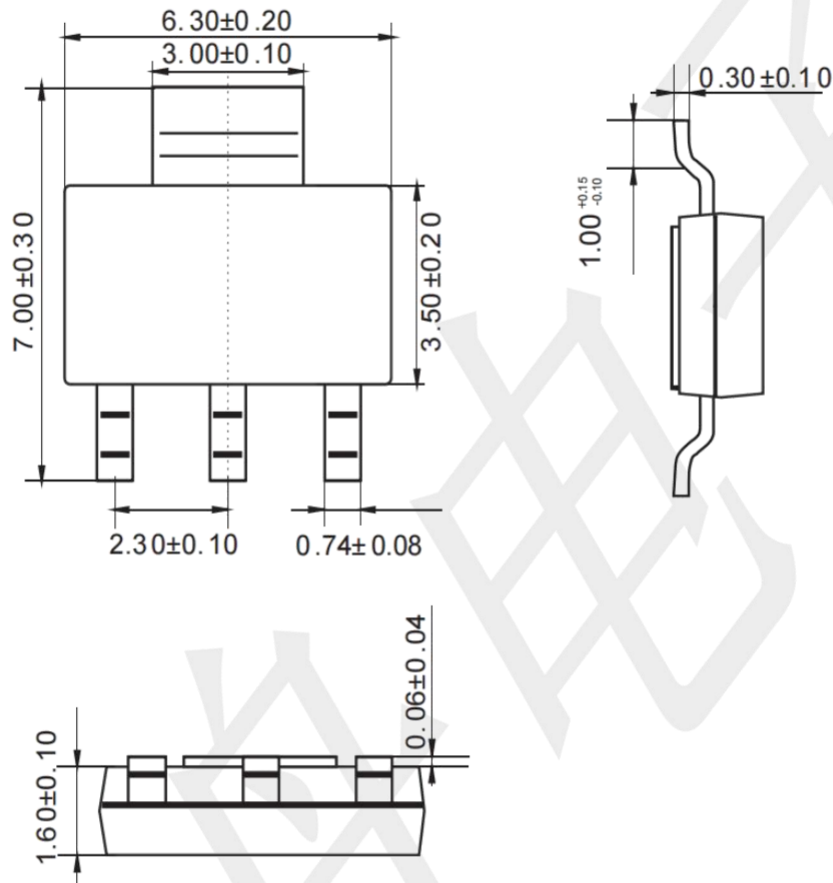
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Typical Operating Characteristics (25 °C, unless otherwise noted)

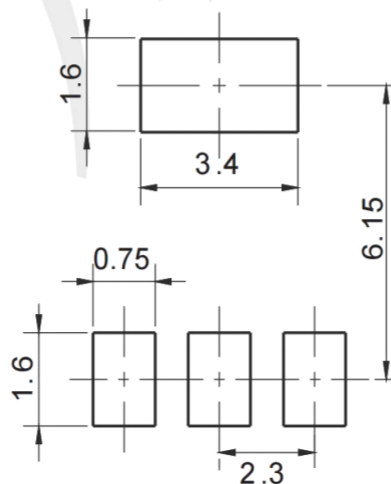


Package Outline Dimensions (unit: mm)

SOT-223



Mounting Pad Layout (unit: mm)



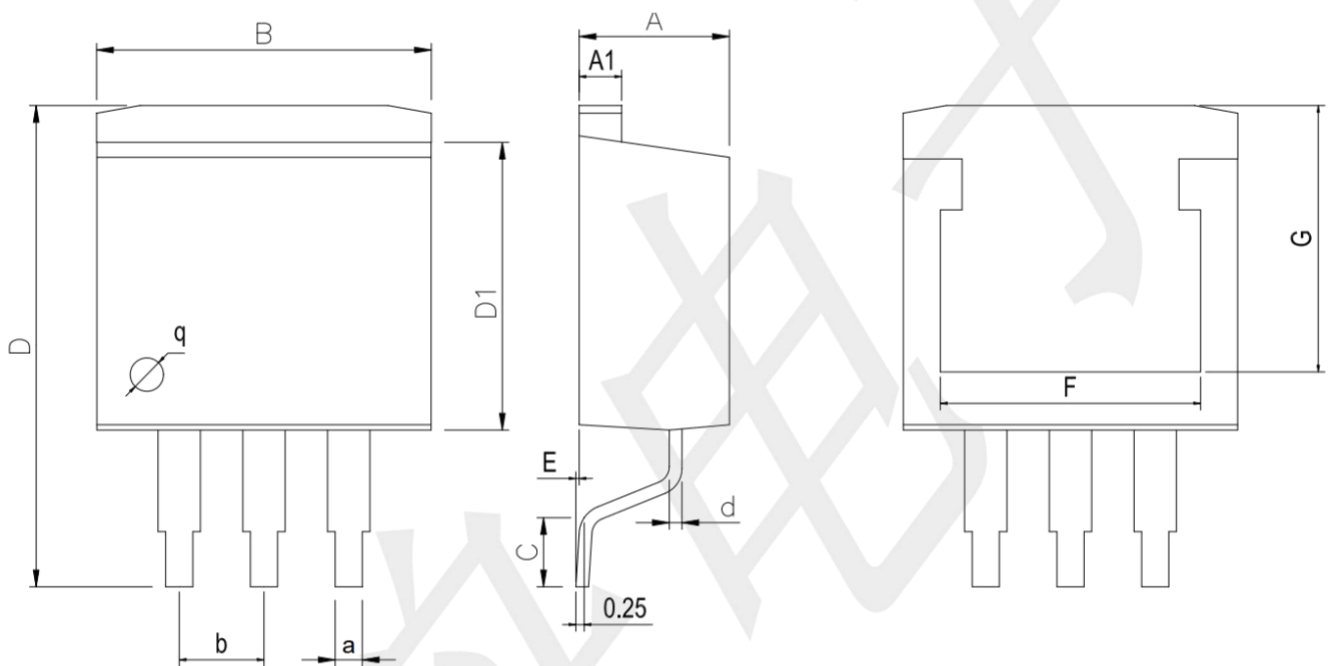
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Package Outline Dimensions (unit: mm)

T0-263-3



Dimensions In Millimeters(TO-263-3)											
Symbol:	A	A1	B	C	D	D1	E	F	G	a	b
Min:	4.45	1.22	10	1.89	13.7	8.38	0	8.332	7.70	0.71	2.54BSC
Max:	4.62	1.32	10.4	2.19	14.6	8.89	0.305	8.552	8.10	0.97	