

## WL2803K

Ultra low dropout, 800mA, CMOS LDO

[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

### Descriptions

The WL2803K series are ultra low dropout, Low quiescent current, high PSRR CMOS LDO. The dropout voltage is 260mV (Typ.) at 800mA load current.

Using CMOS construction, the quiescent current consumed by the WL2803K is typically 150uA over the entire input voltage range, making it attractive for consumer, networking applications that demand high output current.

The WL2803K series are available in wide output voltage range version from 1.2V to 3.3V with 0.1V step. Standard output voltages are 1.8V, 3.3V. Other output voltage options are available upon request.

The WL2803K series offer thermal shutdown (OTP) and current limit functions, to assure the stability of chip and power system at wrong condition, and it uses trimming technique to guarantee output voltage accuracy within  $\pm 2\%$ .

The WL2803K regulators are available in SOT-89-5L packages. Standard products are Pb-free and Halogen-free.

### Features

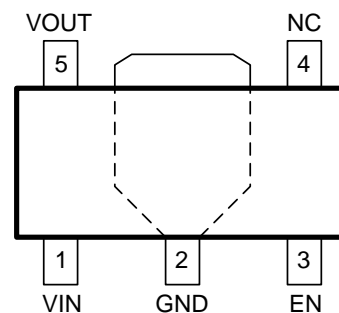
- Input voltage : 2.5V~5.5V
- Output voltage : 1.8V, 3.3V (Or upon request)
- Output current : 800mA
- PSRR : 65dB @ 1KHz
- Dropout voltage : 260mV @  $I_{OUT}=0.8A$
- Output noise : 100uV
- Quiescent current : 150 $\mu$ A Typ.

### Applications

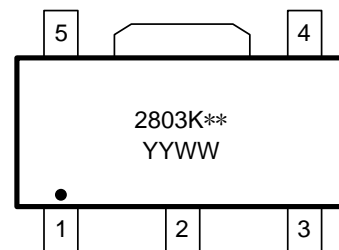
- LCD TV
- STB
- Computer, Graphic card
- Network communication equipments
- Others portable electronics devices



**SOT-89-5L**



**Pin Configuration (Top View)**

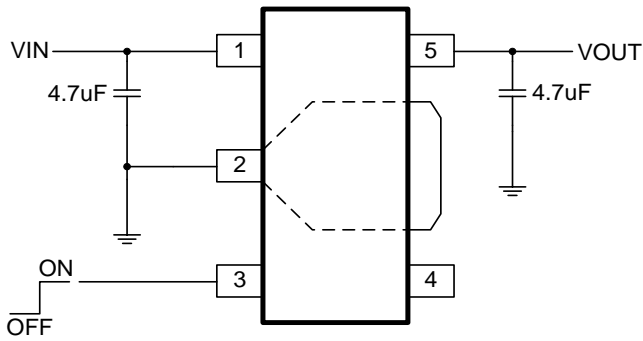


2803K = Device code  
 \*\* = Voltage code (33: 3.3V)  
 YY = Year code  
 WW = Week code

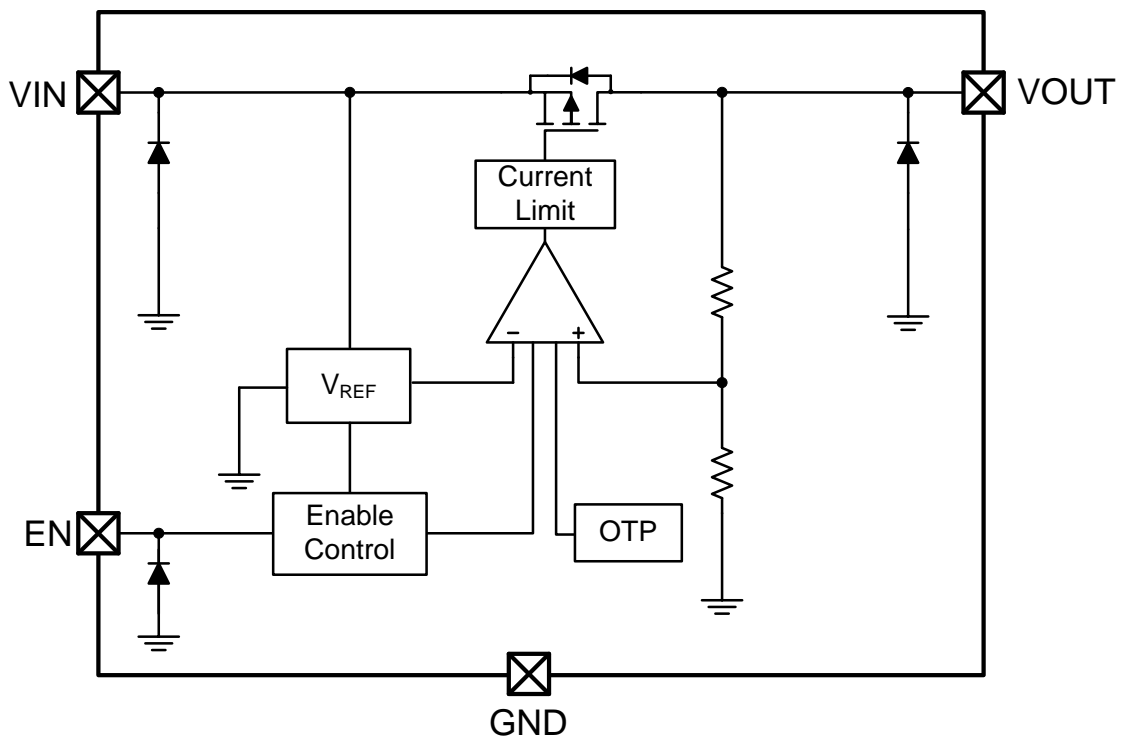
### Marking

### Order Information

For detail information, Please refer to page 9.

**Typical Application**

**Pin Description**

PIN	Symbol	Description
1	VIN	Input
2	GND	Ground
3	EN	Enable, Active High
4	NC	Not Connect
5	VOUT	Output

**Block Diagram**


**Absolute Maximum Ratings**

Parameter	Symbol	Value	Unit
Input voltage range	$V_{IN}$	-0.3 ~ 6.5	V
Output voltage range	$V_{OUT}$	-0.3 ~ $V_{IN}$	V
Power dissipation *1 *3	$P_D$	1.0	W
Power dissipation *2 *3		0.5	W
Thermal resistance *1	$R_{\theta JA}$	125	°C/W
Thermal resistance *2		250	°C/W
Junction temperature	$T_J$	150	°C
Lead temperature(10s)	$T_L$	260	°C
Storage temperature	Tstg	-55 ~ 150	°C
ESD Ratings	HBM	±8000	V
	MM	±400	V

**Note:** These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

\*1: Surface mounted on FR-4 Board using 1 square inch pad size, dual side, 1oz copper

\*2: Surface mounted on FR-4 board using minimum pad size, 1oz copper

\*3: Power dissipation is calculate by  $P_D = (V_{IN} - V_{OUT}) \times I_{OUT}$

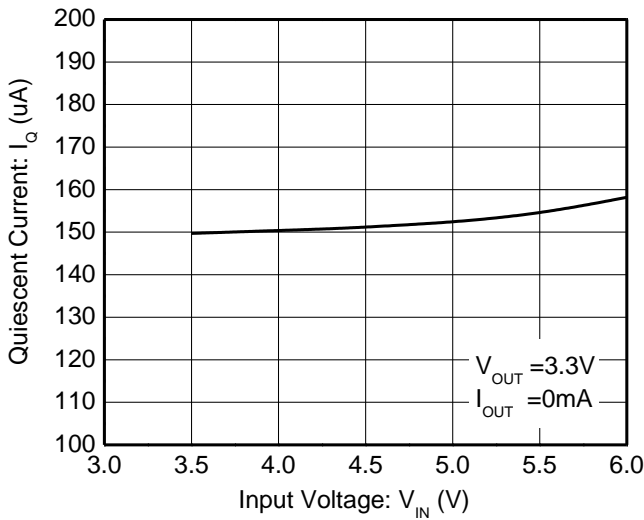
**Recommend Operating Ratings**

Parameter	Symbol	Value	Unit
Operating Supply voltage	$V_{IN}$	2.5 ~ 5.5	V
Operating Temperature Range	Topr	-40 ~ 85	°C

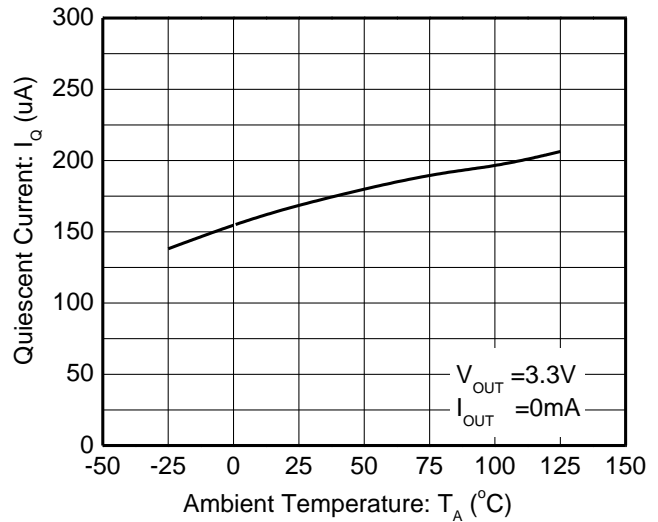
**Electronics Characteristics (Ta=25°C, V<sub>IN</sub>=V<sub>OUT</sub>+1V, C<sub>IN</sub>=C<sub>OUT</sub>=4.7uF, unless otherwise noted)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Voltage	V <sub>OUT</sub>	V <sub>OUT</sub> < 1.5V, V <sub>IN</sub> =2.5V, I <sub>OUT</sub> =1mA	V <sub>OUT</sub> - 30mV	V <sub>OUT</sub>	V <sub>OUT</sub> + 30mV	V
		V <sub>OUT</sub> ≥ 1.5V, I <sub>OUT</sub> =1mA	V <sub>OUT</sub> * 0.98	V <sub>OUT</sub>	V <sub>OUT</sub> * 1.02	
Dropout Voltage	V <sub>DROP</sub>	V <sub>OUT</sub> =V <sub>OUT</sub> *0.98, I <sub>OUT</sub> =1A		250	450	mV
Current Limit	I <sub>LIM</sub>	V <sub>IN</sub> =5V	1.2			A
Line Regulation	ΔV <sub>LINE</sub>	V <sub>OUT</sub> =3.3V, V <sub>IN</sub> =4.3~6.0V, I <sub>OUT</sub> =1mA		5	10	mV
Load Regulation	ΔV <sub>Load</sub>	V <sub>OUT</sub> =3.3V, I <sub>OUT</sub> =1~800mA		10	30	mV
Quiescent Current	I <sub>Q</sub>	V <sub>OUT</sub> =3.3V, I <sub>OUT</sub> =0		150	200	uA
Power Supply Ripple Rejection	PSRR	V <sub>IN</sub> =(V <sub>OUT</sub> +1V) <sub>DC</sub> +0.2V <sub>P-P</sub> F=1KHz, I <sub>OUT</sub> =10mA		65		dB
		V <sub>IN</sub> =(V <sub>OUT</sub> +1V) <sub>DC</sub> +0.2V <sub>P-P</sub> F=10KHz, I <sub>OUT</sub> =10mA		58		
Output noise voltage	e <sub>NO</sub>	10Hz to 100KHz, C <sub>OUT</sub> =4.7μF		100		μV <sub>P-P</sub>
EN logic high voltage	V <sub>ENH</sub>	V <sub>IN</sub> =5.5V, I <sub>OUT</sub> =1mA	1.2			V
EN logic low voltage	V <sub>ENL</sub>	V <sub>IN</sub> =5.5V, I <sub>OUT</sub> =0mA			0.4	V
Thermal shutdown threshold	T <sub>SD</sub>			165		°C
Thermal shutdown hysteresis	ΔT <sub>SD</sub>			30		°C

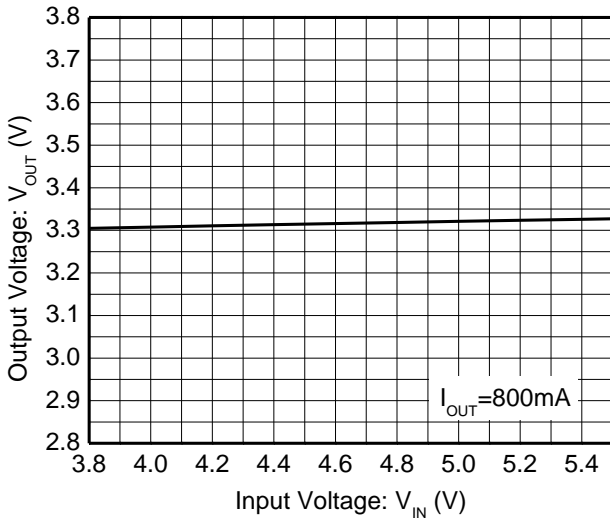
Typical characteristics ( $T_a=25^\circ\text{C}$ ,  $V_{IN}=V_{OUT}+1\text{V}$ ,  $C_{IN}=C_{OUT}=4.7\mu\text{F}$ , unless otherwise noted)



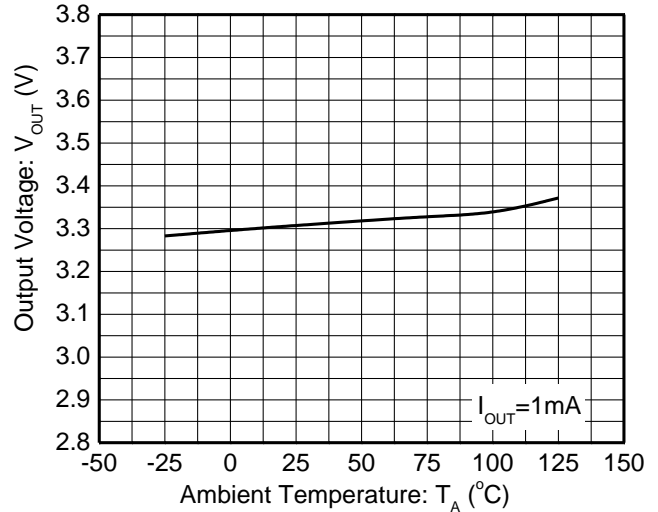
Quiescent current vs. Supply voltage



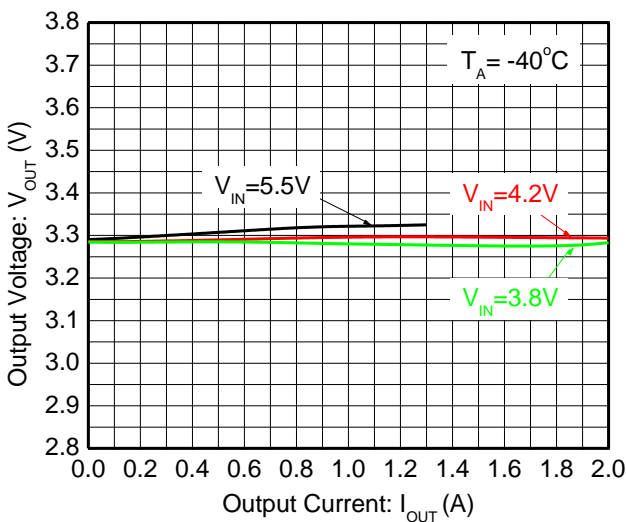
Quiescent current vs. Ambient temperature



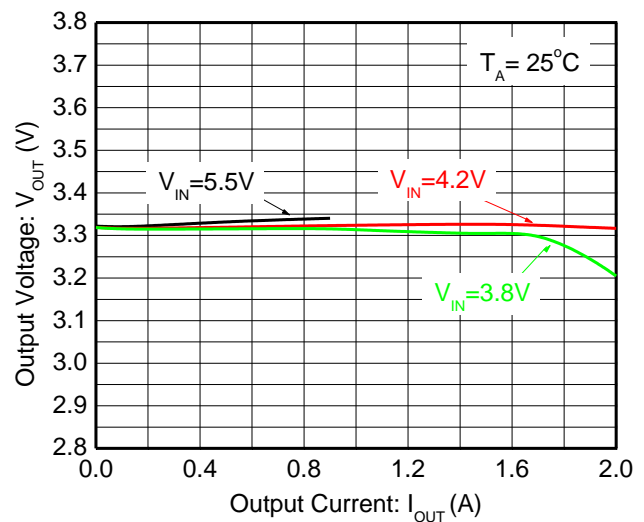
Output voltage vs. Supply voltage



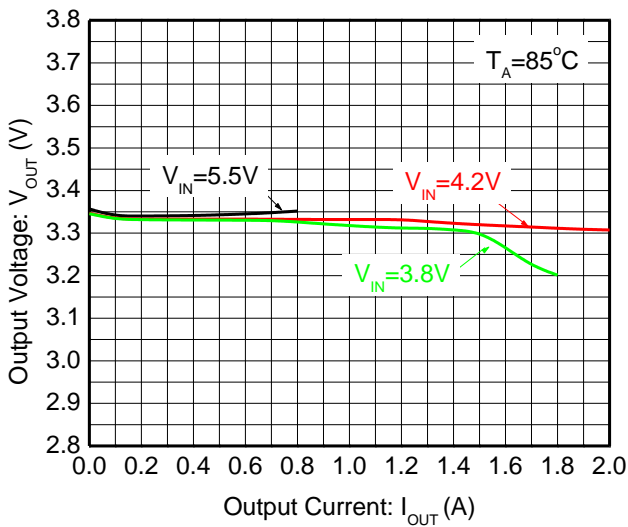
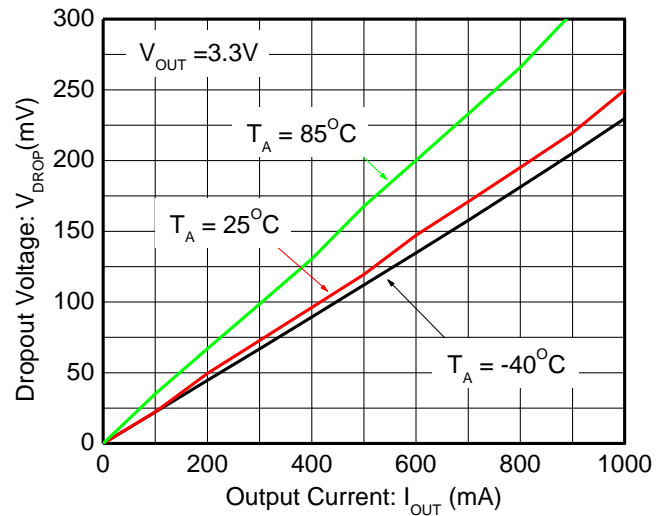
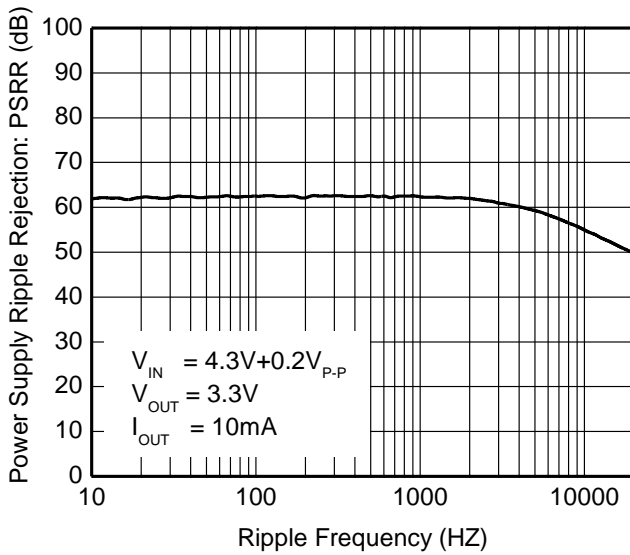
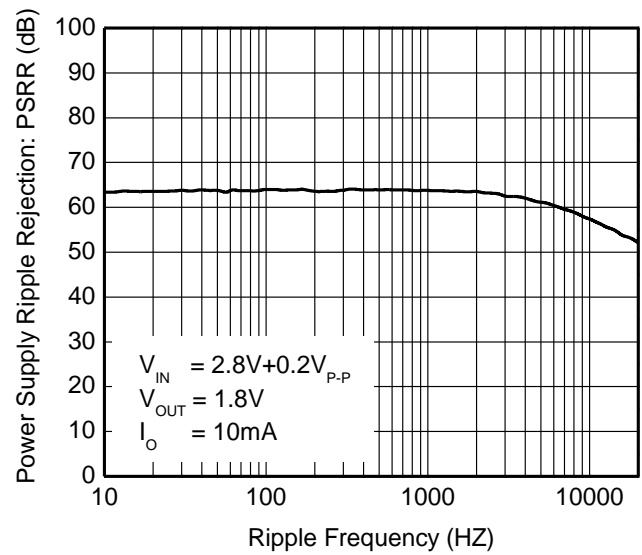
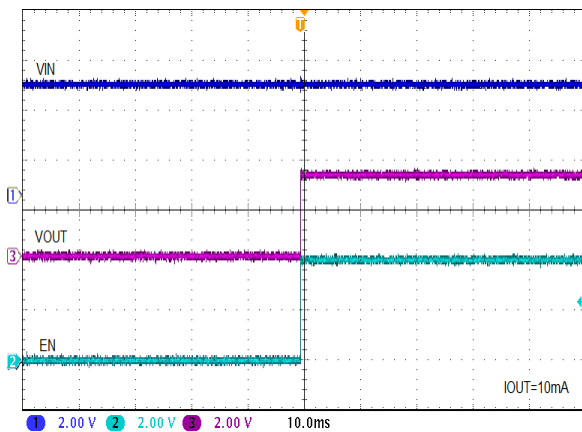
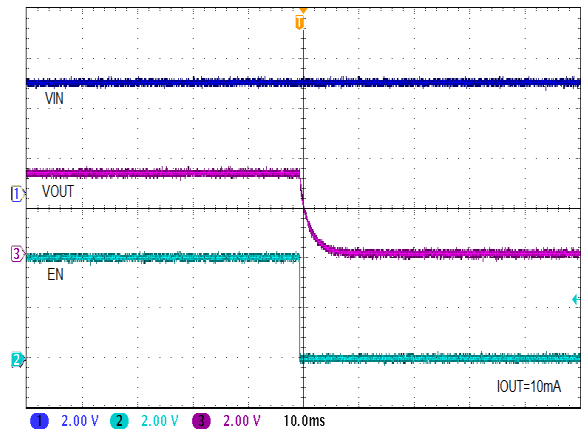
Output voltage vs. Ambient temperature

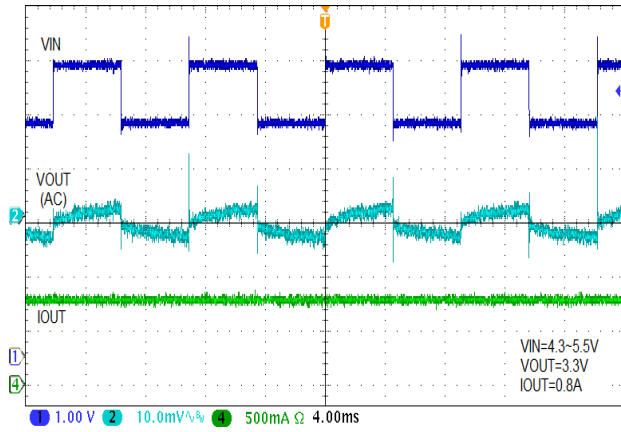
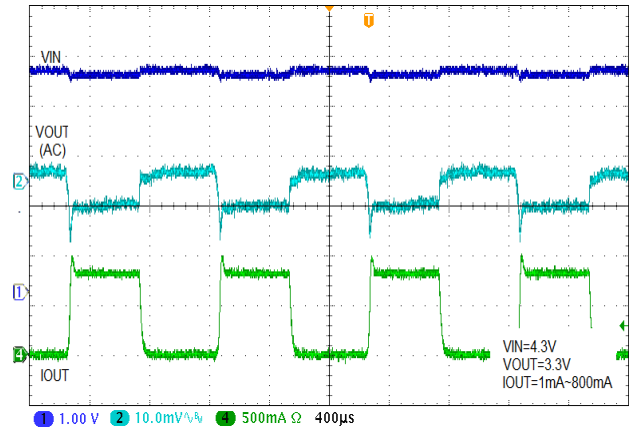


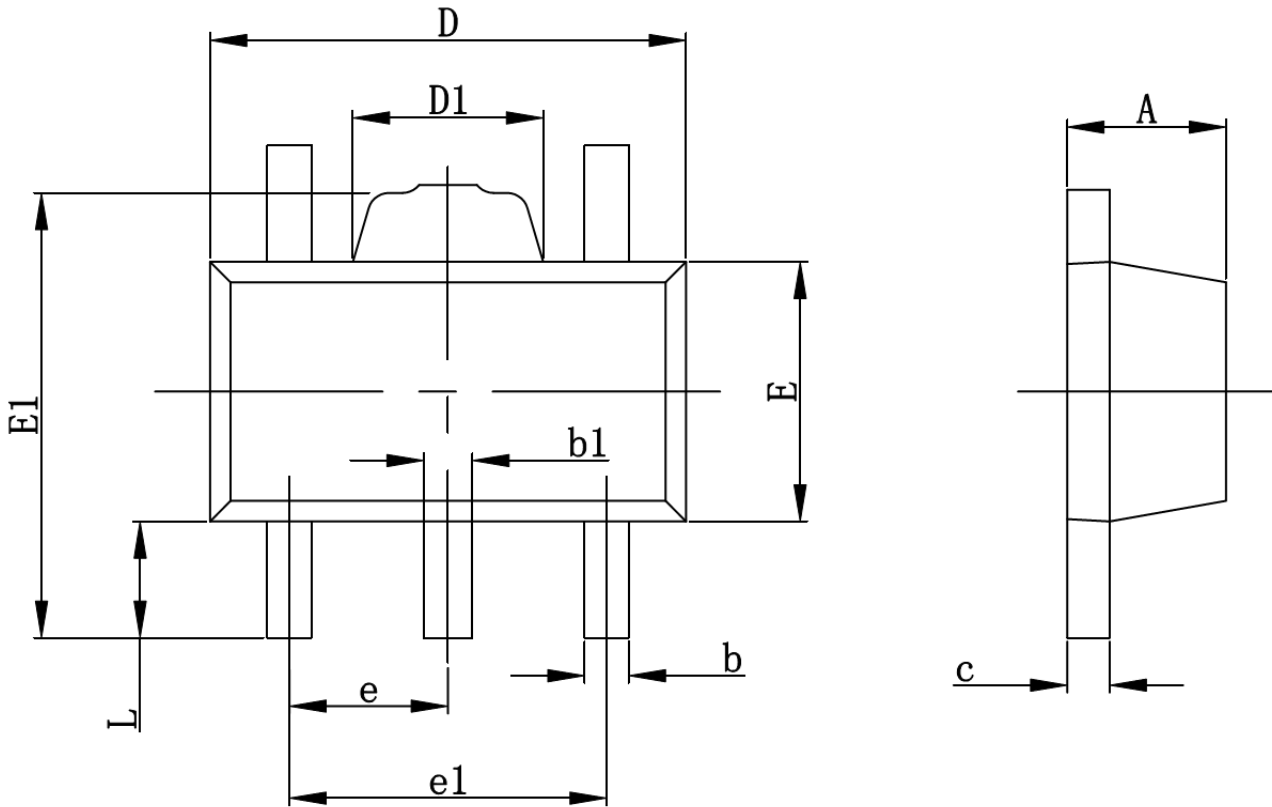
Output voltage vs. Output current



Output voltage vs. Output current


**Output voltage vs. Output current**

**Dropout voltage vs. Output current**

**PSRR**

**PSRR**

**Startup with EN**

**Shutdown with EN**


**Line Regulation**

**Load Regulation**

**Package outline dimensions**
**SOT-89-5L**


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	1.400	1.500	1.600
b	0.320	0.420	0.520
b1	0.400	0.490	0.580
c	0.350	-	0.440
D	4.400	4.500	4.600
D1	1.550 Ref.		
E	2.300	2.450	2.600
E1	3.940	4.100	4.250
e	1.500 Typ.		
e1	3.000 Typ.		
L	0.900	-	1.200



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**ORDER INFORMATION**

<b>Ordering No.</b>	<b>V<sub>OUT</sub> (V)</b>	<b>Package</b>	<b>Operating Temperature</b>	<b>Shipping</b>
WL2803K18-5/TR	1.8	SOT-89-5L	-40 ~ +85°C	1000/Tape and Reel
WL2803K33-5/TR	3.3	SOT-89-5L	-40 ~ +85°C	1000/Tape and Reel