

General Description

The SE8803 is a regulator with very low dropout and dual-output. It specifically designed for today's electricity meter applications.

The SE8803 has two voltage inputs and two voltage outputs. Output1 has two distinct requirements for the power supplies for the electricity meters. The first requirement is low power consumption. The second is low noise. Output1 uses a very unique design to achieve very low power consumption while providing a very low noise power output for electricity meter applications.

The second output is capable of delivering 150mA output current at a very low dropout voltage of 0.82V (Typical). The high precision output at 2% ensures that the accurate power supply requirement is met with enough margins in many tough applications.

Both of Outputs also provides Over Current Protection (OCP) and Over Temperature Protection (OTP), these features will ensure a safe operating environment for electricity meter applications.

The SE8803 is available in SOP and PSOP8 package.

Features

Output 1

- Output voltage of 5.0V (Typ.)
- Low quiescent Current
- Over-current/Over-temperature Protection.
- Minimum external components.
- Output voltage tolerances of $\pm 2\%$
- ESD rating is 2KV (Per MIL-STD-883D)

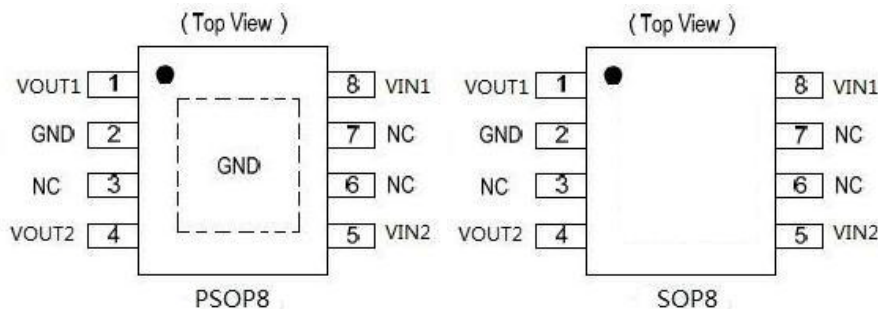
Output 2

- Output voltage of 11.6V (Typ.)
- Output current up to 150mA (Typ.)
- Current limiting Over thermal Protection.
- Minimum external components.
- Output voltage tolerances of $\pm 2\%$
- Input Voltage up to 30V
- Operating Junction Temperature Range -40 to +125°C
- ESD rating is 2KV (Per MIL-STD-883D)

Applications

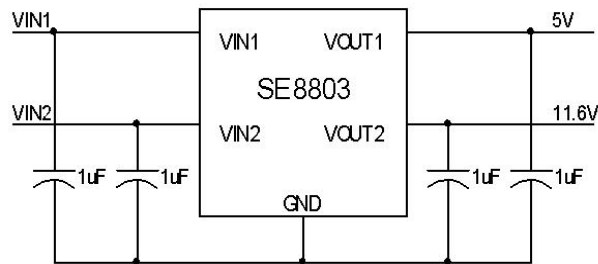
- Electricity meter.
- Networking Equipments where low noise and low power consumption is required.

Pin Configuration

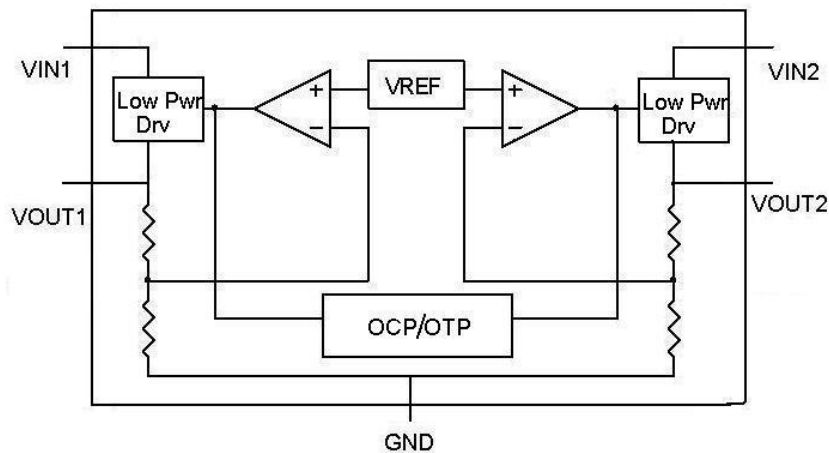




Typical Application



Functional Block Diagram



Ordering Information

Part Number	Marking Information	Package	Remarks
SE8803P	SE8803	PSOP8	YYWW means Production batch; LF: Lead Free
SE8803F	YYWW-LF	SOP8	

Absolute Maximum Rating

Parameter	Symbol	Maximum	Units
Power dissipation @25°C	P_D	0.9	W
SOP8			
PSOP8	1.1		
Input Voltage	V_{IN1}	-0.3~28	V
	V_{IN2}	-0.3~30	V
Operating Junction Temperature Range	T_J	-40 to +125	°C
Thermal Resistance	θ_{JA}	75	°C/W
SOP8			
PSOP8	65		
Lead Temperature (Soldering) 10 seconds	T_{LEAD}	260±5	°C
Storage Temperature	T_{STG}	-65 to +150	°C
ESD (HBM) Susceptibility	V_{ESD}	2	KV



Recommended Operating Conditions

Parameter	Symbol	Value	Units
Supply Input Voltage	V_{IN1}	7.0 to +22	V
	V_{IN2}	13 to +28	V
Junction Temperature	T_J	-40 to +85	°C

Electrical Characteristics

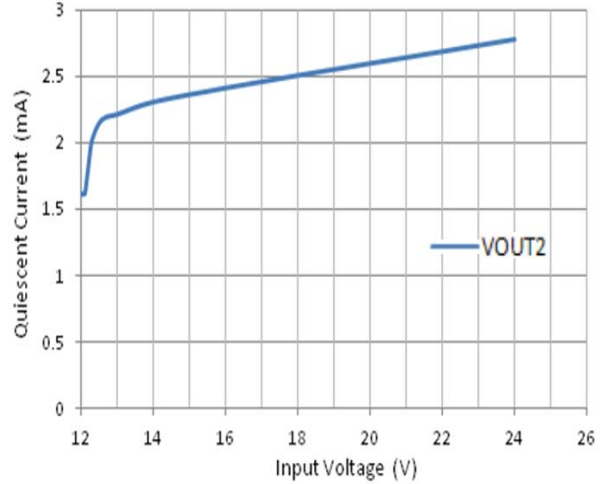
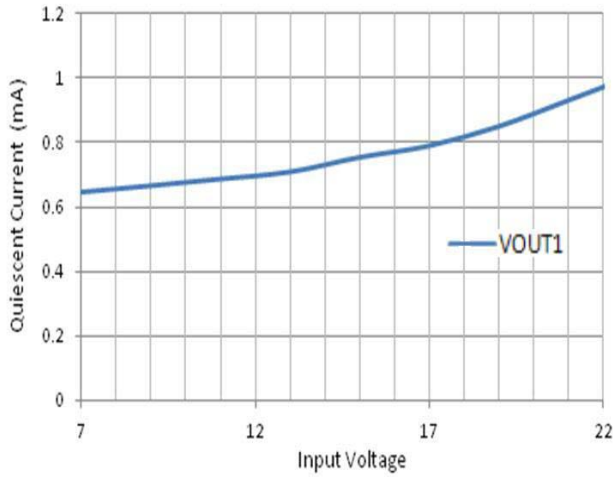
$V_{IN1} = 8V$, $V_{IN2} = 13V$; $I_{OUT} = 10mA$; $C_{IN1} = C_{OUT1} = 1\mu F$; $C_{IN2} = C_{OUT2} = 1\mu F$; $T_J = 25^\circ C$; unless otherwise specified

Symbol	Parameter	Conditions	SE8803			Unit
			Min	Typ	Max	
V_{O1}	Output Voltage	$I_{OUT} = 10mA$	4.9	5	5.1	V
V_{O2}		$I_{OUT} = 10mA$	11.368	11.6	11.832	V
ΔV_{O1}	Line Regulation	$7V \leq V_{IN1} \leq 20V$	--	0.07	--	%/V
ΔV_{O2}		$13V \leq V_{IN2} \leq 26V$	--	0.11	--	%/V
ΔV_{O1}	Load Regulation	$1mA \leq I_{O1} \leq 50mA$	--	50	--	mV
ΔV_{O2}		$10mA \leq I_{O2} \leq 150mA$	--	320	--	mV
I_{Q1}	Quiescent Current	$I_{O1} = 10mA$	--	0.65	--	mA
I_{Q2}		$I_{O2} = 10mA$	--	2.21	--	mA
		$I_{O2} = 100mA$	--	1.7	--	mA
ΔI_{Q1}	Quiescent Current Change	$7V \leq V_{IN} \leq 20V$	--	0.32	--	mA
I_{Q2}		$13V \leq V_{IN} \leq 24V$	--	0.56	--	mA
V_{D1}	Dropout Voltage	$\Delta V_{O1} = -2\%$	-	0.82	--	V
V_{D2}		$\Delta V_{O2} = -2\%$	-	0.82	--	V
I_{PK1}	Peak Output Current	$V_{IN1} = 8V$	50	60	--	mA
		$V_{IN1} = 15V$	90	100	--	mA
I_{PK2}		$V_{IN2} = 13V$	150	200	--	mA
$\Delta V_{O1}/\Delta T$	Average Output Voltage Tempco	$I_{O1} = 10mA$	--	0.1	--	mV/°C
$\Delta V_{O2}/\Delta T$		$I_{O2} = 10mA$	--	0.8	--	mV/°C
T_{OTP}	Thermal Protection Temperature		--	150	--	°C
$V_{IN1} (Min)$	Minimum Value of Input Voltage Required to Maintain Line Regulation	$I_{O1} = 10mA$	5.8	6.2	--	V
$V_{IN2} (Min)$		$I_{O2} = 10mA$	--	13	--	V

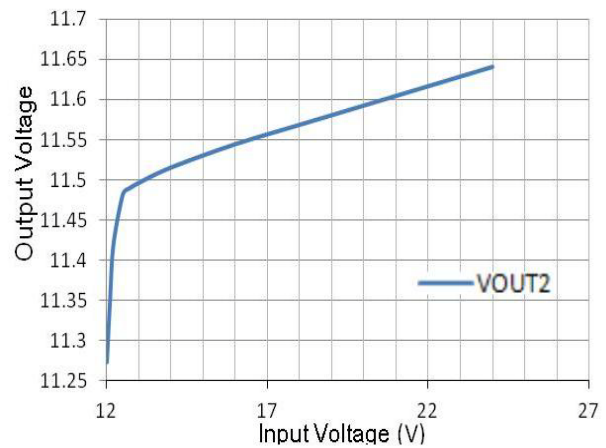
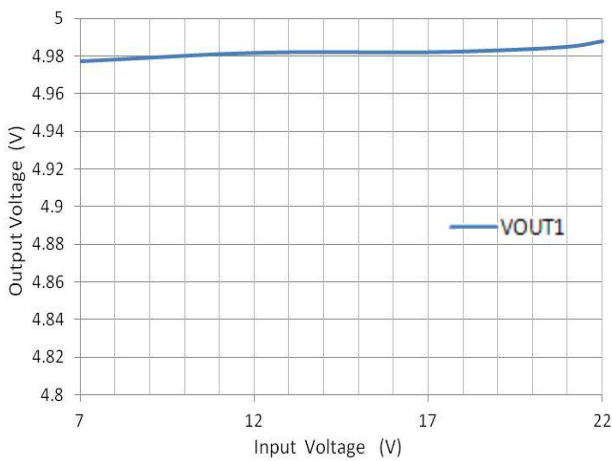


Typical Performance Characteristic

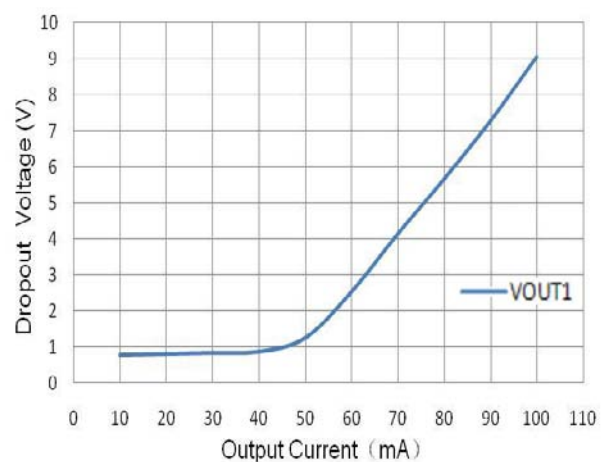
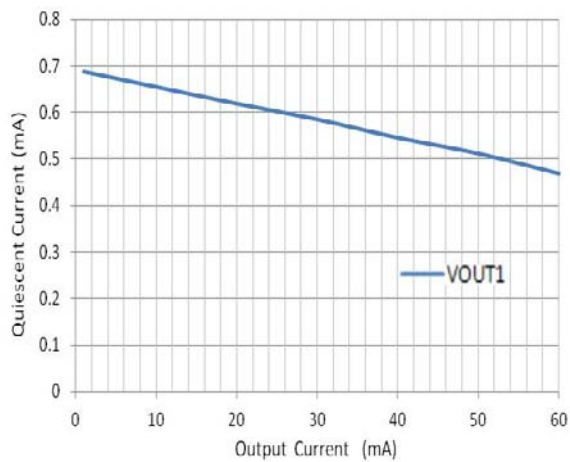
$V_{IN1} = 8V$, $V_{IN2} = 13V$, $I_{O1} = I_{O2} = 10mA$, $C_{IN} = C_{OUT} = 1\mu F$, $T_J = 25^\circ C$, unless specified otherwise.



Quiescent Current VS Input Voltage

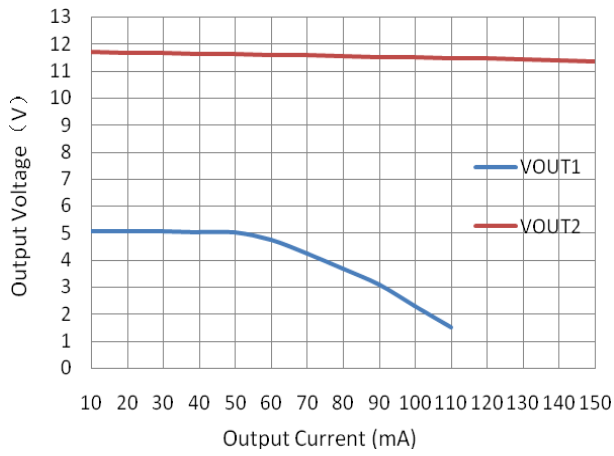


Output Voltage VS Input Voltage

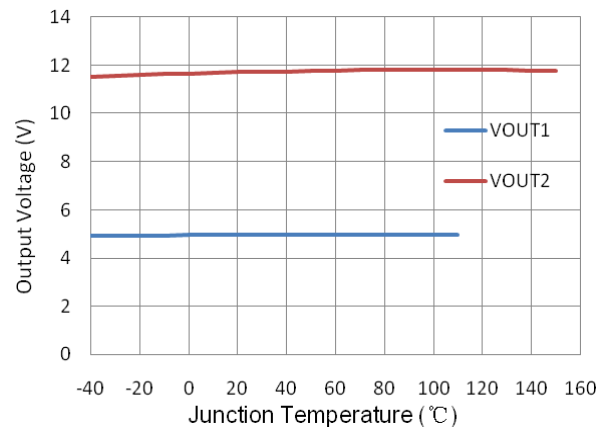


Quiescent Current VS Output Current

Dropout Voltage VS Output Current



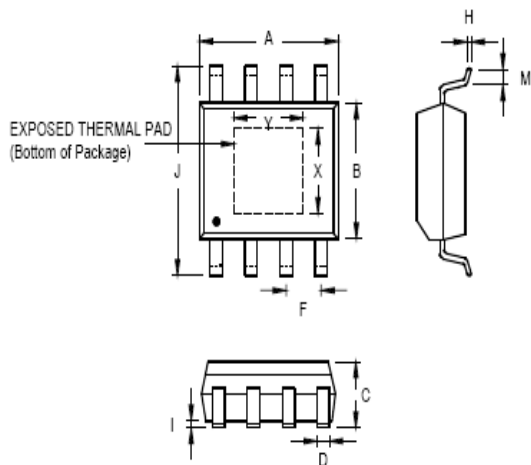
Output Voltage VS Output Current



Output Voltage VS Junction Temperature

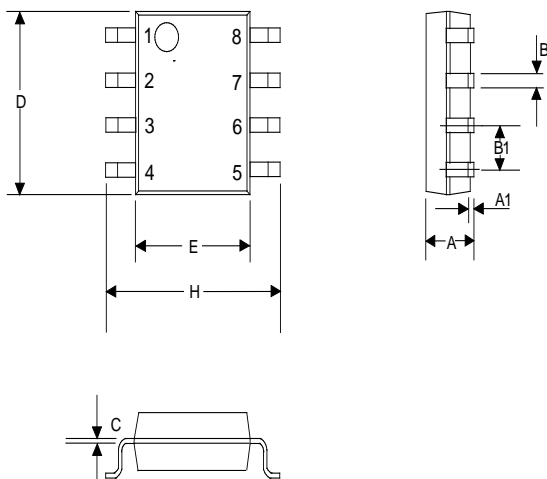


Outline Drawing PSOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.801	5.004	0.189	0.197
B	3.810	3.988	0.150	0.157
C	1.346	1.753	0.053	0.069
D	0.330	0.508	0.013	0.020
F	1.194	1.346	0.047	0.053
H	0.191	0.254	0.008	0.010
I	0.000	0.152	0.000	0.006
J	5.791	6.198	0.228	0.244
M	0.406	1.270	0.016	0.050
X	2.057	2.515	0.081	0.099
Y	2.057	3.404	0.081	0.134

Outline Drawing SOP8



DIM ^N	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.0532	0.0688	1.35	1.75
A1	0.0040	0.0098	0.10	0.25
B	0.0130	0.0200	0.33	0.51
B1	0.050 BSC		1.27 BSC	
C	0.0075	0.0098	0.19	0.25
D	0.1890	0.1968	4.80	5.00
H	0.2284	0.2440	5.80	6.20
E	0.1497	0.1574	3.80	4.00



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