

Features

- Low cost, accurate high-side current sensing
- Output voltage scaling
- Up to 2.5V sense voltage
- 2.5V to 20V supply range
- 4 μ A quiescent current
- 1% typical accuracy

Applications

- Battery chargers
- Smart battery packs
- DC motor control
- Over current monitor
- Power management
- Level translating
- Programmable current source

General Description

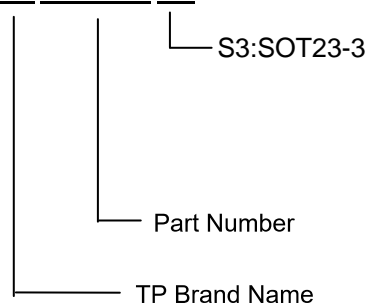
The TP1001S3 is a high side current sense monitor. Using this device eliminates the need to disrupt the ground plane when sensing a load current.

It takes a high side voltage developed across a current shunt resistor and translates it into a proportional output current. A user defined output resistor scales the output current into a ground-referenced voltage.

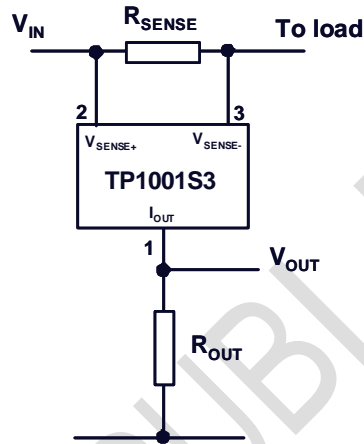
The wide input voltage range of 20V down to as low as 2.5V make it suitable for a range of applications. A minimum operating current of just 4 μ A, combined with a SOT23 package make it a unique solution for portable battery equipment.

Ordering Information

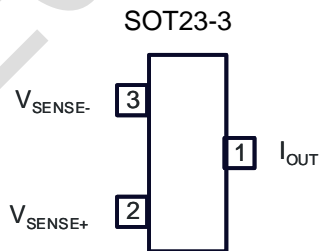
TP1001S3



TYPICAL APPLICATION



PIN CONFIGURATION



Pin Name	Pin Function
V _{SENSE+}	Connection to supply voltage
V _{SENSE-}	Connection to load
I _{OUT}	Output current, proportional to measured current

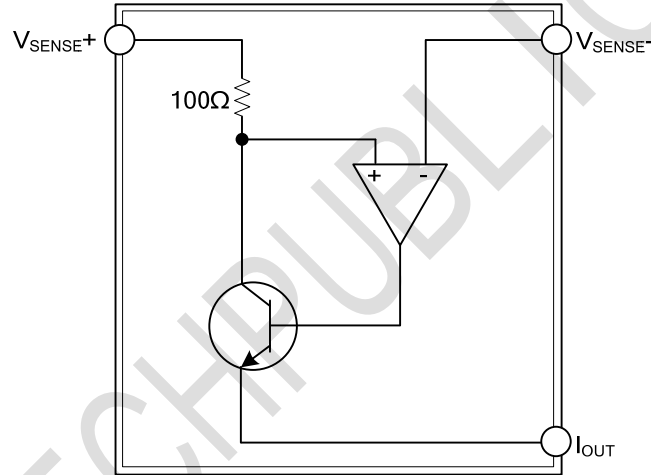
Absolute Maximum Rating ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Description	Rating	Unit
Voltage on any pin (relative to I _{OUT})	-0.6 to 20	V
Continuous output current, I _{OUT}	25	mA
Continuous sense voltage, V _{SENSE} [†]	-0.5 to +5	V
Operating temperature, T _A	-40 to 85	°C
Storage temperature	-55 to 125	°C
Package power dissipation @ T _A = 25°C (Derate to zero @ 125°C)	SOT23	450
	SM8	2

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

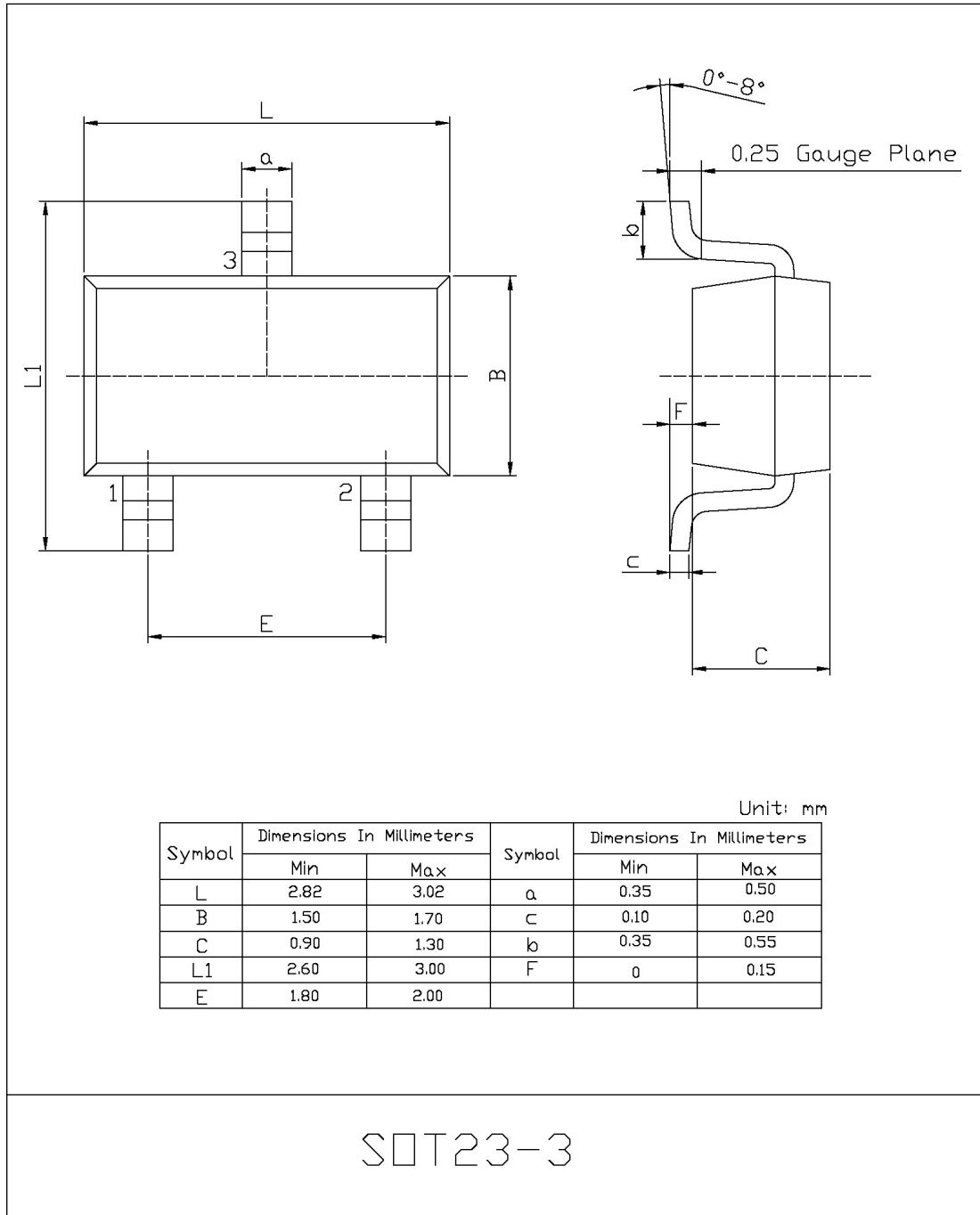
Symbol	Parameter	Conditions	Limits			Units
			Min	Typ	Max	
V _{IN}	V _{CC} range		2.5		20	V
I _{OUT} ¹	Output Current	V _{SENSE} = 0V	1	4	15	μA
		V _{SENSE} = 10mV	90	104	120	μA
		V _{SENSE} = 100mV	0.975	1.002	1.025	mA
		V _{SENSE} = 200mV	1.95	2.0	2.05	mA
		V _{SENSE} = 1V	9.6	9.98	10.2	mA
V _{SENSE} [†]	Sense Voltage		0		2500	mV
I _{SENSE-}	V _{SENSE} - Input Current				100	nA
A _{CC}	Accuracy	R _{SENSE} = 0.1Ω V _{SENSE} = 200mV	-2.5		2.5	%
G _M	Transconductance, I _{OUT} /V _{SENSE}			10000		μA/V
BW	Bandwidth	V _{SENSE(DC)} = 10mv, RF P _{IN} = -40dBm [‡]		300		kHz
		V _{SENSE(DC)} = 100mv, RF P _{IN} = -20dBm [‡]		2		MHz

BLOCK DIAGRAM



Package information

SOT23-3



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