TP78xx Series

1.5A Fixed Voltage Regulators

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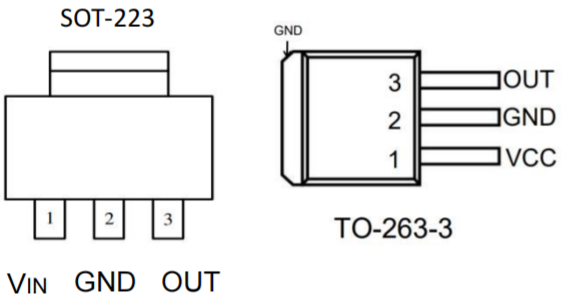
Features

- 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

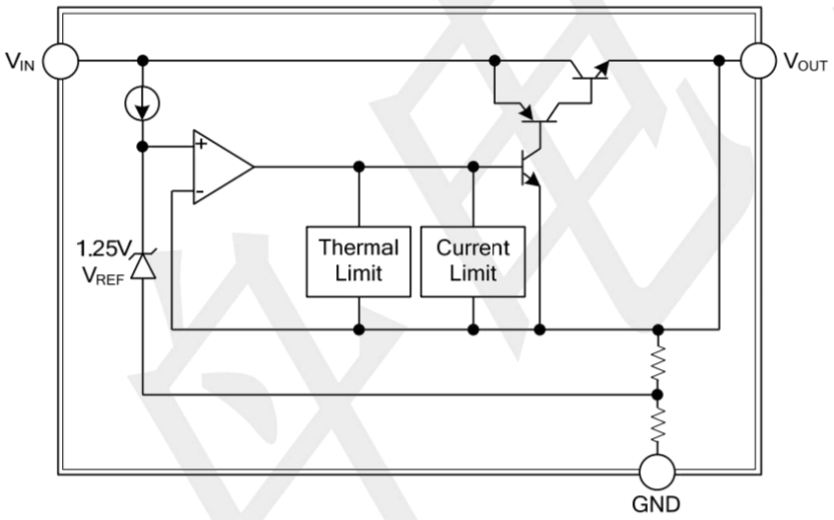
Example: TP7805W3
→ 5.0V Version, in TO-263-3 Package & Tape & Reel Packing Type

Absolute Maximum Ratings

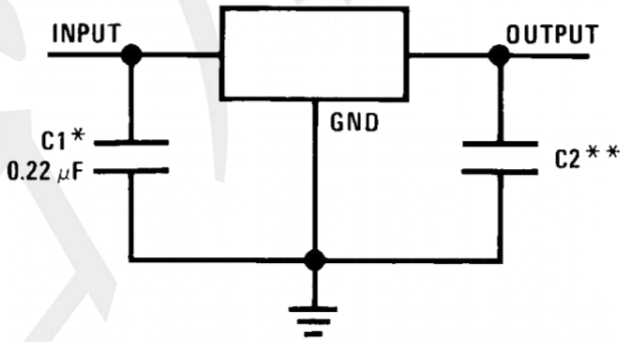
over operating free-air temperature range (unless otherwise noted)

Symbol	Parameter	Rating	UNIT
VIN	Input voltage	35	**V**
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62.5	℃/**W**
$R_{\theta JC}$	Thermal Resistance Junction-case	5.0	℃/**W**
T_{OPR}	Operating Junction Temperature Range	0～125	℃
T_{stg}	Storage temperature range	-65～150	℃

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).

Electrical Characteristics

(TA=25℃, unless otherwise specified)

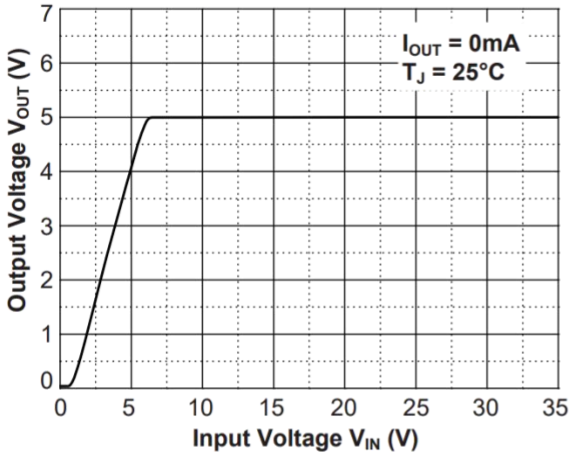
PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
DC Output Voltage	VO	T_j=25℃	4.8	5.0	5.2	V
		V_i=7V-20V Io=5mA-1A Po≤15W	4.75	5.0	5.25	V
		T_j=25℃	11.52	12.0	12.48	V
		V_i=7V-20V Io=5mA-1A Po≤15W	12.4	12.0	12.6	V
Load Regulation	△Vo	T_j=25℃ Io=5mA-1.5A	--	--	100	mV
		T_j=25℃ Io=250mA-750mA	--	--	50	mV
Line regulation	△Vo	T_j=25℃ Vi=7V-25V	--	3.0	100	mV
		T_j=25℃ Vi=8V-12V	--	1.0	50	mV
Quiescent Current	Iq	T_j=25℃	--	--	8	mA
Quiescent Current Change	△Iq	Vi=7V-25V	--	--	0.8	mA
		Io=5mA-1A	--	--	0.5	mA
Output Voltage Drift	△Vo/△T	Io=5mA	--	-1.1	--	mV/℃
Output Noise Voltage	eN	B=10Hz-100KHz T_j=25℃	--	--	40	μV/Vo
Supply Voltage Rejection	SVR	Vi=8V-18V f=120Hz	62	--	--	dB
Dropout Voltage	Vd	Io=1A T_j=25℃	--	2.0	--	V
Output Resistance	Ro	f=1KHz	--	17	--	mΩ
Short Circuit Current	Isc	Vi=35V T_j=25℃	--	0.75	--	A
Short Circuit Peak Current	Iscp	T_j=25℃	--	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 (tw ≤ 10 ms, duty cycle ≤ 5%).

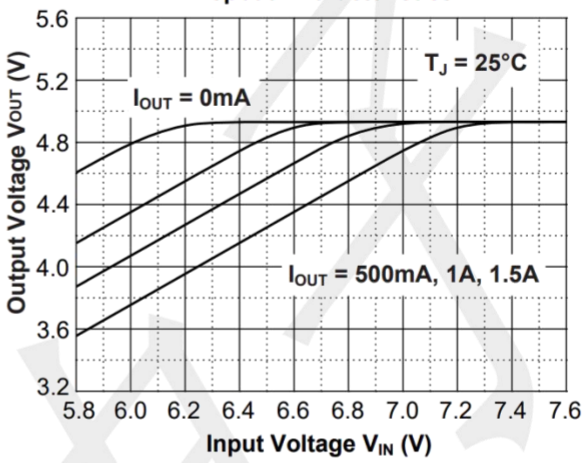
Output voltage changes due to changes in internal temperature must be taken into account separately.

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

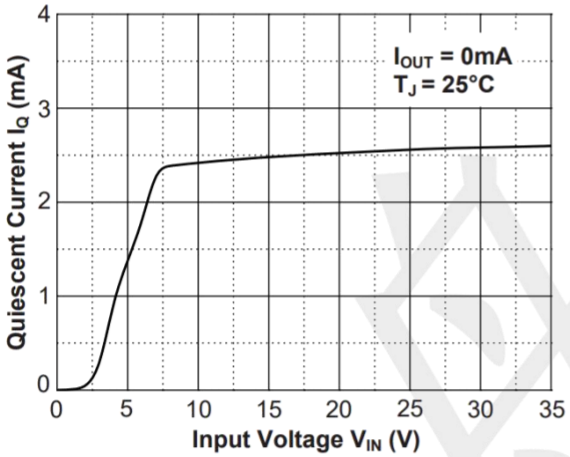
Output Characteristics



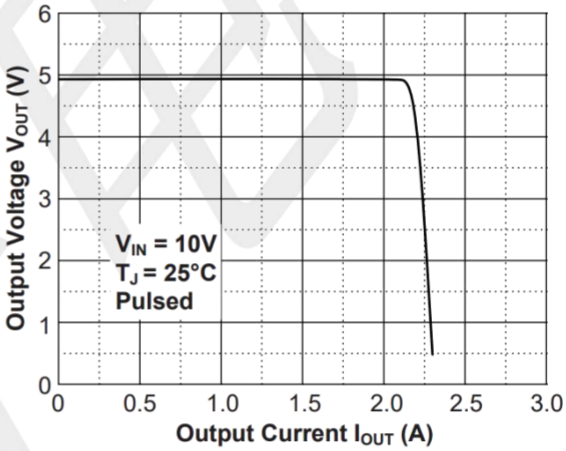
Dropout Characteristics



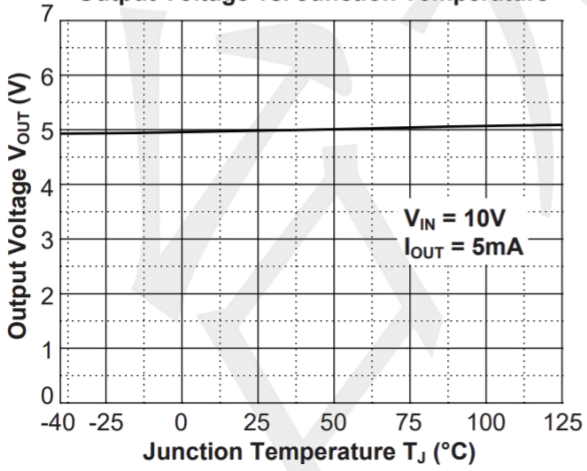
Quiescent Current



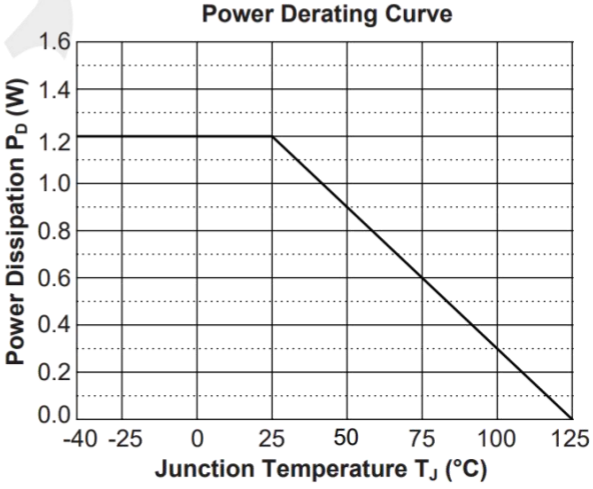
Current Cut-off Grid Voltage



Output Voltage vs. Junction Temperature

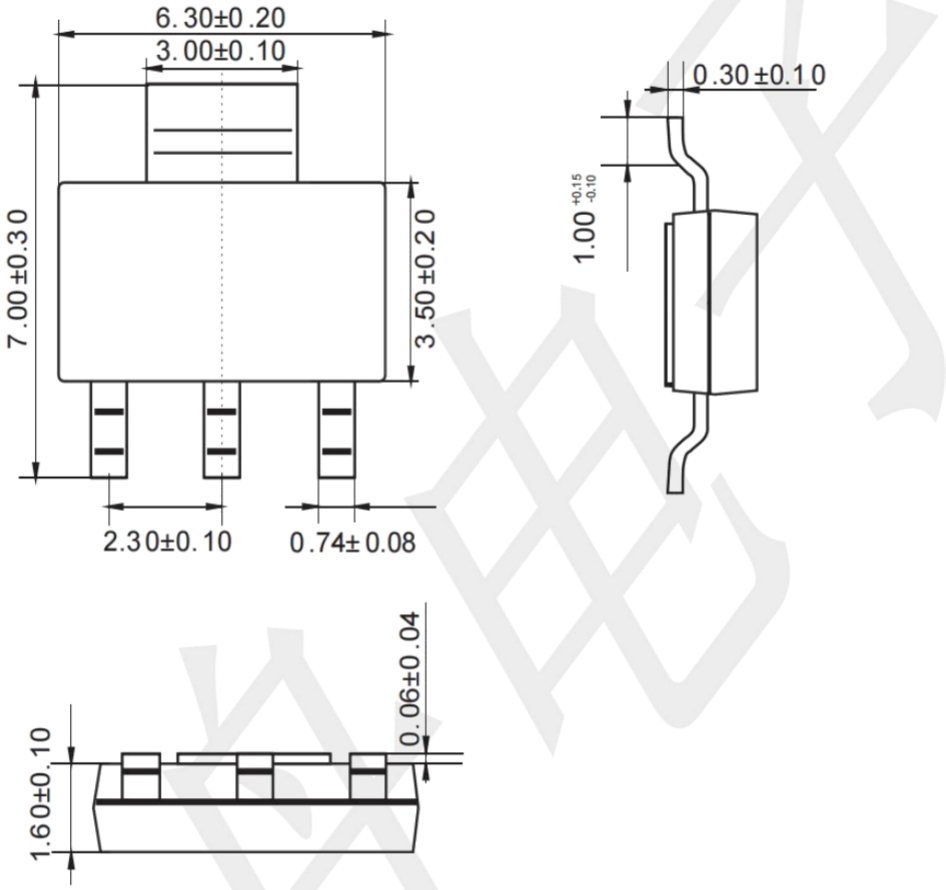


Power Derating Curve

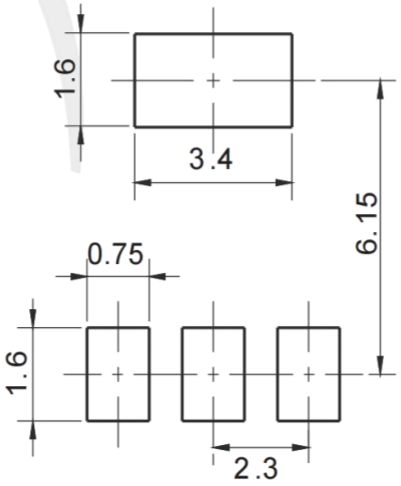


Package Outline Dimensions (unit: mm)

SOT-223

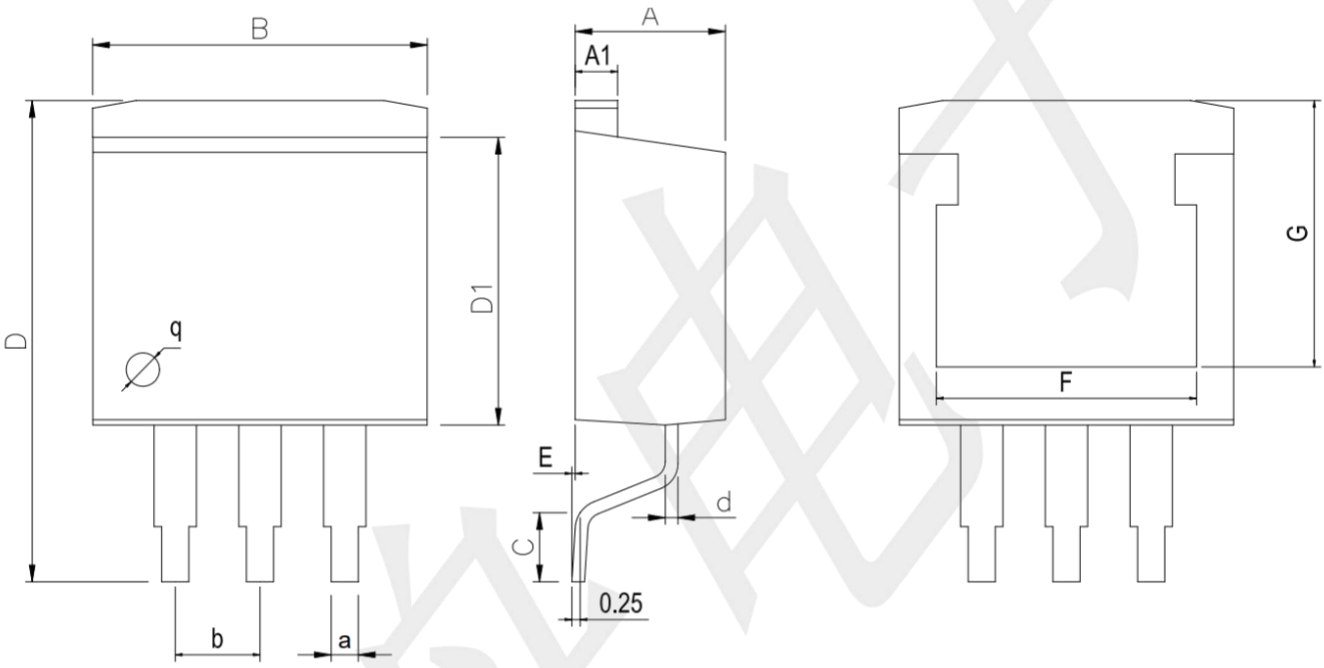


Mounting Pad Layout (unit: mm)



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	