

WL2803D

Ultra low dropout, 800mA, CMOS LDO

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

Descriptions

The WL2803D series are ultra low dropout, Low quiescent current, high PSRR CMOS LDO.

Using CMOS construction, the quiescent current consumed by the WL2803D is typically 150uA over the entire input voltage range, making it attractive for consumer, networking applications that demand high output current. The WL2803D series are available in wide output voltage range version from 1.2V to 3.3V.

The WL2803D 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 $\pm 2\%$.

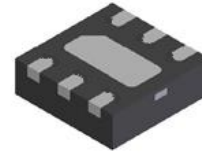
The WL2803D regulators are available in DFN2X2-6L packages. Standard products are Pb-free and Halogen-free.

Features

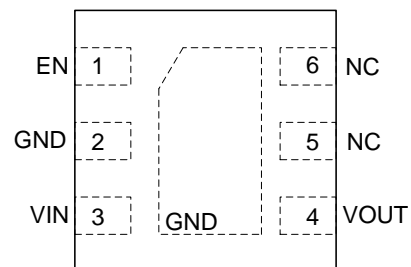
- Input voltage : 2.5V~5.5V
- Output voltage : 3.0V
- Output current : 800mA
- PSRR : 65dB @ 1KHz
- Dropout voltage : 130mV @ $I_{OUT}=0.5A$
- Output noise : 100uV
- Quiescent current : 150uA Typ.

Applications

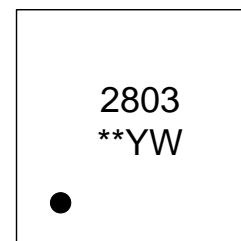
- LCD TV
- STB
- Computer, Graphic card
- Network communication equipments
- Others portable electronics devices



DFN2X2-6L



Pin Configuration (Top View)

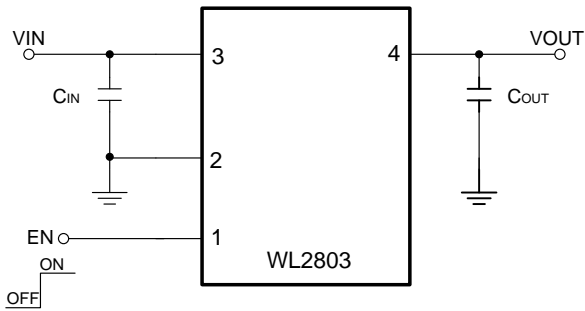


- 2803 = Device code
- ** = Voltage code (30: 3.0V)
- Y = Year code
- W = Week code

Marking

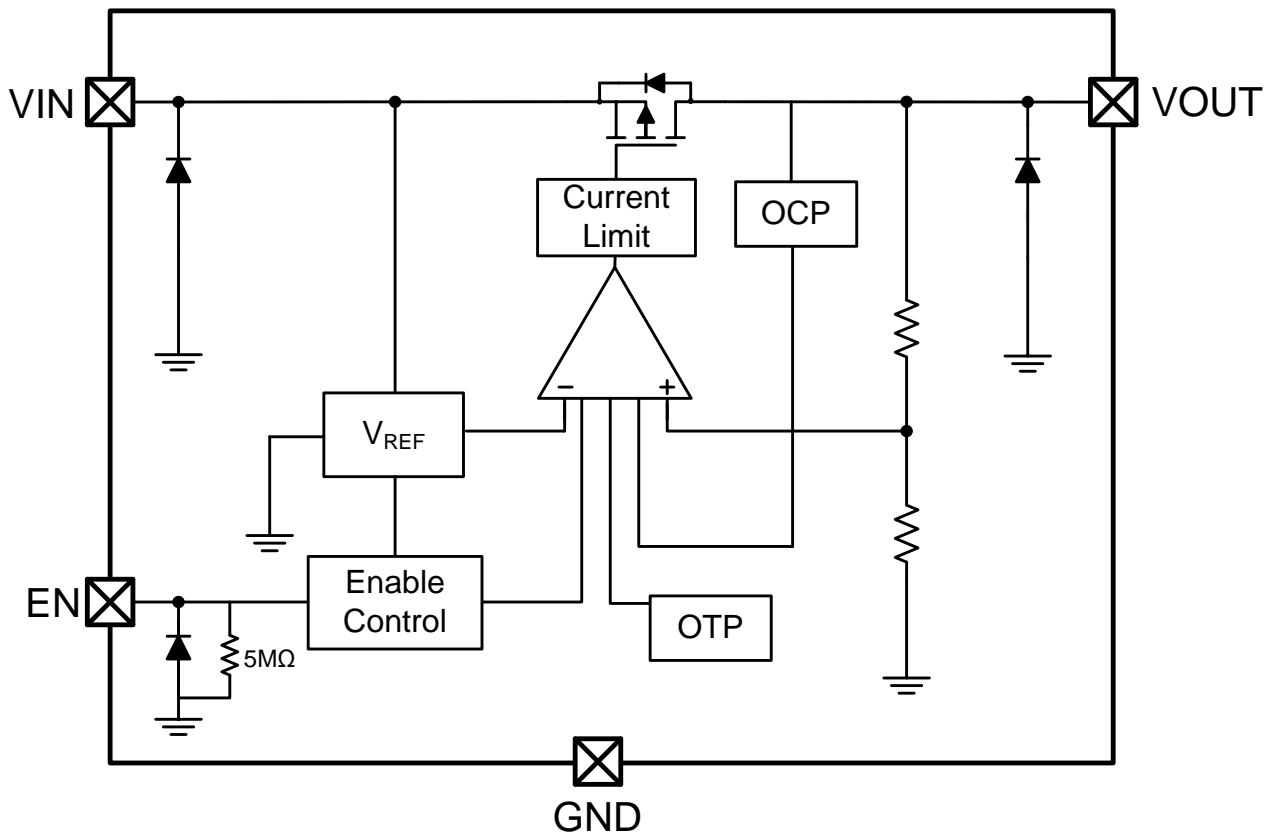
Order Information

For detail information, Please refer to page 9.

Typical Application

Pin Description

| PIN | Symbol | Description |
|-----|--------|---------------------|
| 1 | EN | Enable, Active High |
| 2 | GND | Ground |
| 3 | VIN | Input |
| 4 | VOUT | Output |
| 5,6 | NC | Not connect |

| | Min. | Typ. | Max. |
|-----------|-------|-------|------|
| C_{IN} | 2.2uF | 4.7uF | |
| C_{OUT} | 1uF | 4.7uF | |

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 | 0.7 | W |
| Power dissipation *2 *3 | | 0.5 | W |
| Thermal resistance *2 | $R_{\theta JA}$ | 165 | °C/W |
| Junction temperature | T_J | 150 | °C |
| Lead temperature(10s) | T_L | 260 | °C |
| Storage temperature | T_{stg} | -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 $P_D = (V_{IN} - V_{OUT}) \times I_{OUT}$

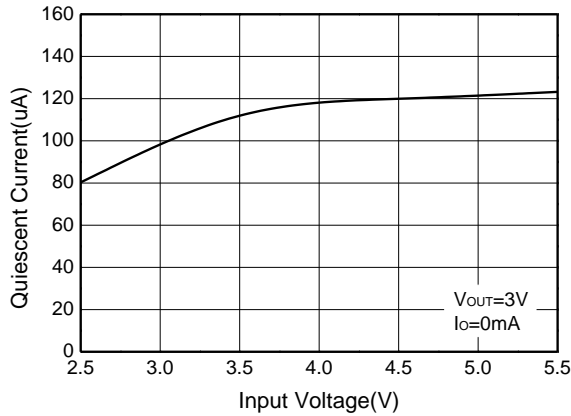
Recommend Operating Ratings

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

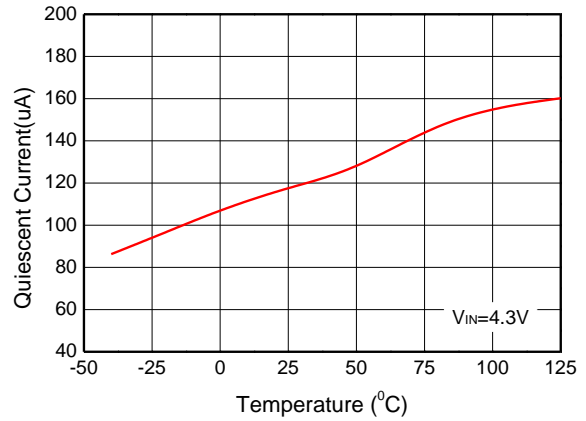
Electronics Characteristics (Ta=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=4.7uF, unless otherwise noted)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------------|--------------------|---|-------------------------------|------------------|-------------------------------|-------------------|
| Output Voltage | V _{OUT} | V _{OUT} < 1.5V, V _{IN} =2.5V, I _{OUT} =1mA | V _{OUT} - 30mV | V _{OUT} | V _{OUT} + 30mV | V |
| | | V _{OUT} ≥ 1.5V, I _{OUT} =1mA | V _{OUT} * 0.98 | V _{OUT} | V _{OUT} * 1.02 | |
| Dropout Voltage | V _{DROP} | V _{OUT} =V _{OUT} *0.98, I _{OUT} =1A | | 250 | 450 | mV |
| Current Limit | I _{LIM} | V _{IN} =5V | 1 | | | A |
| Line Regulation | ΔV _{LINE} | V _{OUT} =3.3V, V _{IN} =4.3~6.0V, I _{OUT} =1mA | | 5 | 10 | mV |
| Load Regulation | ΔV _{Load} | V _{OUT} =3.3V, I _{OUT} =1~500mA | | 10 | 30 | mV |
| Quiescent Current | I _Q | V _{OUT} =3.3V, I _{OUT} =0 | | 150 | 200 | uA |
| Shut-down Current | I _{SHDN} | V _{EN} = 0V | | 0.1 | 1.0 | uA |
| Power Supply Ripple Rejection | PSRR | V _{IN} =(V _{OUT} +1V) _{DC} +0.2V _{P-P} F=1KHz, I _{OUT} =10mA | | 65 | | dB |
| | | V _{IN} =(V _{OUT} +1V) _{DC} +0.2V _{P-P} F=10KHz, I _{OUT} =10mA | | 58 | | |
| Output noise voltage | e _{NO} | 10Hz to 100KHz, C _{OUT} =4.7μF | | 100 | | μV _{P-P} |
| EN logic high voltage | V _{ENH} | V _{IN} =5.5V, I _{OUT} =1mA | 1.2 | | | V |
| EN logic low voltage | V _{ENL} | V _{IN} =5.5V, I _{OUT} =0mA | | | 0.4 | V |
| Thermal shutdown threshold | T _{SD} | | | 165 | | °C |
| Thermal shutdown hysteresis | Δ T _{SD} | | | 30 | | °C |

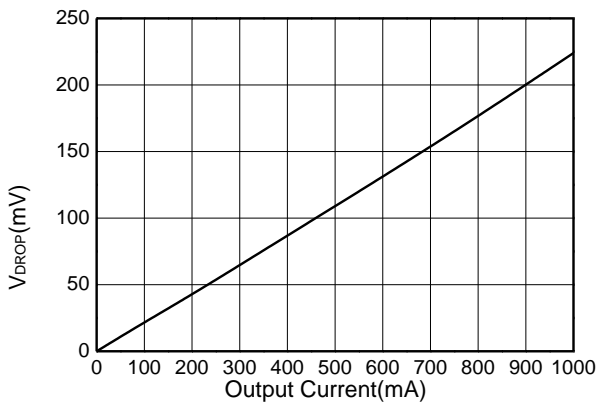
Typical characteristics ($T_a=25^\circ\text{C}$, $V_{IN}=V_{OUT}+1\text{V}$, $C_{IN}=C_{OUT}=4.7\mu\text{F}$, unless otherwise noted)



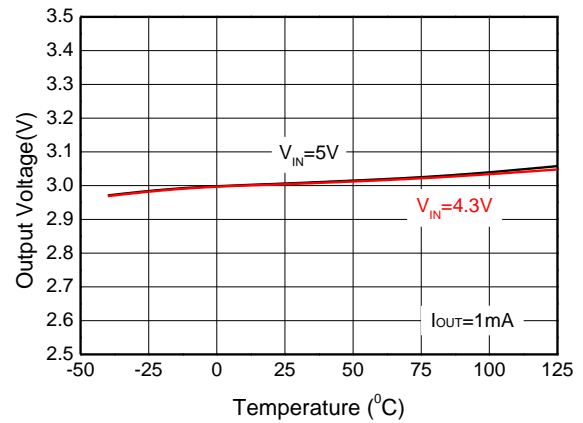
Quiescent current vs. Supply voltage



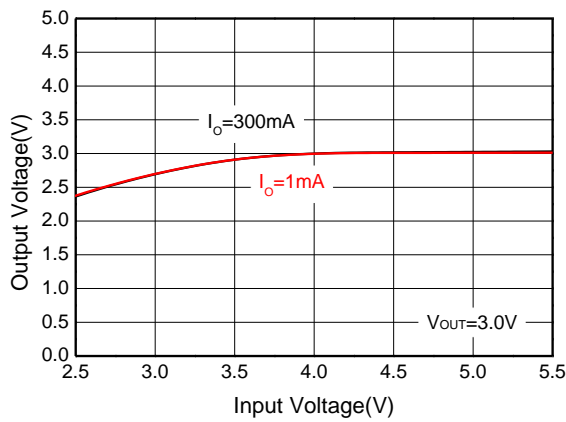
Quiescent current vs. Temperature



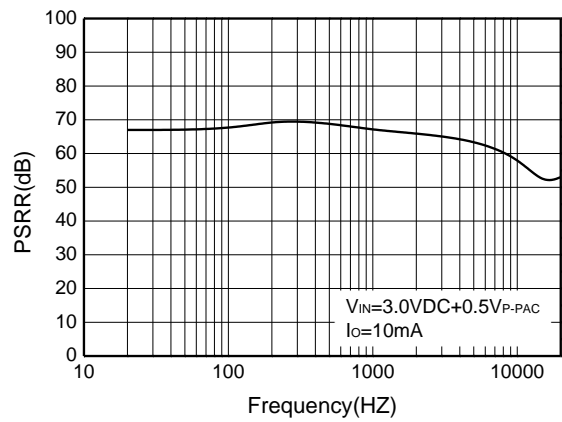
DROP Voltage vs. Output Current



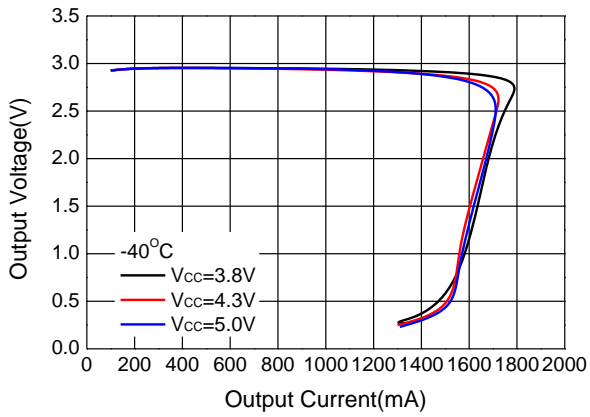
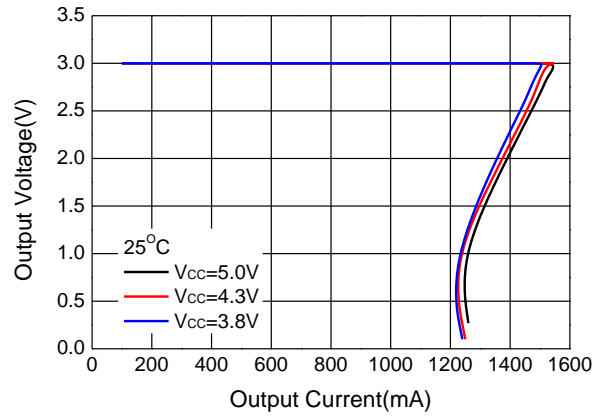
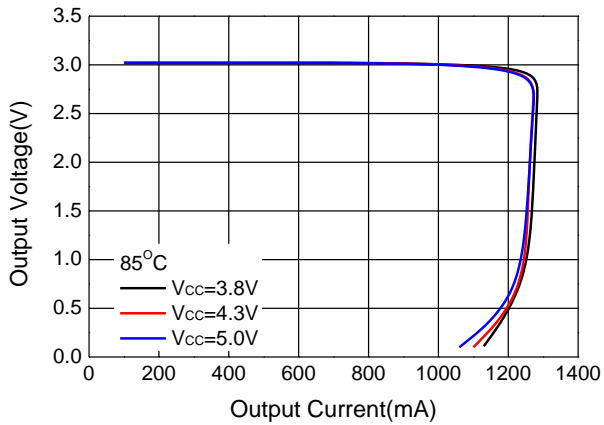
Output Voltage vs. Temperature

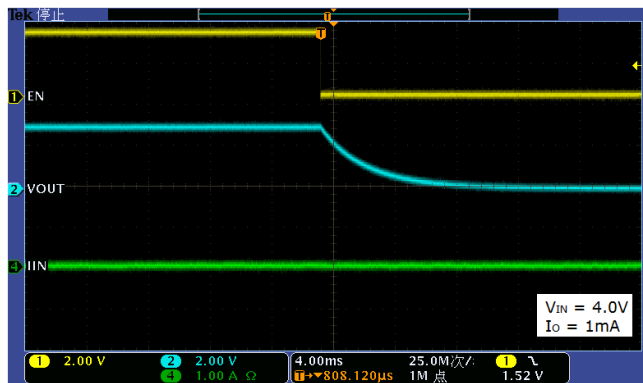
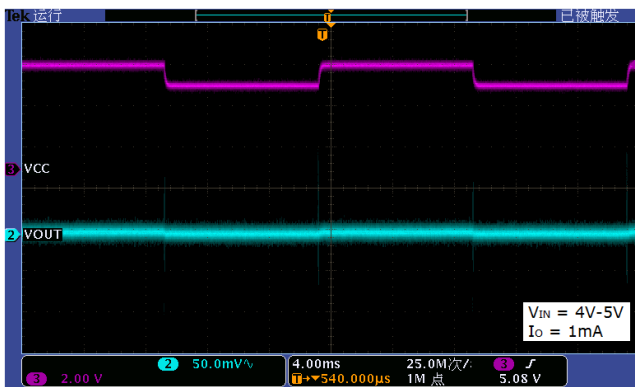
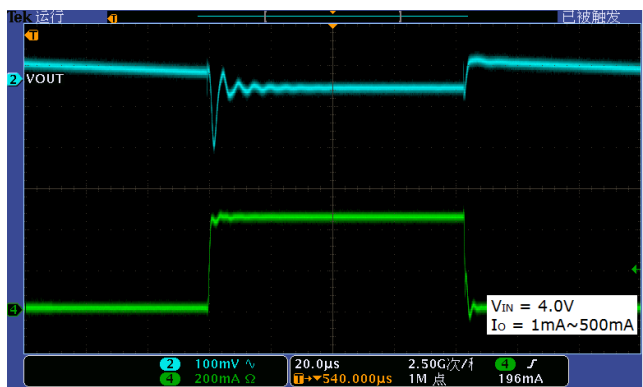


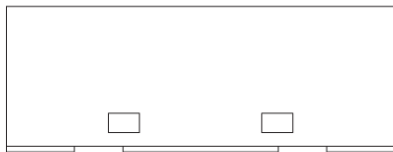
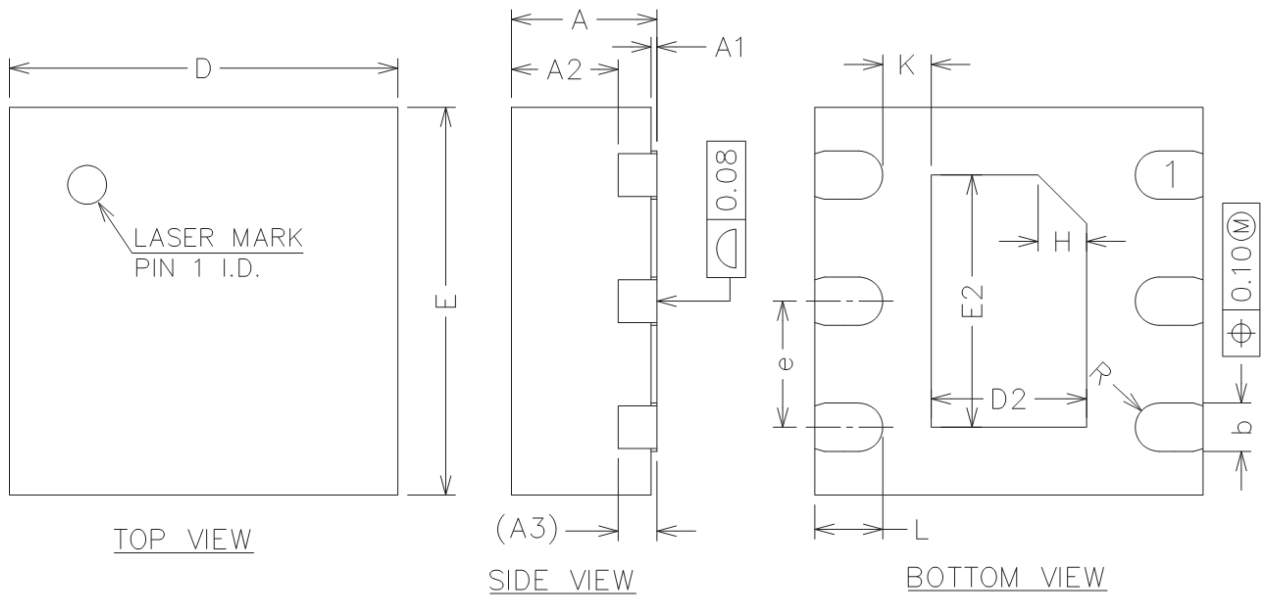
Output voltage vs. Supply voltage



PSRR


Output voltage vs. Output current

Output voltage vs. Output current

Output voltage vs. Output current


Startup with EN

Shutdown with EN

Line Regulation

Dropout voltage vs. Output current

Package outline dimensions
DFN2X2-6L


SIDE VIEW

| Symbol | Dimensions in millimeter | | |
|--------|--------------------------|-------|-------|
| | Min. | Typ. | Max. |
| A | 0.700 | 0.750 | 0.800 |
| A1 | 0.000 | 0.020 | 0.050 |
| A2 | 0.500 | 0.550 | 0.600 |
| A3 | 0.200 REF. | | |
| b | 0.200 | 0.250 | 0.300 |
| D | 1.900 | 2.000 | 2.100 |
| E | 1.900 | 2.000 | 2.100 |
| D2 | 0.700 | 0.800 | 0.900 |
| E2 | 1.200 | 1.300 | 1.400 |
| e | 0.550 | 0.650 | 0.750 |
| H | 0.250 REF. | | |
| K | 0.200 | - | - |
| L | 0.300 | 0.350 | 0.400 |
| R | 0.110 | - | - |

ORDER INFORMATION

| Ordering No. | V_{OUT} (V) | Package | Marking | Operating Temperature | Shipping |
|---------------------|----------------------------|----------------|----------------|------------------------------|--------------------|
| WL2803D30-6/TR | 3.0 | DFN2X2-6L | 2803/30YW | -40 ~ +85°C | 3000/Tape and Reel |