TPS709 Series

Current 200mA High Voltage 30V Low Power LDO

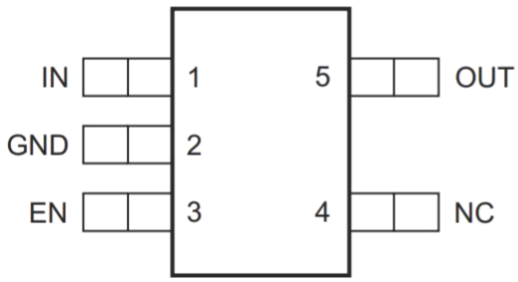
Features

- 1.5μA Current at no Load(TYP.)
- ±2% Output Accuracy
- 200mA Output Current
- Current Limit Protection

Applications

- Industrial Controls
- Home Automation
- Wireless power tools
- Motor driver and control board

PIN CONFIGURATION



SOT23-5

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

Ordering Information

TPS709 XXXXXX-TP

PACKAGE TYPE
DBVR :SOT23-5

OUTPUT VOLTAGE
12: 1.2V
15: 1.5V
18: 1.8V
25: 2.5V
28: 2.8V
30: 3.0V
33: 3.3V
36: 3.6V
50: 5.0V

Example: TPS70930DBVR-TP

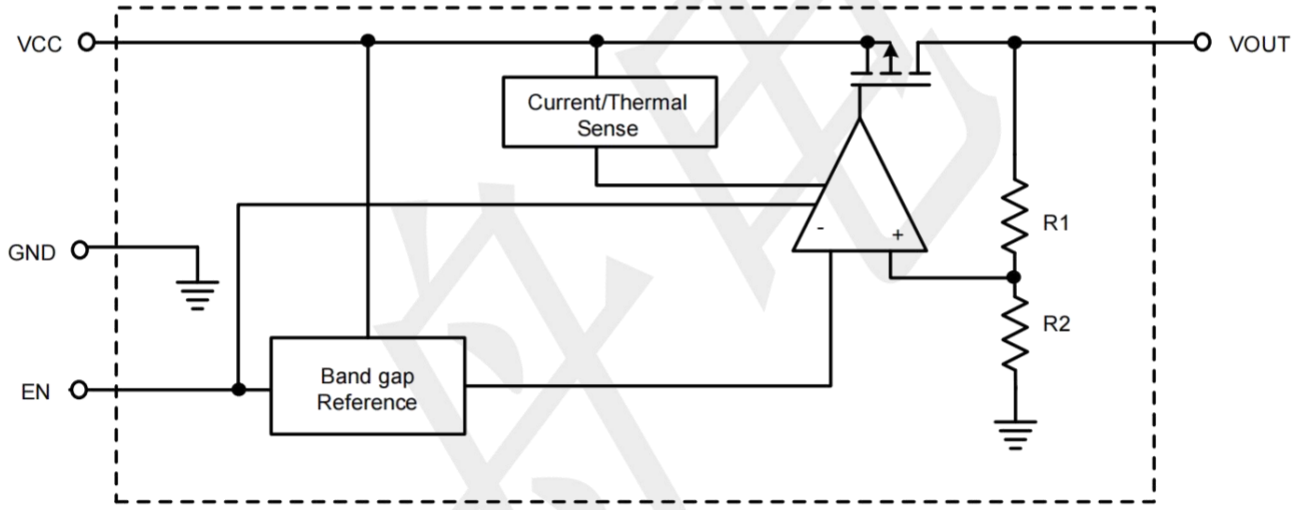
→ 3.0V Version, in SOT23-5 Package & Tape & Reel Packing Type

Absolute Maximum Ratings

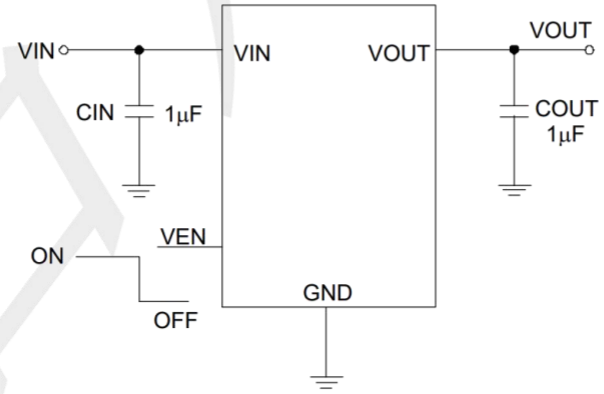
over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
VIN	Continuous input voltage range	-0.3	35	V
VOUT,EN	Output EN voltage range	-0.3	35	
Current	Maximum output current	Internally limited		mA
Temperature	Operating Temperature, Topr	-40	+85	℃
	Storage, Tstg	-55	+125	
	Welding temperature and time，Tsolder	+260, 10s		
Power Dissipation	Pd SOT23-5	250		mW

BLOCK DIAGRAM



Typical Application Circuit



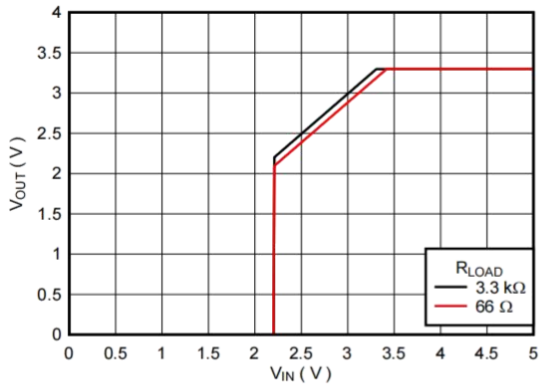
Electrical Characteristics

(TA=25℃, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Supply Voltage	V_{IN}		--	--	30	V
Output current	$I_{OUT(max)}$		200	250	--	mA
DC Output Voltage Accuracy		I_{OUT} = 0.1mA	-2	--	2	%
Dropout Voltage（V_{IN}-V_{OUT}）	I_{OUT}= 100mA	V_{OUT} = 1.2V	--	800	--	mV
		V_{OUT} = 1.5V	--	650	--	
		V_{OUT} = 1.8V	--	520	--	
		V_{OUT} = 2.5V	--	450	--	
		V_{OUT} = 3.0V	--	350	--	
		V_{OUT} = 3.3V	--	340	--	
		V_{OUT} = 3.6V	--	320	--	
		V_{OUT} = 5.0V	--	280	--	
Ground Current (I_{OUT} = 0mA)	I_Q	V_{OUT} = 3.3V	--	1.5	4.0	uA
Shutdown Ground Current	I_{SD}	V_{EN} = 0V, V_{OUT} = 0V	--	0.01	0.5	
V_{OUT} Shutdown Leakage Current	I_{LEAK}		--	0.01	0.5	
Power supply voltage regulation rate	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	I_{OUT} =10mA, VIN≤30V	--	0.05	--	% / V
Output Current Limit	I_{LIM}	V_{OUT}=0.9× $V_{OUT(NOM)}$	300	--	--	mA
Enable Threshold Voltage	V_{IH}	EN Rising	1.2	--	--	V
	V_{IL}	EN Falling	--	--	0.5	
Power Supply Rejection Ratio	PSRR	V_{OUT} =5V, I_{OUT} =30mA, V_{IN} = 12V, f = 1kHz	--	80	--	dB
Thermal Shutdown Temperature	T_{SD}	I_{OUT} =10mA	--	140	--	℃
Thermal Shutdown Hysteresis	ΔT_{SD}		--	20	--	
Package Thermal Resistance (Note 1)	SOT23-5	Thermal Resistance Junction-toAmbient	--	220	--	℃/W
short-circuit current	ISHORT	V_{IN}=4.0V	--	42	--	mA
Overcurrent protection current	ILIMIT	V_{IN}=4.0V	--	400	--	mA

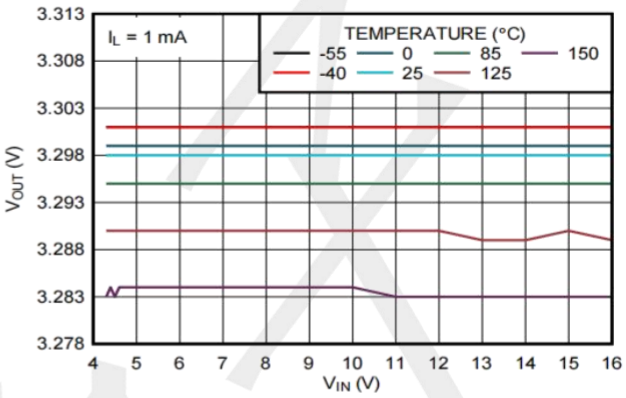
Note: 1. Test condition: the device is mounted on FR-4 substrate PC board, with minimum recommended pad layout.

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



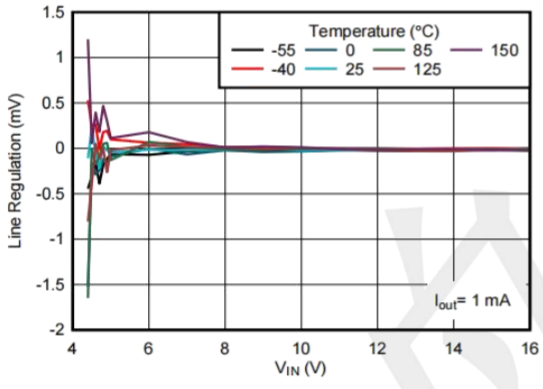
V_{OUT} = 3.3 V

Output Voltage versus VIN



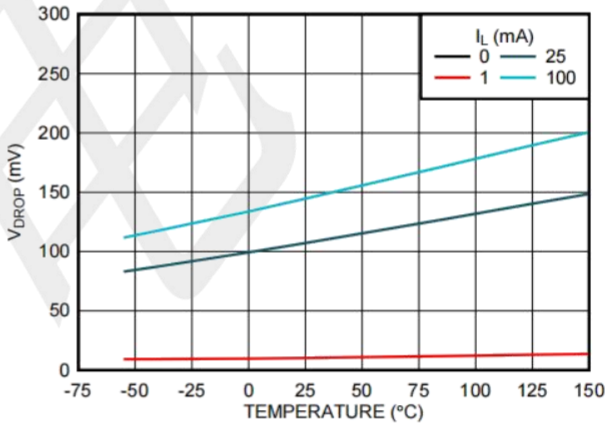
V_{OUT} = 3.3 V, I_L = 1 mA

Output Voltage versus VIN and Temperature

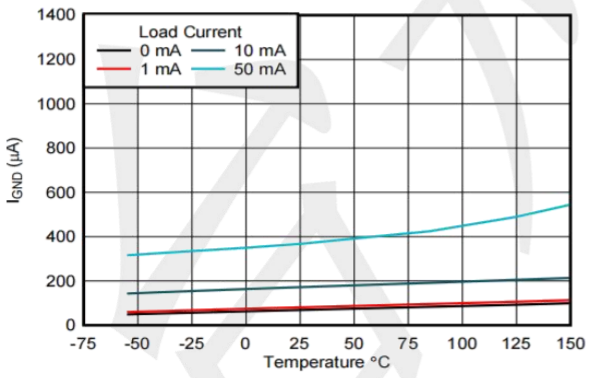


V_{OUT} = 3.3 , I_L = 1 mA

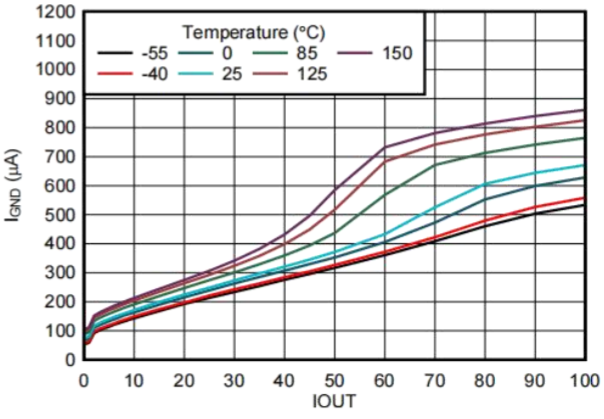
Line Regulation versus VIN & Temperature



Dropout Voltage (VDO) versus Temperature



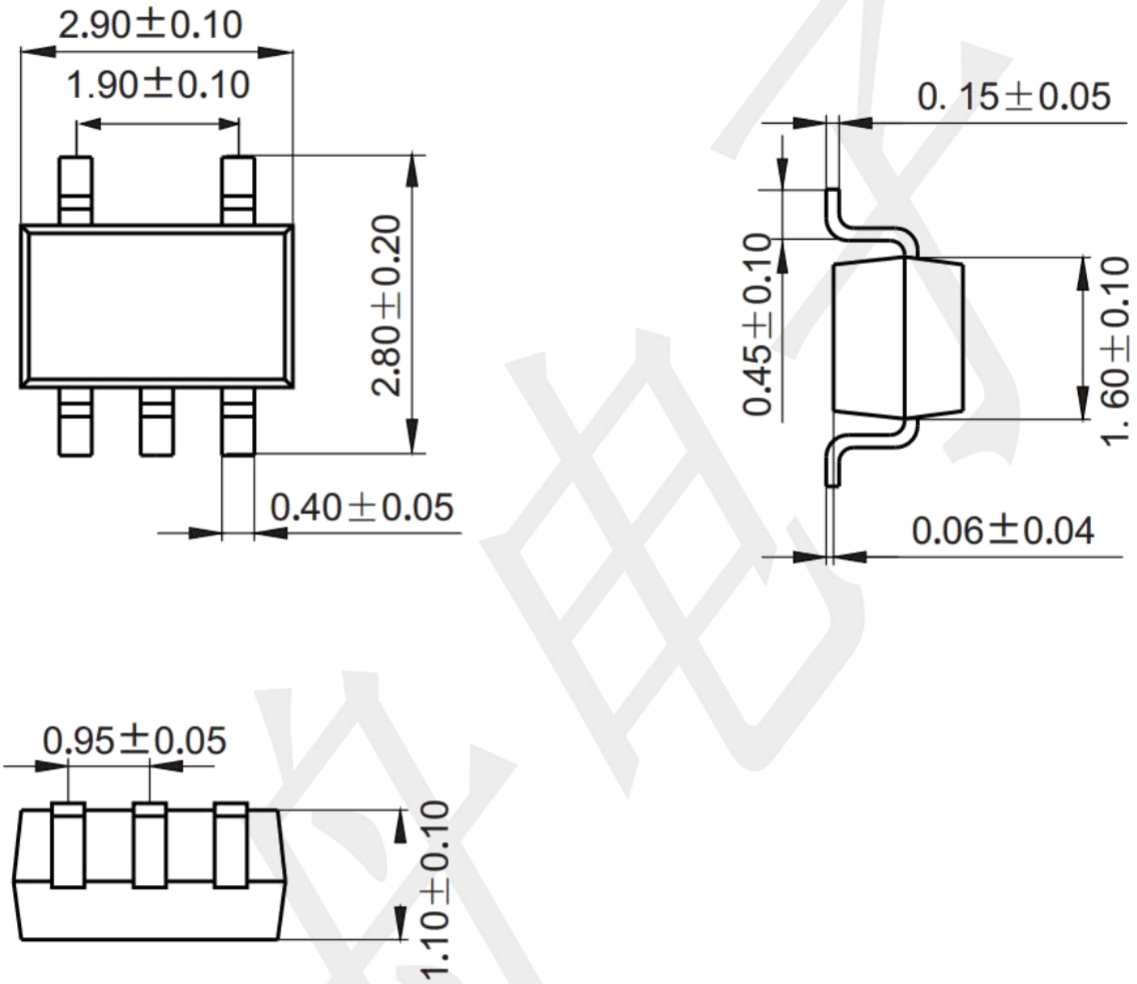
Ground Pin Current (IGND) versus Temperature



Ground Pin Current (IGND) versus Load Current

Package Outline Dimensions (unit: mm)

SOT23-5 (Unit: mm)



Mounting Pad Layout (unit: mm)