

TPS7A20 Series

Ultra low noise, low IQ, high PSRR LDO

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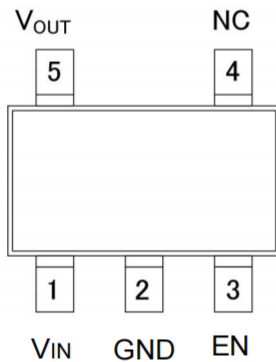
Features

- 2 μ A Current at no Load
- \pm 2% Output Accuracy
- 300mA Output Current
- Current Limit Protection

Applications

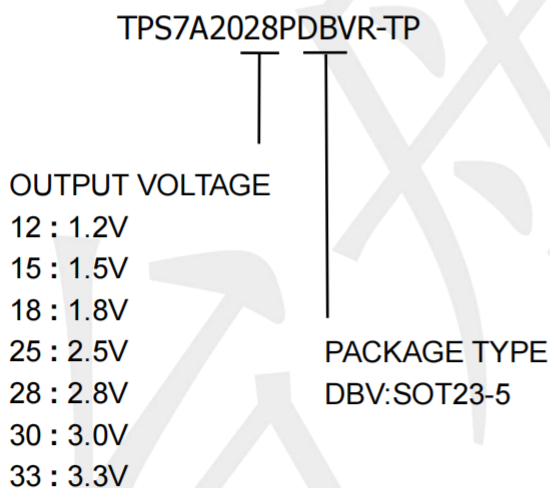
- Industrial Controls
- Home Automation
- Modules (Wireless, Camera, etc.)
- Portable, Battery Powered Equipment

PIN CONFIGURATION



Pin Number	Pin Name	Pin Function
SOT23-5		
1	VIN	Input of Supply Voltage
2	GND	Ground
3	EN	Enable Control Input
4	NC	No Internal Connection
5	VOUT	Output of the Regulator

Ordering Information



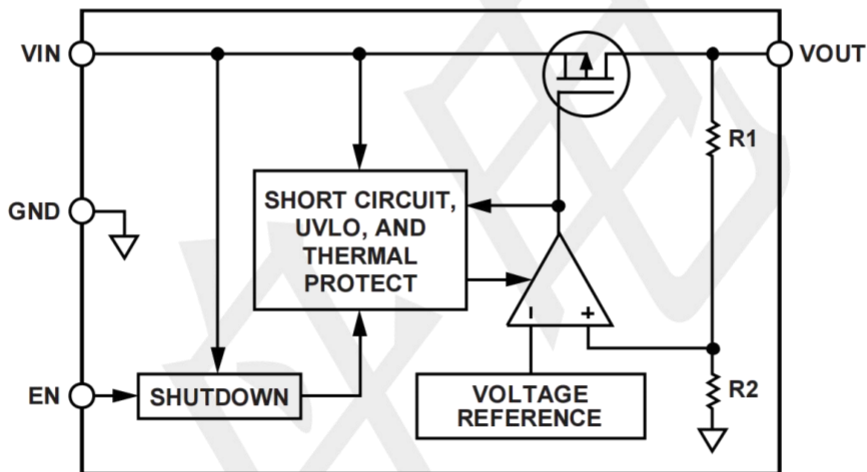
Example: TPS7A2028PDBVR-TP
 → 2.8V Version, in SOT23-5 Package &
 Tape & Reel Packing Type

Absolute Maximum Ratings

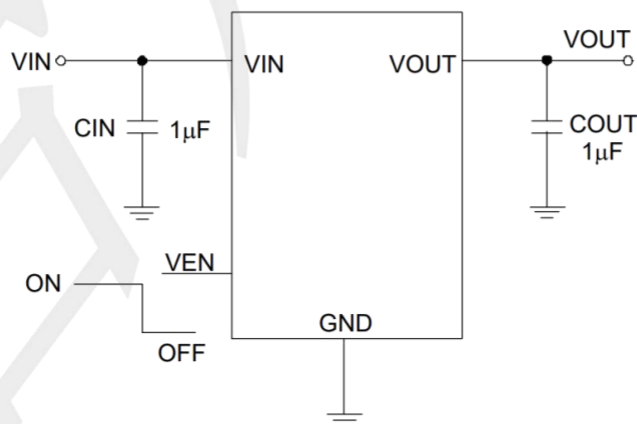
over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
VIN	Continuous input voltage range	-0.3	6.0	V
VOUT	Output voltage range	-0.3	6.0	
EN	EN pin voltage range	-0.3	6.0	
IOUT	Output pin current	Internally limited		mA
Temperature	Operating Temperature Range, Topr	-40	+85	°C
	Storage, Tstg	-40	+125	

BLOCK DIAGRAM



Typical Application Circuit



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Electrical Characteristics

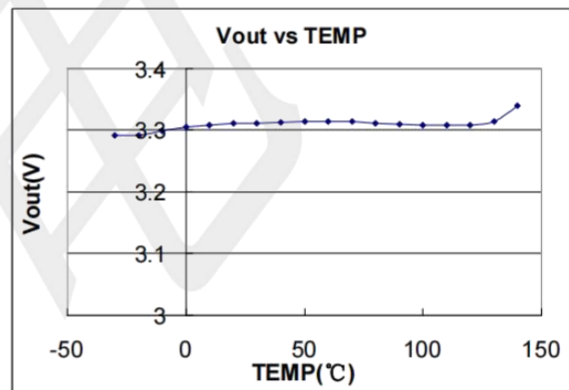
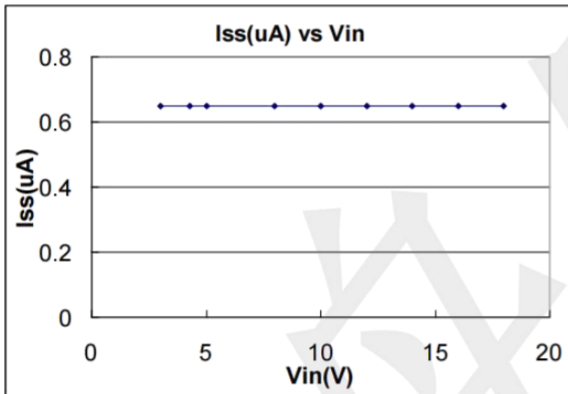
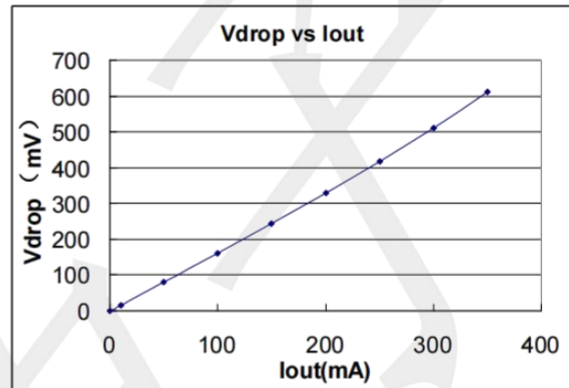
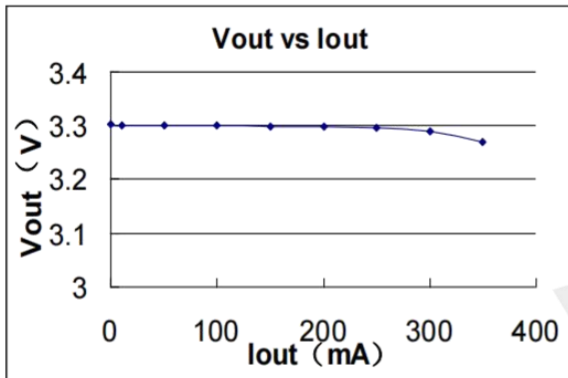
(VIN=15V, VEN=5V, TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Supply Voltage	VIN		1.4	--	5.5	V
Output current	IOUT		300	--	--	mA
DC Output Voltage Accuracy		IOUT = 1mA	-2	--	2	%
Dropout Voltage (VIN-VOUT)	IOUT = 300mA	VOUT = 1.2V	--	0.45	--	mV
		VOUT = 1.5V	--	0.36	--	
		VOUT = 1.8V	--	0.28	--	
		VOUT = 2.5V	--	0.23	--	
		VOUT = 2.8V	--	0.22	--	
		VOUT = 3.0V	--	0.20	--	
		VOUT = 3.3V	--	0.18	--	
Ground Current (IOUT = 0mA)	IQ	IOUT = 0mA	--	2.0	5.0	uA
Shutdown Ground Current	ISD	VEN = 0V,	--	0.1	0.5	
VOUT Shutdown Leakage Current	ILEAK	VOUT = 0V	--	0.1	0.5	
Enable Threshold Voltage	VIH	EN Rising	1.0	--	--	V
	VIL	EN Falling	--	--	0.4	
EN Input Current	IEN	VEN = 5V	--	10	100	nA
Line Regulation	ΔLINE	IOUT = 1mA, 2 ≤ VIN ≤ 6V	--	0.2	--	%
Load Regulation	ΔLOAD	10mA ≤ IOUT ≤ 100mA	--	0.2	--	
Output Current Limit	ILIM	VOUT = 0.9 × VOUT(NOM)	400	600	--	mA
Power Supply Rejection Ratio	PSRR	VOUT = 3.3V, IOUT = 40mA, VIN = 5.5V, f = 1kHz	--	75	--	dB
Thermal Shutdown Temperature	TSD	IOUT = 10mA	--	160	--	°C
Thermal Shutdown Hysteresis	ΔTSD	IOUT = 10mA	--	15	--	°C
Package Thermal Resistance θJA (Note 1)	Thermal Resistance Junction-to-Ambient		--	210	--	°C/W
Total Power Dissipation TC=25°C	PDTOT		--	0.2	--	W

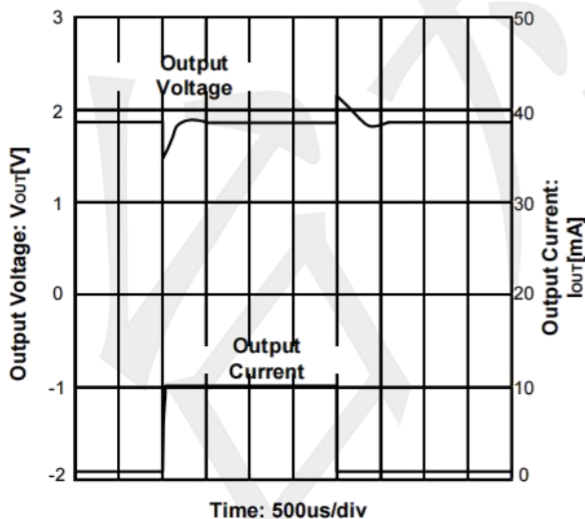
Note: Test condition: For SOT23-5, the device is mounted on FR-4 substrate PC board, with minimum recommended pad layout.

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

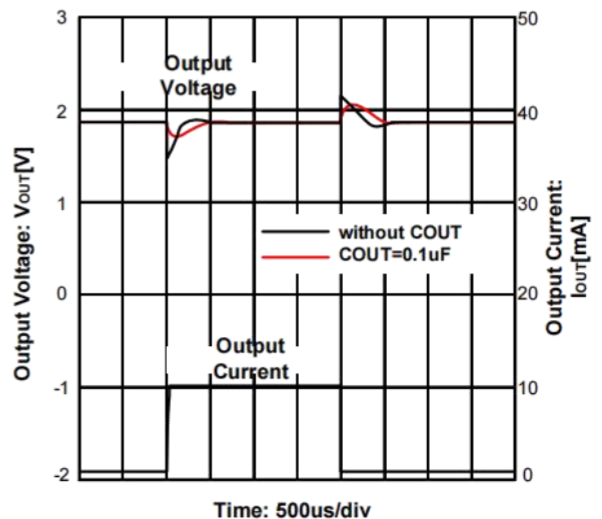
Unless otherwise specified: $T_A = 25^\circ\text{C}$, $V_{IN} = V_{O(NOM)} + 1\text{V}$, $C_{OUT} = 1\ \mu\text{F}$, $C_{IN} = 1\ \mu\text{F}$ all voltage options, EN pin tied to V_{IN} .



$I_{OUT} = 1\text{mA} \leftrightarrow 10\text{mA}$, $t_R = t_F = 5\ \mu\text{s}$, without C_{OUT}



$I_{OUT} = 1\text{mA} \leftrightarrow 10\text{mA}$, $t_R = t_F = 5\ \mu\text{s}$



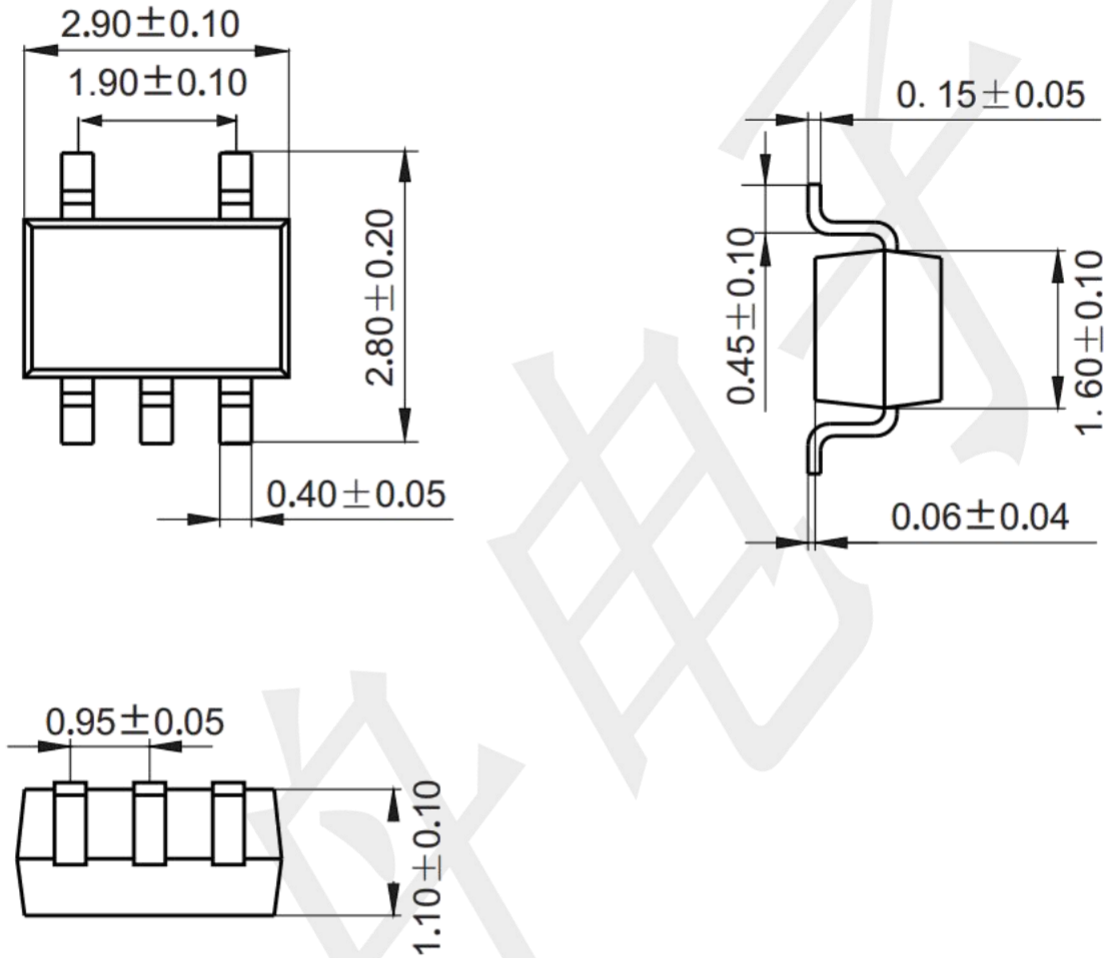
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Package Outline Dimensions (unit: mm)

SOT23-5



Mounting Pad Layout (unit: mm)

