

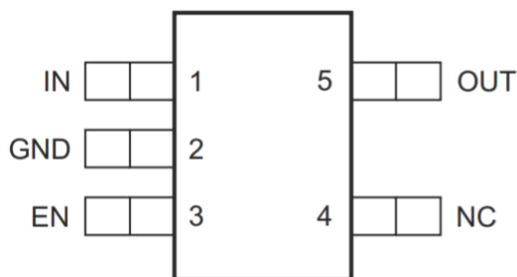
Features

- 1.5 μ A Current at no Load(TYP.)
- $\pm 2\%$ 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 Control Input
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: TPS70912DBVR-TP

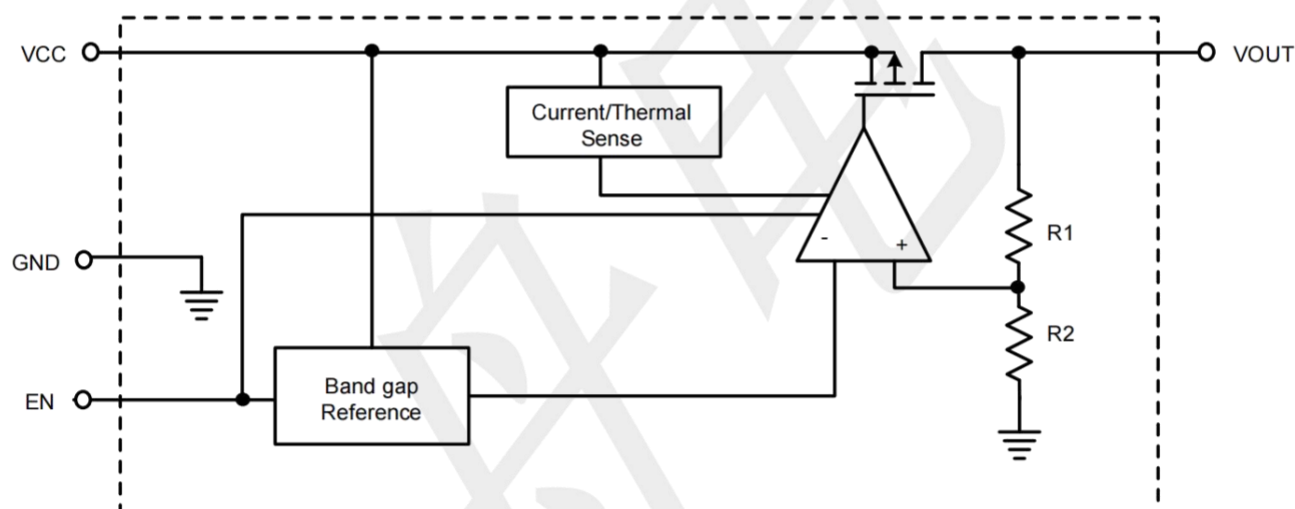
→ 1.2V Version, in SOT23-5 Package & Tape & Reel Packing Type

Absolute Maximum Ratings

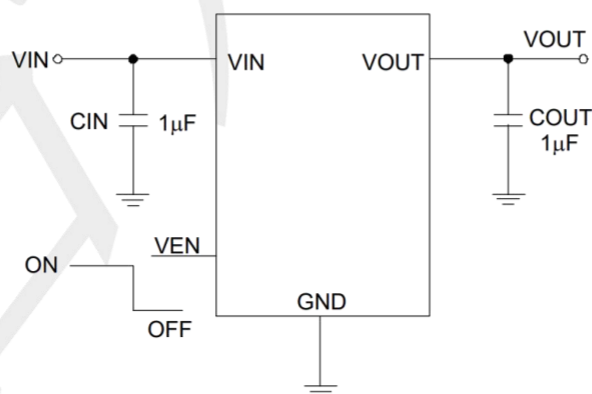
over operating free-air temperature range (unless otherwise noted)

		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	°C
	Storage, Tstg	-55	+125	
	Welding temperature and time, Tsolder		+260, 10s	
Power Dissipation	Pd SOT23-5	250		mW

BLOCK DIAGRAM



Typical Application Circuit



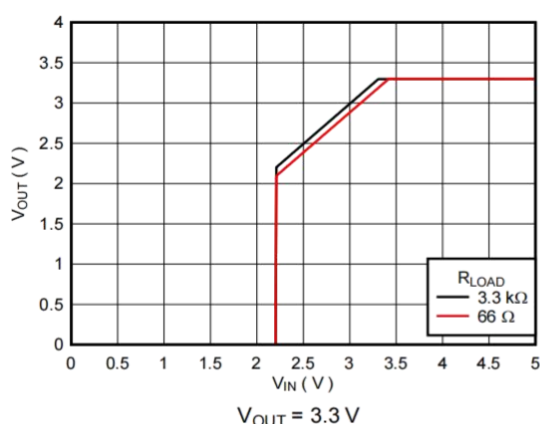
Electrical Characteristics

(TA=25°C, unless otherwise specified)

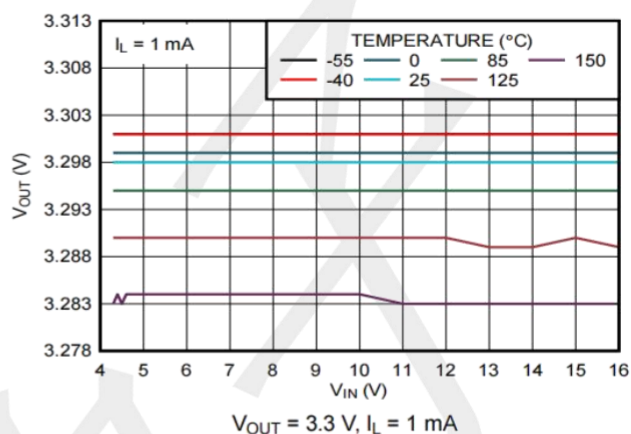
PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Supply Voltage	V _{IN}		--	--	30	V
Output current	I _{OUT(max)}		200	250	--	mA
DC Output Voltage Accuracy		I _{OUT} = 0.1mA	-2	--	2	%
Dropout Voltage (V _{IN} -V _{OUT})	I _{OUT} =100mA	V _{OUT} = 1.2V	--	800	--	mV
		V _{OUT} = 1.5V	--	650	--	
		V _{OUT} = 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,	--	0.01	0.5	
V _{OUT} Shutdown Leakage Current	I _{LEAK}	V _{OUT} = 0V	--	0.01	0.5	
Power supply voltage regulation rate	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I _{OUT} = 10mA, V _{IN} ≤ 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	--	°C
Thermal Shutdown Hysteresis	ΔT _{SD}		--	20	--	
Package Thermal Resistance (Note 1)	SOT23-5	Thermal Resistance Junction-to-Ambient	--	220	--	°C/W
short-circuit current	I _{SHORT}	V _{IN} = 4.0V	--	42	--	mA
Overcurrent protection current	I _{LIMIT}	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.

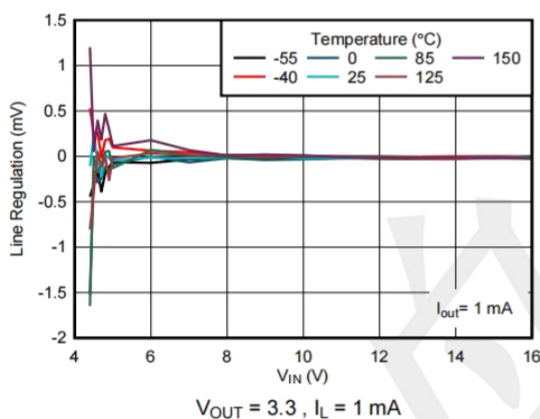
Typical Operating Characteristics (25 °C, unless otherwise noted)



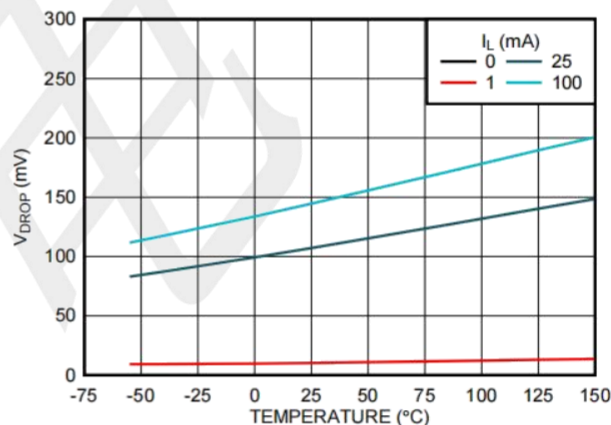
Output Voltage versus V_{IN}



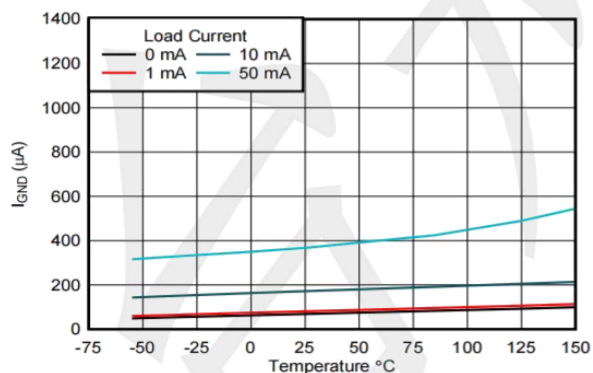
Output Voltage versus V_{IN} and Temperature



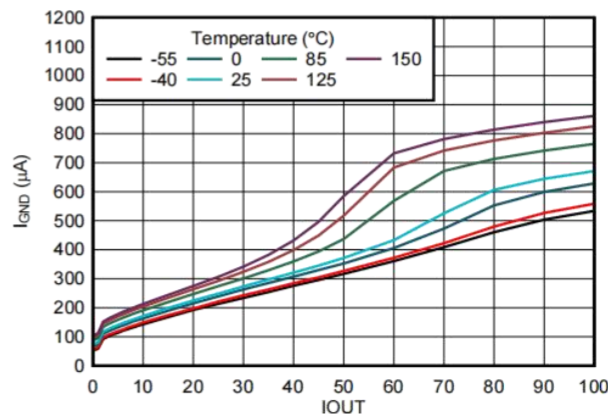
Line Regulation versus V_{IN} & Temperature



Dropout Voltage (V_{DO}) versus Temperature



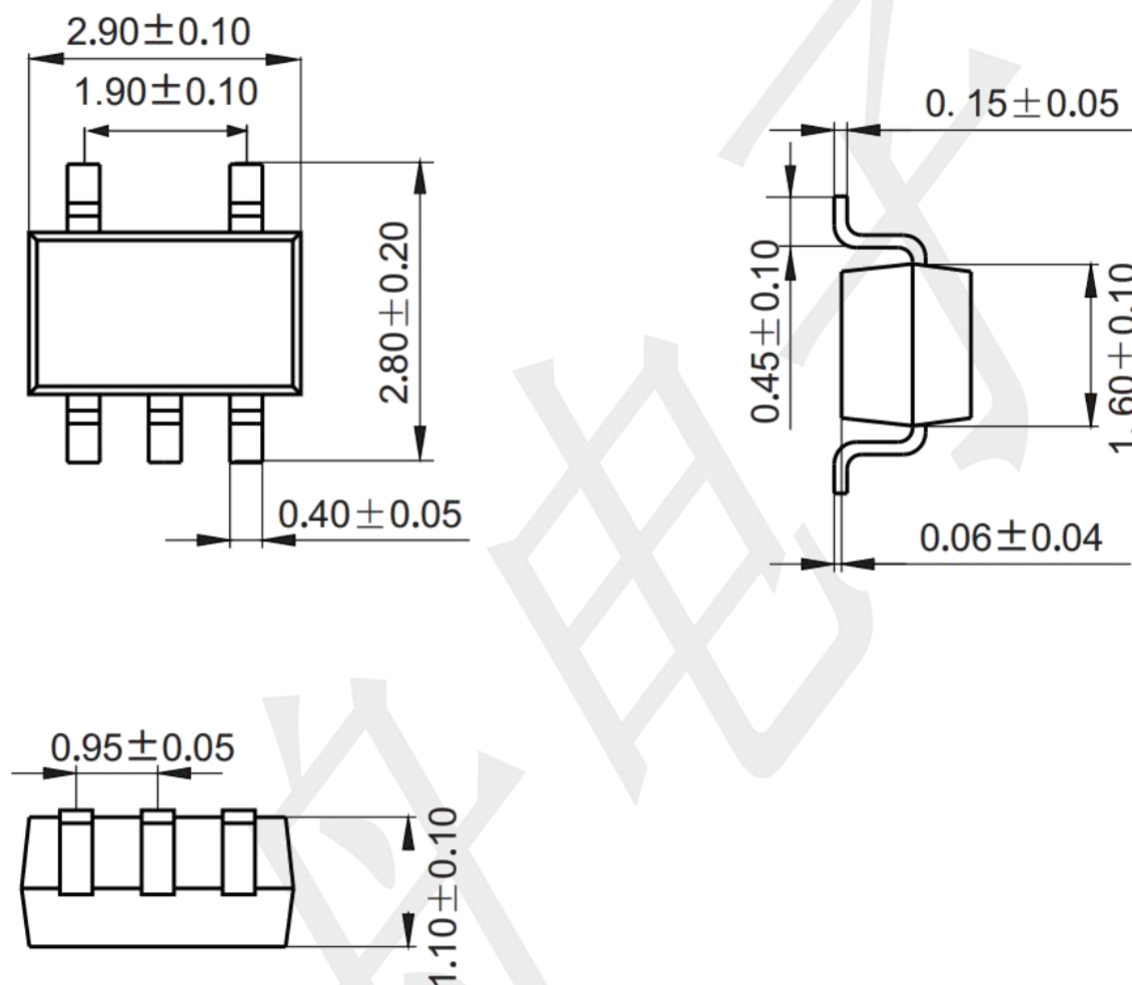
Ground Pin Current (I_{GND}) versus Temperature



Ground Pin Current (I_{GND}) versus Load Current

Package Outline Dimensions (unit: mm)

SOT23-5 (Unit: mm)



Mounting Pad Layout (unit: mm)

