

# WL2801E

Low noise, High PSRR, High speed, CMOS LDO

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

## Descriptions

The WL2801E series is a high accuracy, low noise, high speed, low dropout CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The current limiter's fold-back circuit also operates as a short circuit protection and an output current limiter at the output pin.

The WL2801E regulators are available in standard SOT-23-5L packages. Standard products are Pb-free and Halogen-free.



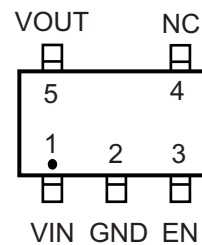
SOT-23-5L

## Features

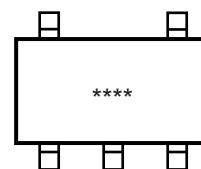
- Input voltage : 2.7V~5.5V
- Output range : 1.2V~3.3V
- Output current : 200mA (Up to 300mA Typ.)
- PSRR : 75dB @ 217Hz
- Dropout voltage : 170mV @ I<sub>OUT</sub>=200mA
- Quiescent current : 70μA Typ.
- Shut-down current : < 0.1μA
- Recommend capacitor : 1uF

## Applications

- MP3/MP4 Players
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device



Pin Configuration (Top View)

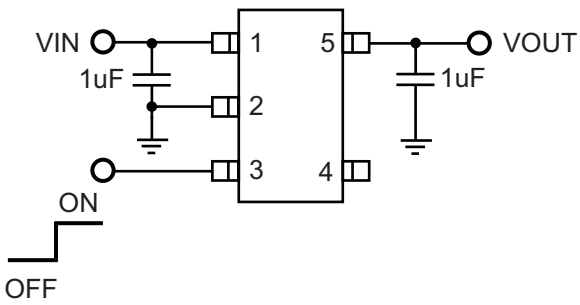


For detail marking information, please see page 9.

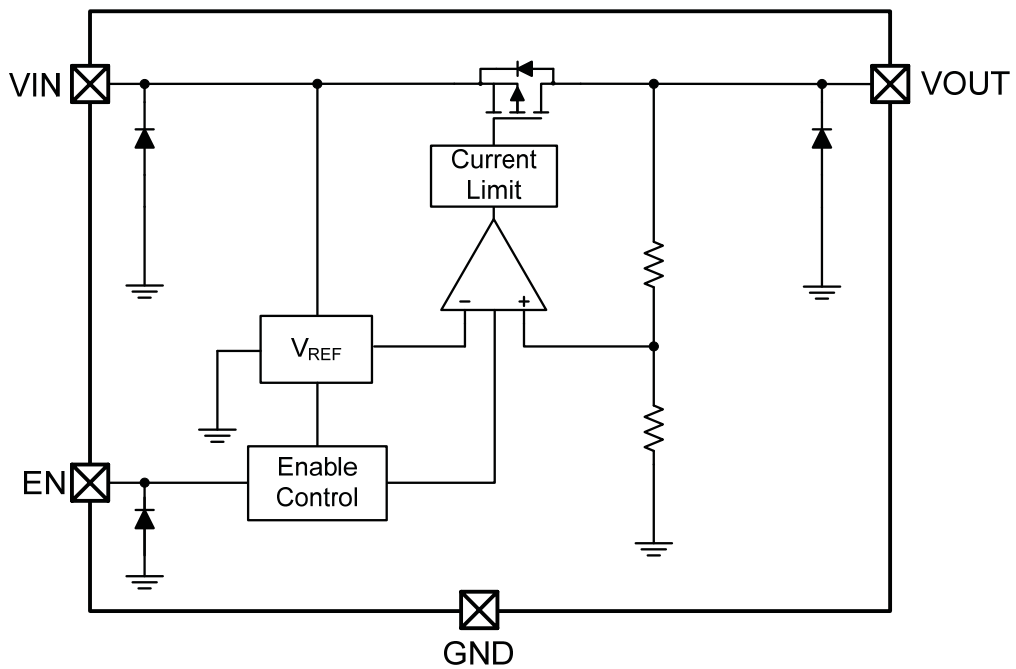
## Marking

## Order Information

For detail order information, please see page 9.

**Typical Application**

**Pin Description**

PIN	Symbol	Description
1	VIN	Input
2	GND	Ground
3	EN	Enable (Active high)
4	NC	Not connected
5	VOUT	Output

**Block Diagram**


**Absolute Maximum Ratings**

Parameter	Value	Unit
Power Dissipation	Internal limited	mW
V <sub>IN</sub> Range	-0.3 ~ 6.5	V
V <sub>EN</sub> Range	-0.3 ~ V <sub>IN</sub>	V
V <sub>OUT</sub> Range	-0.3 ~ V <sub>IN</sub>	V
Lead Temperature Range	260	°C
Storage Temperature Range	-55 ~ 150	°C
Operating Junction Temperature Range	150	°C

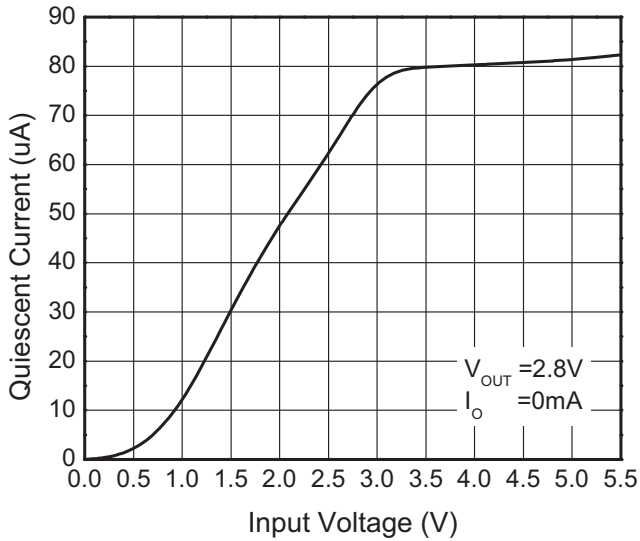
**Recommend Operating Ratings**

Parameter	Value	Unit
Operating Supply voltage	2.7 ~ 5.5	V
Operating Temperature Range	-40 ~ 85	°C
Thermal Resistance, R <sub>θJA</sub>	250	°C/W

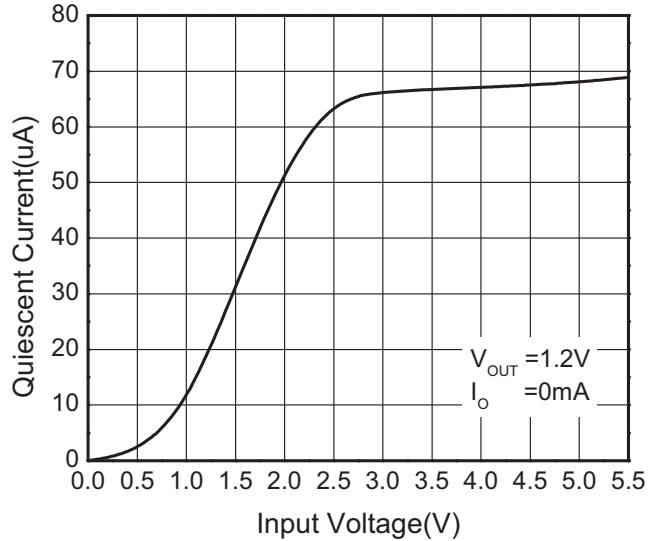
**Electronics Characteristics (Ta=25°C, V<sub>IN</sub>=V<sub>OUT</sub>+1V, C<sub>IN</sub>=C<sub>OUT</sub>=1μF, unless otherwise noted)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Voltage	V <sub>OUT</sub>	V <sub>OUT</sub> < 2V, V <sub>IN</sub> =2.7V, I <sub>OUT</sub> =1mA	0.97	V <sub>OUT</sub>	1.03	V
		V <sub>OUT</sub> ≥ 2V, I <sub>OUT</sub> =1mA	0.98	V <sub>OUT</sub>	1.02	
Current Limit	I <sub>LIM</sub>	V <sub>EN</sub> =V <sub>IN</sub>	Ref. to Output Voltage vs. Output Current Chart			mA
Dropout Voltage	V <sub>DROP</sub>	V <sub>OUT</sub> =2.8V, I <sub>OUT</sub> =200mA		170	200	mV
		V <sub>OUT</sub> =2.8V, I <sub>OUT</sub> =300mA		250	300	
Line Regulation	ΔV <sub>LINE</sub>	V <sub>IN</sub> =2.7~5.5V, I <sub>OUT</sub> =1mA		0.01	0.15	%/V
Load Regulation	ΔV <sub>Load</sub>	V <sub>OUT</sub> =2.8V, I <sub>OUT</sub> =1~300mA		20	30	mV
Quiescent Current	I <sub>Q</sub>	V <sub>OUT</sub> =2.8V, I <sub>OUT</sub> =0		70	100	μA
Short Current	I <sub>SHORT</sub>	V <sub>EN</sub> =V <sub>IN</sub> , V <sub>OUT</sub> Short to GND with 1Ω		170		mA
Shut-down Current	I <sub>SHDN</sub>	V <sub>EN</sub> =0V		0.1	1.0	μA
Power Supply Rejection Rate	PSRR	V <sub>IN</sub> =(V <sub>OUT</sub> +1V) <sub>DC</sub> +0.5V <sub>P-P</sub> F=217Hz, I <sub>OUT</sub> =10mA		75		dB
		V <sub>IN</sub> =(V <sub>OUT</sub> +1V) <sub>DC</sub> +0.5V <sub>P-P</sub> F=10KHz, I <sub>OUT</sub> =10mA		65		
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, V <sub>OUT</sub> =0V			0.4	V
EN Input Current	I <sub>EN</sub>	V <sub>EN</sub> = 0 to 5.5V			1.0	μA
Output Noise Voltage	e <sub>NO</sub>	10Hz to 100KHz, C <sub>OUT</sub> =1μF		100		μV <sub>RMS</sub>

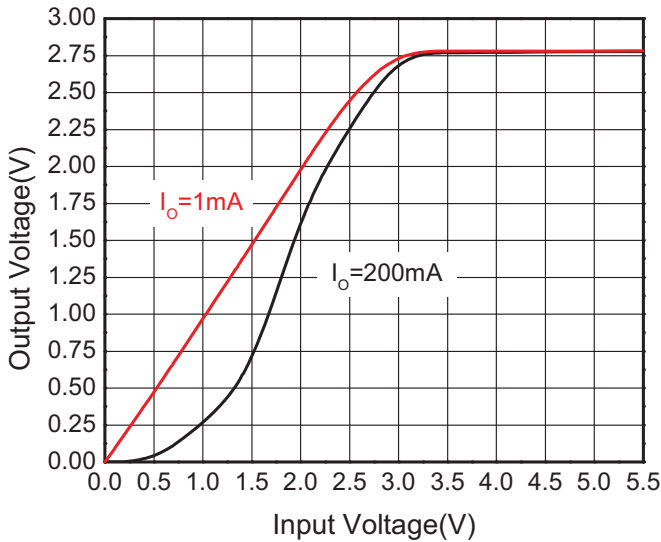
Typical characteristics ( $T_a=25^\circ\text{C}$ ,  $V_{IN}=V_{OUT}+1\text{V}$ ,  $C_{IN}=C_{OUT}=1\mu\text{F}$ , unless otherwise noted)



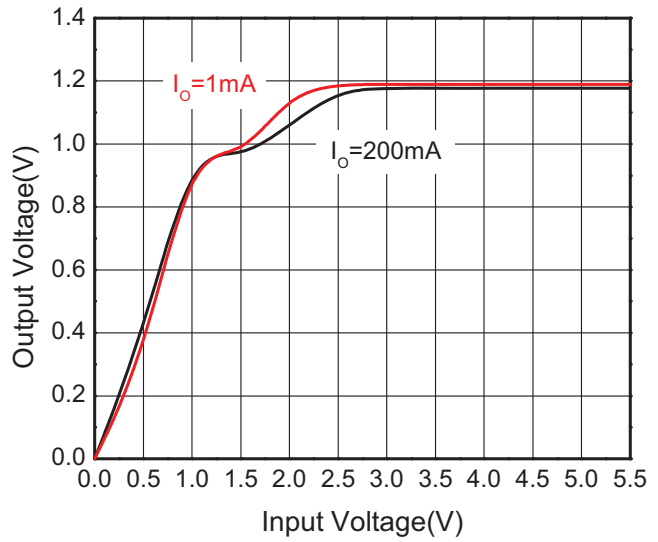
**Quiescent current vs. Supply voltage**



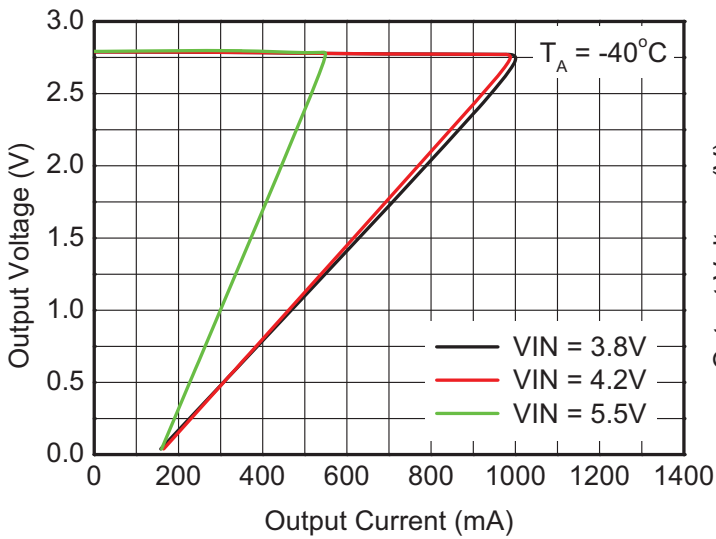
**Quiescent current vs. Supply voltage**



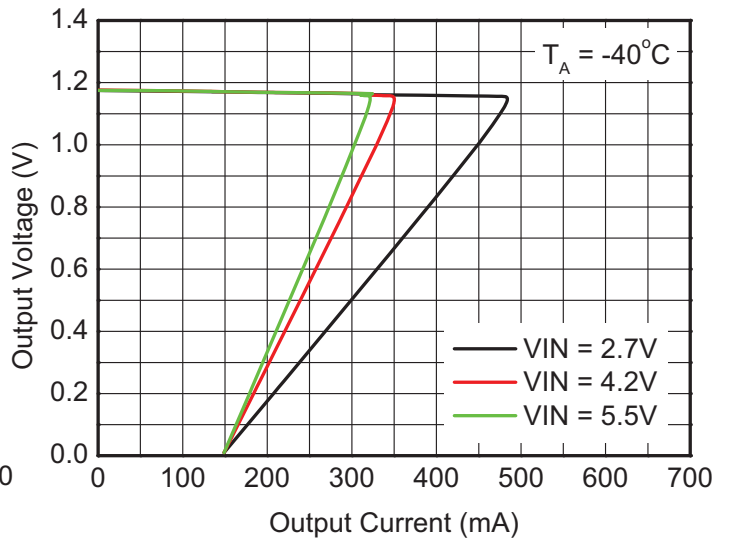
**Output voltage vs. Supply voltage**



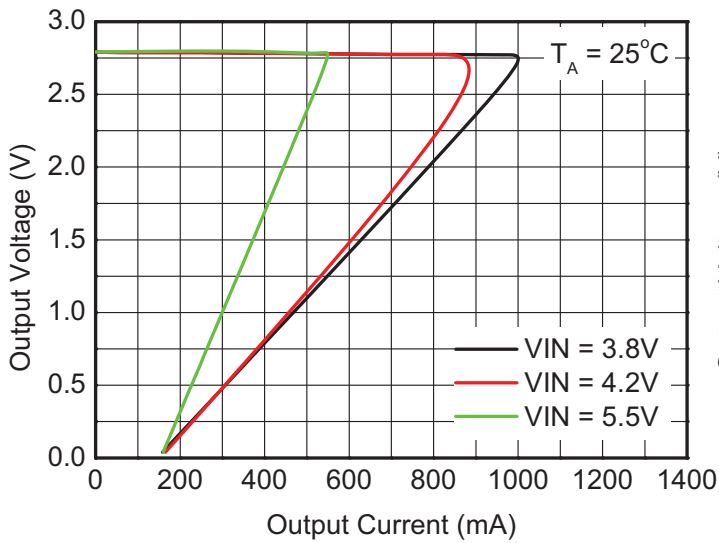
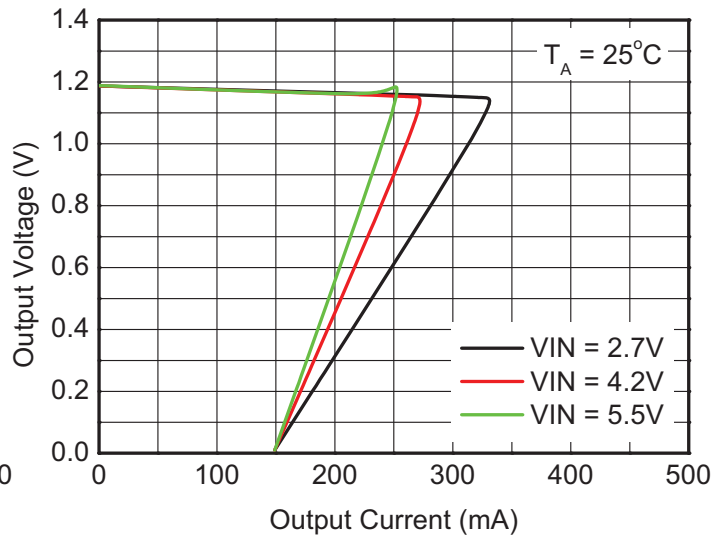
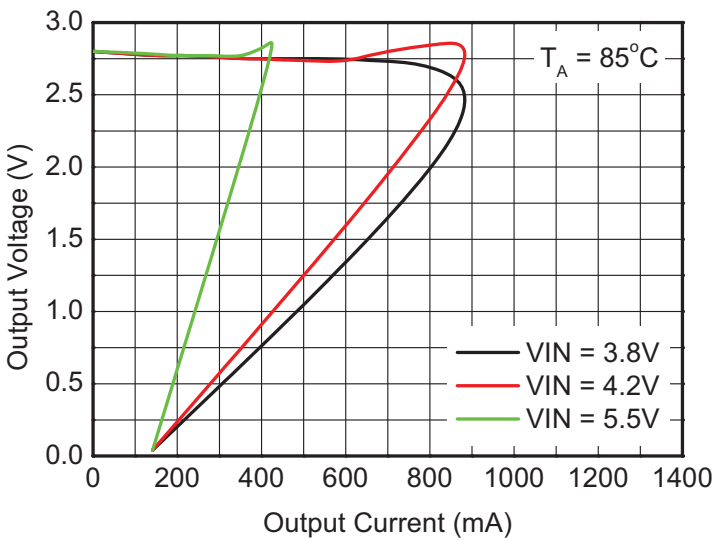
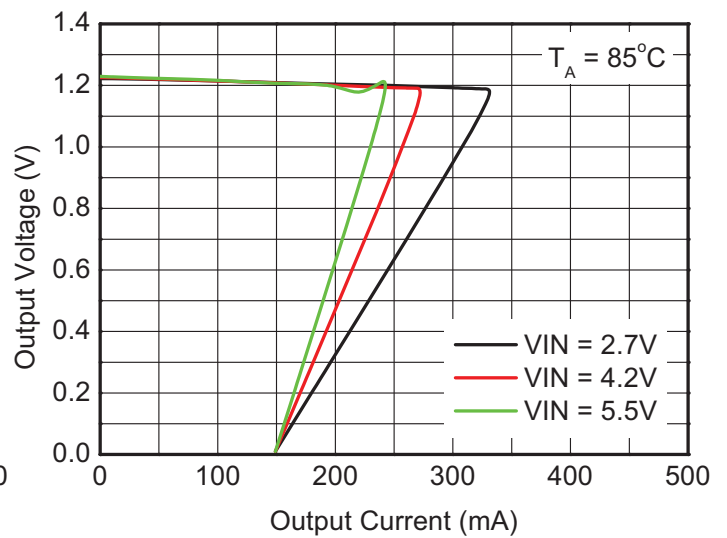
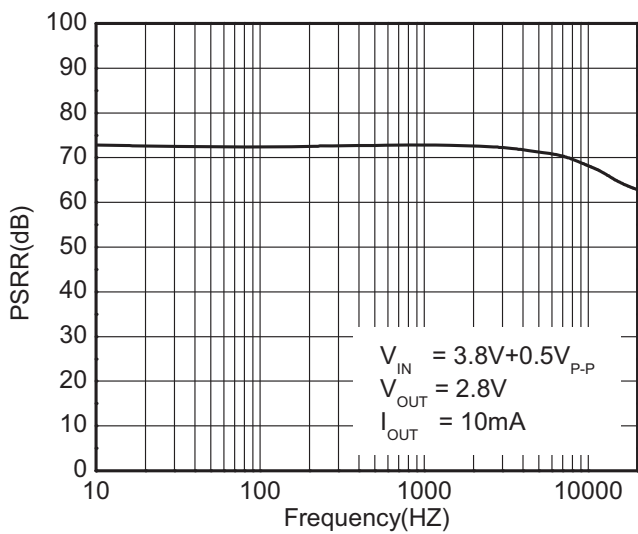
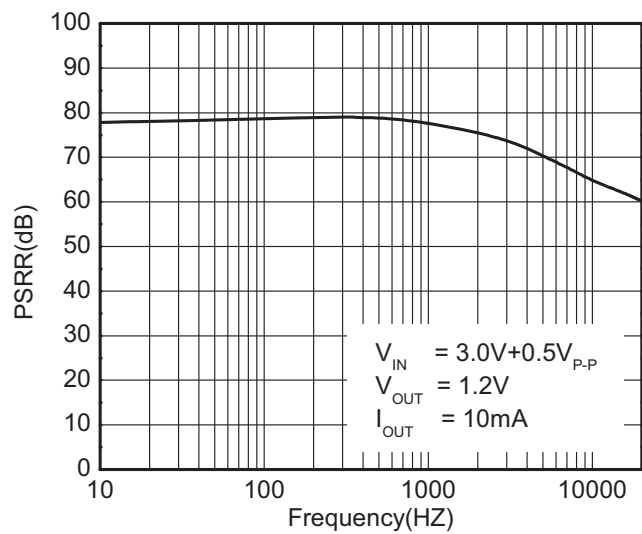
**Output voltage vs. Supply voltage**

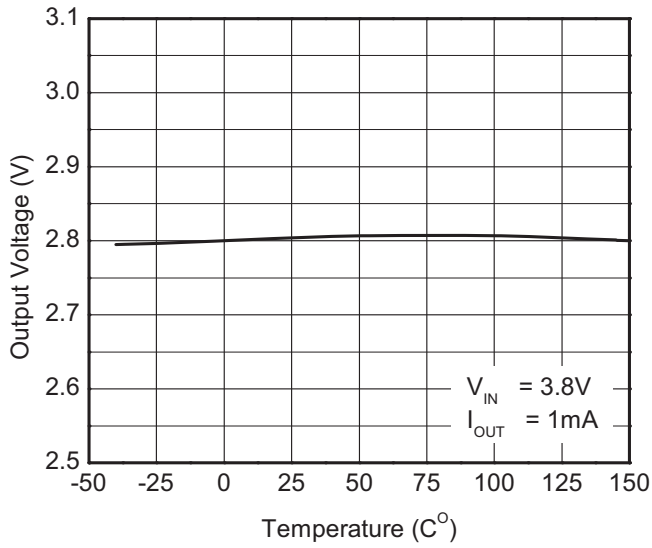
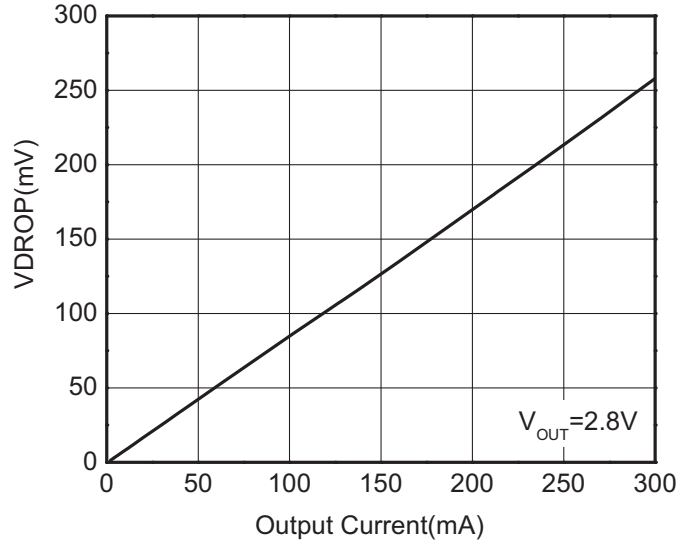
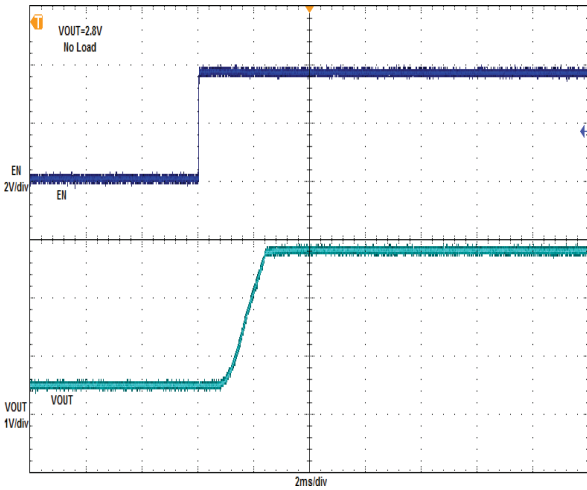
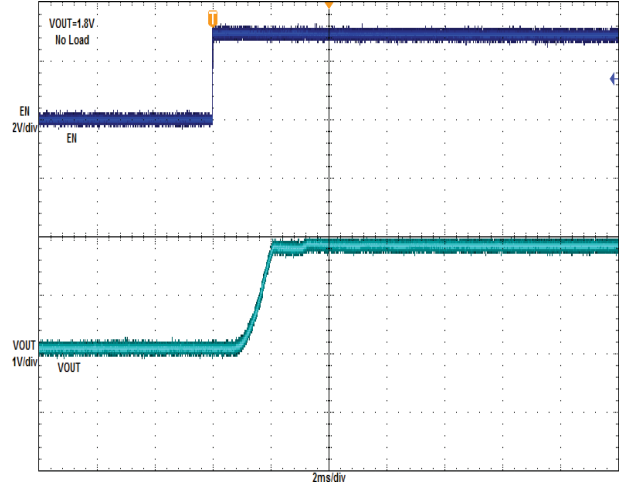
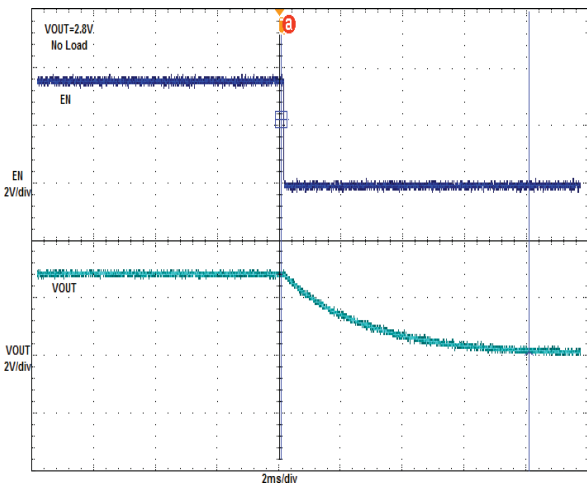
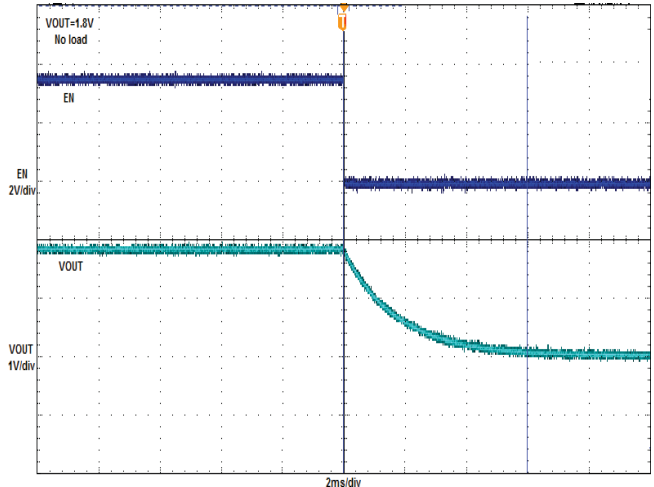


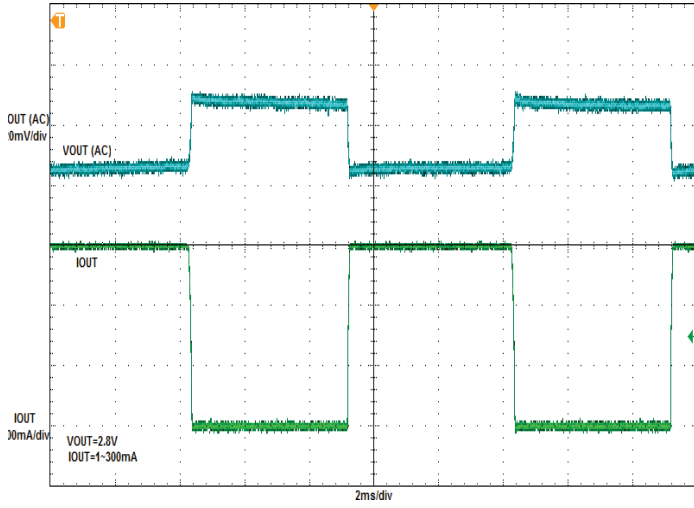
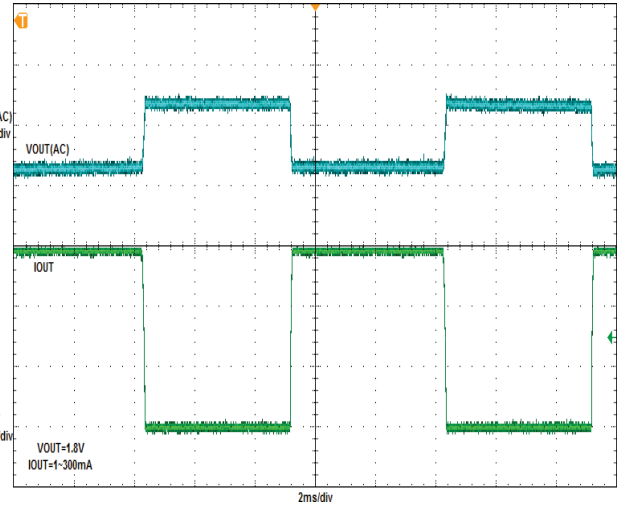
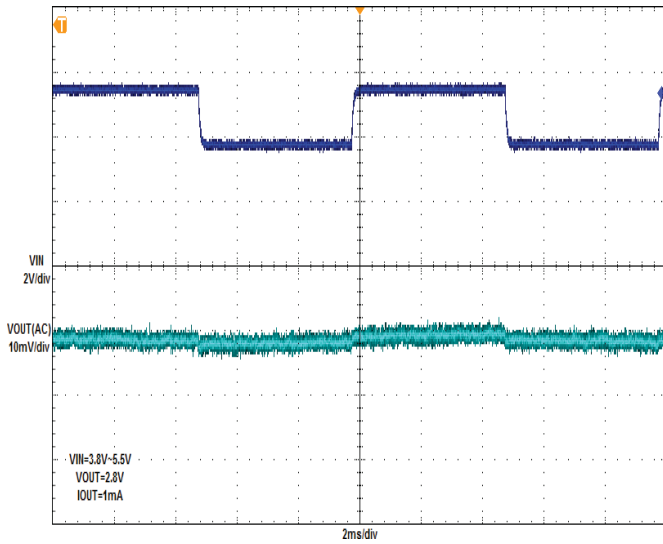
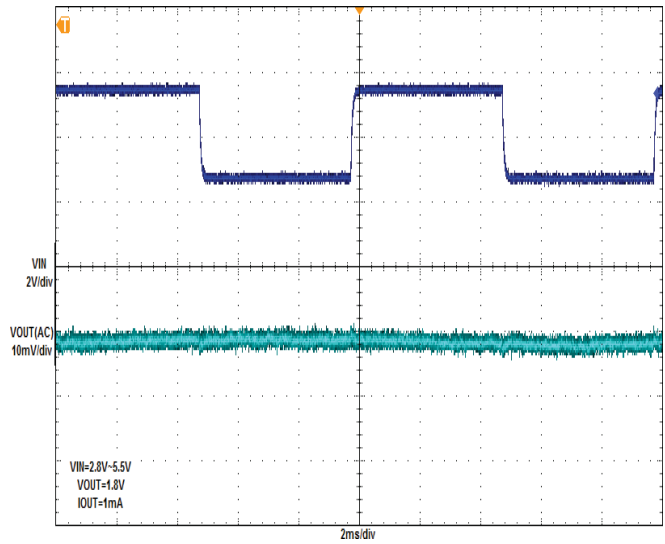
**Output voltage vs. Output current**

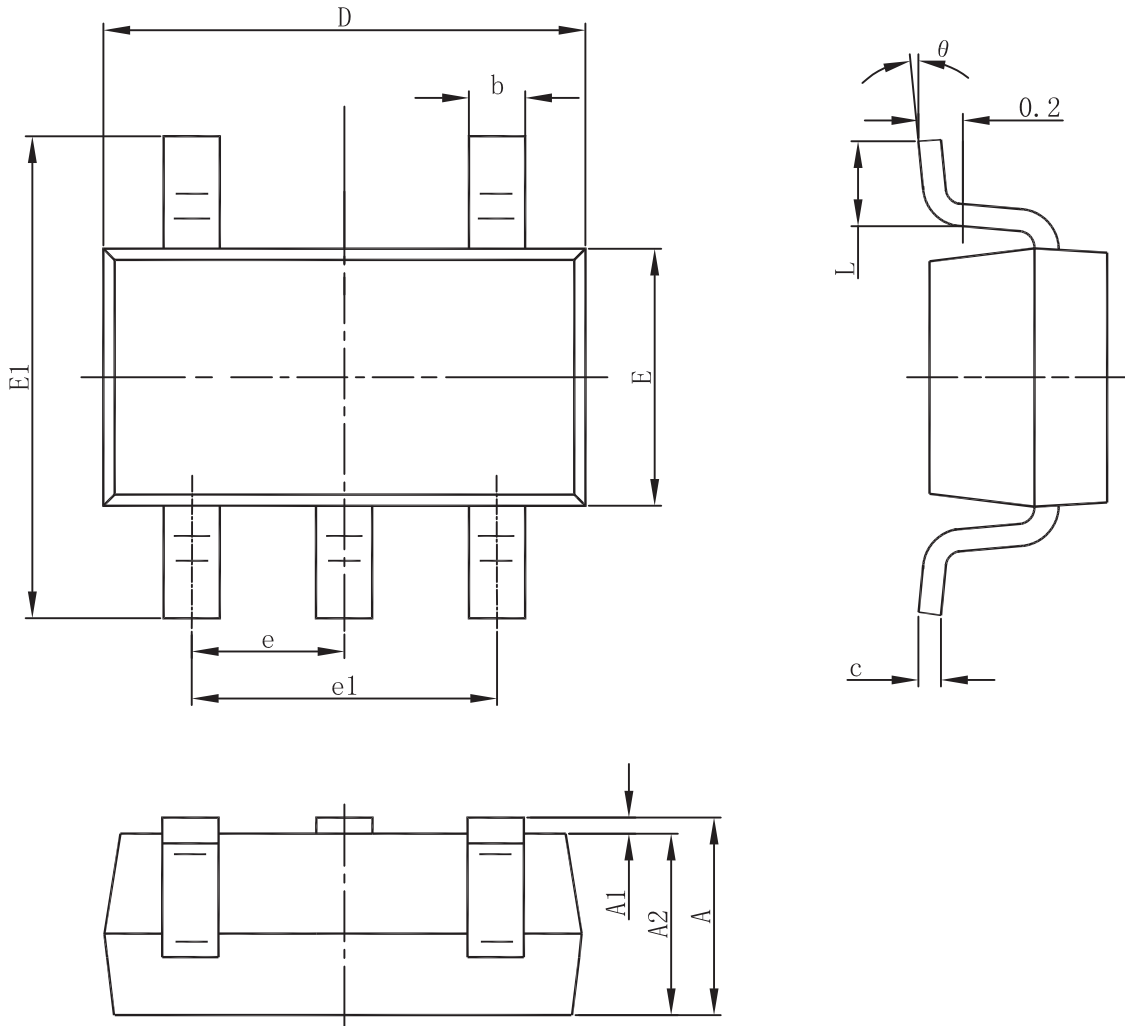


**Output voltage vs. Output current**


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**PSRR**

**PSRR**


**Output voltage vs. Temperature**

**Output voltage vs. Temperature**

**Start Up**

**Start Up**

**Shutdown**

**Shutdown**


**Load Step**

**Load Step**

**Line Step**

**Line Step**

**Packaging Information**
**SOT-23-5L**


Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	1.050	-	1.250
A1	0.000	-	0.100
A2	1.050	-	1.150
b	0.300	0.4	0.500
c	0.100	-	0.200
D	2.820	2.9	3.020
E	1.500	1.6	1.700
E1	2.650	2.8	2.950
e	0.950 (Basic)		
e1	1.800	1.9	2.000
L	0.300	0.45	0.600
$\theta$	0°	-	8°



## ORDER INFORMATION

Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2801E12-5/TR	1.2	SOT-23-5L	-40~+85°C	WE12 YYWW	Tape and Reel, 3000
WL2801E13-5/TR	1.3	SOT-23-5L	-40~+85°C	WE13 YYWW	Tape and Reel, 3000
WL2801E15-5/TR	1.5	SOT-23-5L	-40~+85°C	WE15 YYWW	Tape and Reel, 3000
WL2801E18-5/TR	1.8	SOT-23-5L	-40~+85°C	WE18 YYWW	Tape and Reel, 3000
WL2801E25-5/TR	2.5	SOT-23-5L	-40~+85°C	WE25 YYWW	Tape and Reel, 3000
WL2801E28-5/TR	2.8	SOT-23-5L	-40~+85°C	WE28 YYWW	Tape and Reel, 3000
WL2801E30-5/TR	3.0	SOT-23-5L	-40~+85°C	WE30 YYWW	Tape and Reel, 3000
WL2801E33-5/TR	3.3	SOT-23-5L	-40~+85°C	WE33 YYWW	Tape and Reel, 3000

**Marking:**

**WE\*\*** = Device Code  
**YY** = Year  
**WW** = Week