

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 $\pm 2\%$.

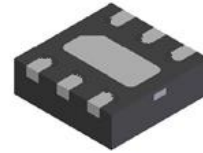
The WL2803D regulators are available in DFN2X2-6L packages. Standard products are Pb-free and Halogen-free.

Features

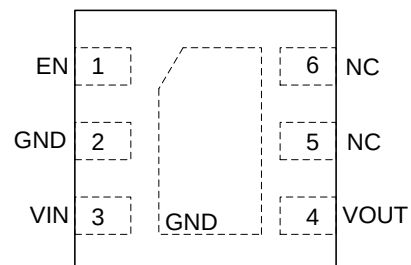
- Input voltage : 2.5V~5.5V
- Output voltage : 3.0V
- Output current : 800mA
- PSRR : 65dB @ 1KHz
- Dropout voltage : 130mV @ $I_{OUT}=0.5A$
- Output noise : 100uV
- Quiescent current : 150uA Typ.

Applications

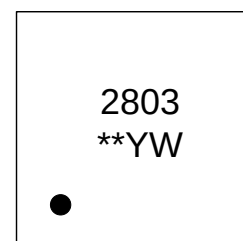
- LCD TV
- STB
- Computer, Graphic card
- Network communication equipments
- Others portable electronics devices



DFN2X2-6L



Pin Configuration (Top View)



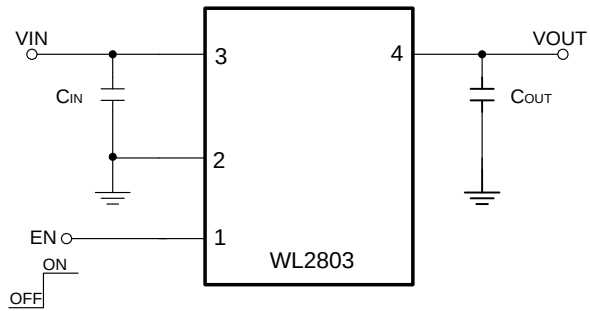
2803 = Device code
 ** = Voltage code (30: 3.0V)
 Y = Year code
 W = Week code

Marking

Order Information

For detail information, Please refer to page 9.

Typical Application

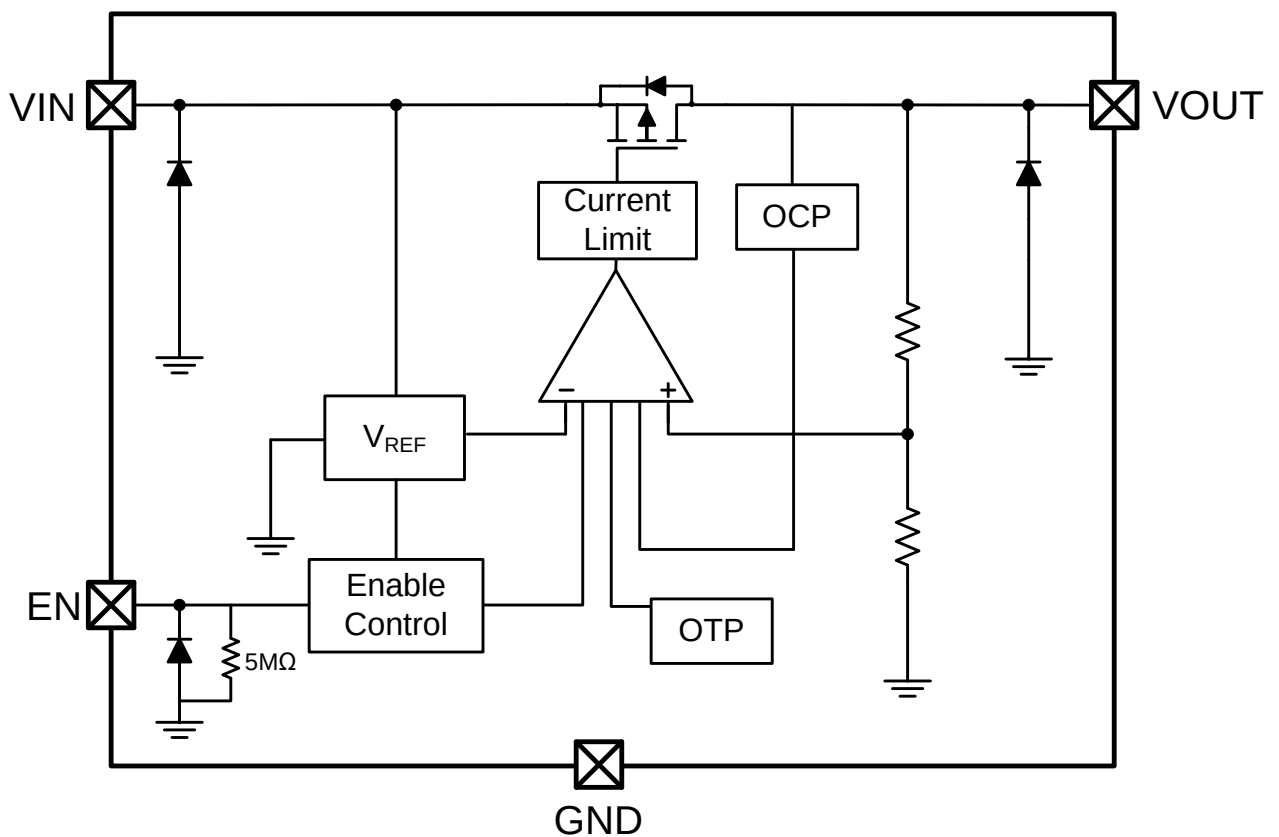


Pin Description

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 $P_D = (V_{IN} - V_{OUT}) \times I_{OUT}$

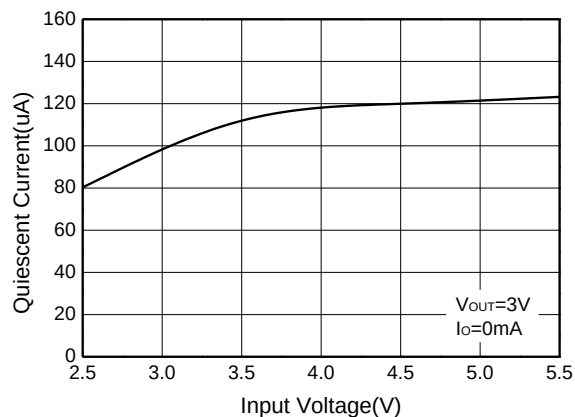
Recommend Operating Ratings

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

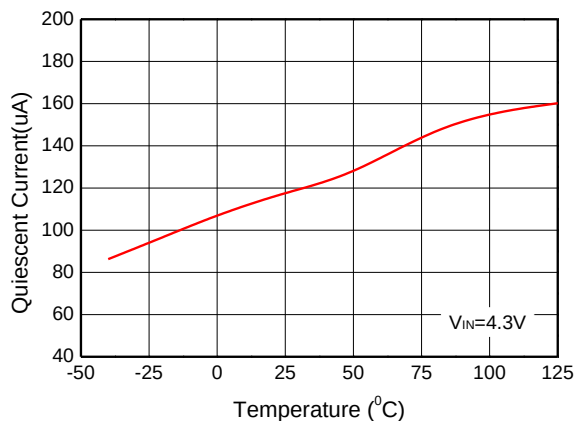
Electronics Characteristics ($T_a=25^{\circ}\text{C}$, $V_{IN}=V_{OUT}+1\text{V}$, $C_{IN}=C_{OUT}=4.7\mu\text{F}$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{OUT} < 1.5\text{V}$, $V_{IN}=2.5\text{V}$, $I_{OUT}=1\text{mA}$	V_{OUT} - 30mV	V_{OUT}	V_{OUT} + 30mV	V
		$V_{OUT} \geq 1.5\text{V}$, $I_{OUT}=1\text{mA}$	V_{OUT} * 0.98	V_{OUT}	V_{OUT} * 1.02	
Dropout Voltage	V_{DROP}	$V_{OUT}=V_{OUT}*0.98$, $I_{OUT}=1\text{A}$		250	450	mV
Current Limit	I_{LIM}	$V_{IN}=5\text{V}$	1			A
Line Regulation	ΔV_{LINE}	$V_{OUT}=3.3\text{V}$, $V_{IN}=4.3\sim 6.0\text{V}$, $I_{OUT}=1\text{mA}$		5	10	mV
Load Regulation	ΔV_{Load}	$V_{OUT}=3.3\text{V}$, $I_{OUT}=1\sim 500\text{mA}$		10	30	mV
Quiescent Current	I_Q	$V_{OUT}=3.3\text{V}$, $I_{OUT}=0$		150	200	μA
Shut-down Current	I_{SHDN}	$V_{EN} = 0\text{V}$		0.1	1.0	μA
Power Supply Ripple Rejection	PSRR	$V_{IN}=(V_{OUT}+1\text{V})_{DC}+0.2V_{P-P}$ $F=1\text{KHz}$, $I_{OUT}=10\text{mA}$		65		dB
		$V_{IN}=(V_{OUT}+1\text{V})_{DC}+0.2V_{P-P}$ $F=10\text{KHz}$, $I_{OUT}=10\text{mA}$		58		
Output noise voltage	e_{NO}	10Hz to 100KHz, $C_{OUT}=4.7\mu\text{F}$		100		μV_{P-P}
EN logic high voltage	V_{ENH}	$V_{IN}=5.5\text{V}$, $I_{OUT}=1\text{mA}$	1.2			V
EN logic low voltage	V_{ENL}	$V_{IN}=5.5\text{V}$, $I_{OUT}=0\text{mA}$			0.4	V
Thermal shutdown threshold	T_{SD}			165		$^{\circ}\text{C}$
Thermal shutdown hysteresis	ΔT_{SD}			30		$^{\circ}\text{C}$

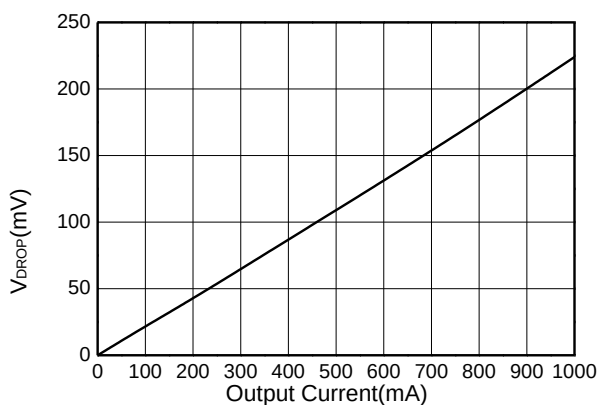
Typical characteristics ($T_a=25^{\circ}\text{C}$, $V_{\text{IN}}=V_{\text{OUT}}+1\text{V}$, $C_{\text{IN}}=C_{\text{OUT}}=4.7\mu\text{F}$, unless otherwise noted)



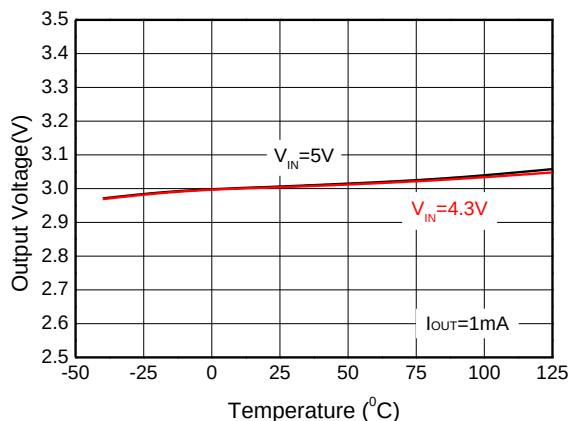
Quiescent current vs. Supply voltage



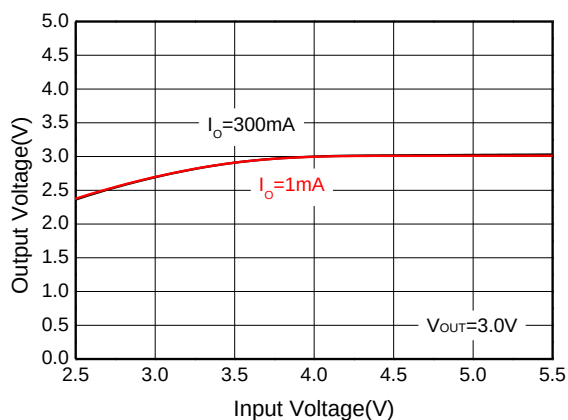
Quiescent current vs. Temperature



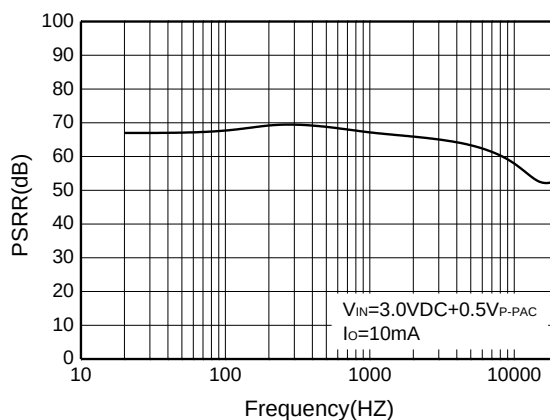
DROP Voltage vs. Output Current



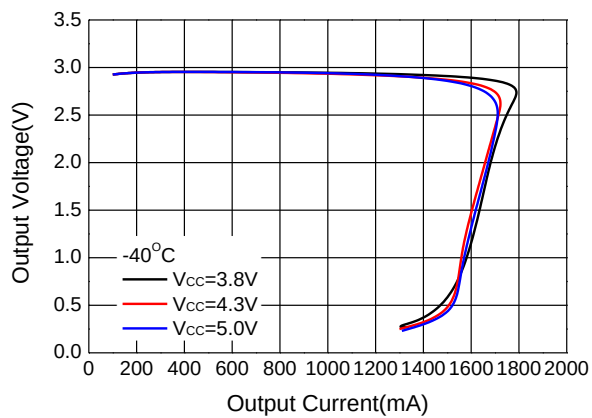
Output Voltage vs. Temperature



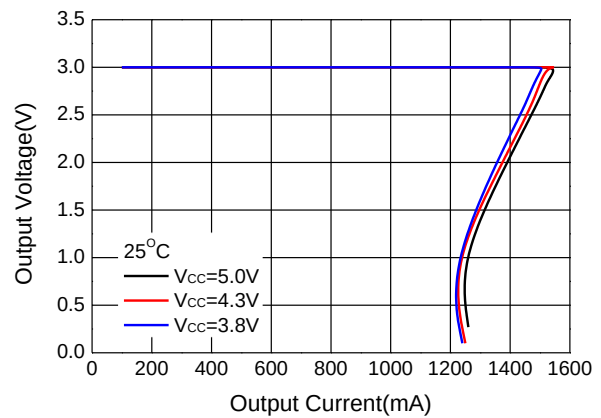
Output voltage vs. Supply voltage



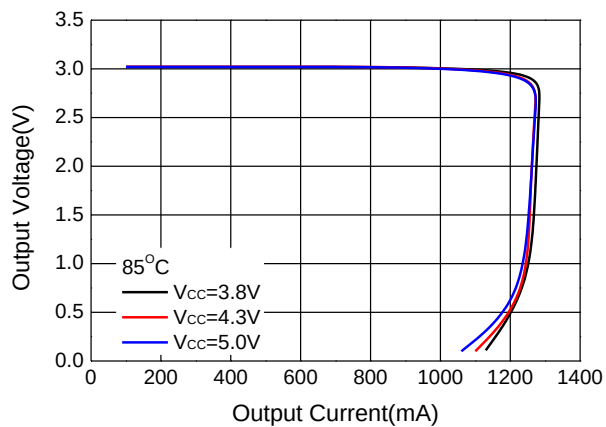
PSRR



Output voltage vs. Output current



Output voltage vs. Output current



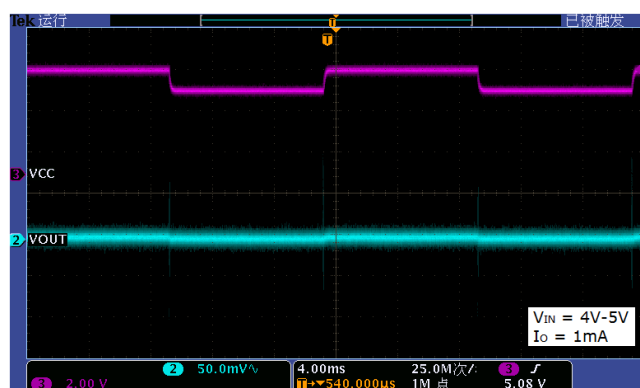
Output voltage vs. Output current



Startup with EN



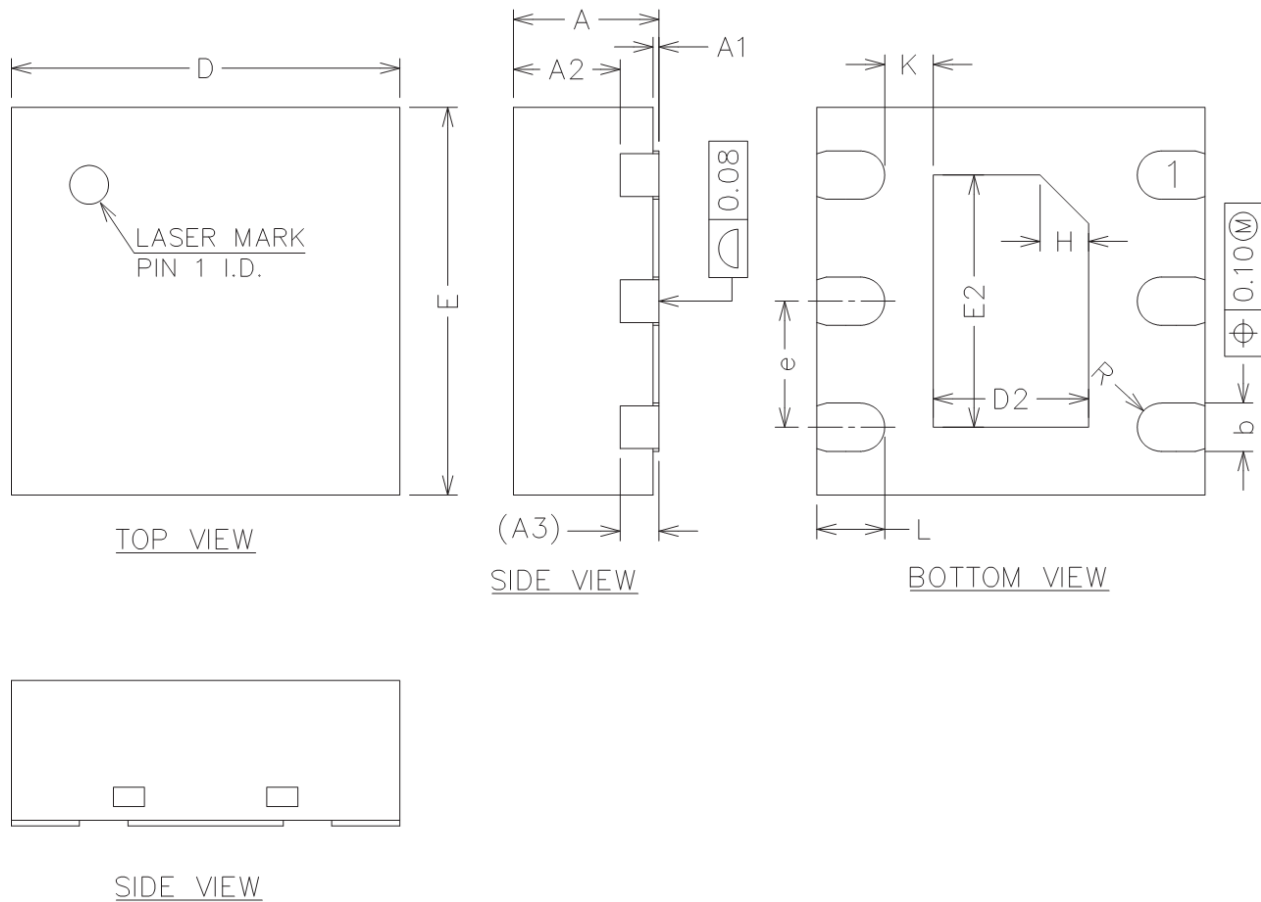
Shutdown with EN



Line Regulation



Dropout voltage vs. Output current

Package outline dimensions
DFN2X2-6L


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