WL2801E

Low noise, High PSRR, High speed, CMOS LDO **Http://www.willsemi.com**

Descriptions

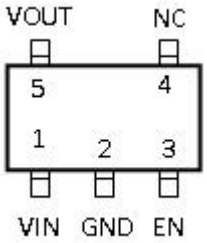
The WL2801E series is a high accuracy, low noise, high speed, low dropout CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

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.



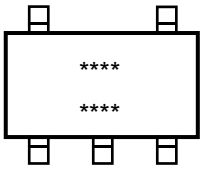
SOT-23-5L



Pin Configuration (Top View)

Features

- Input voltage : 2.7V~5.5V
- Output range : 1.2V~3.3V
- Output current : 200mA (@Vout<2V)(Typ.)
- 300mA (@Vout>2V)(Typ.)
- PSRR : 75dB @ 217Hz
- Dropout voltage : 170mV @ I_{OUT}=200mA
- Quiescent current : 70μA Typ.
- Shut-down current : < 0.1μA
- Recommend capacitor : 1uF



For detail marking information, please see page 10.

Marking

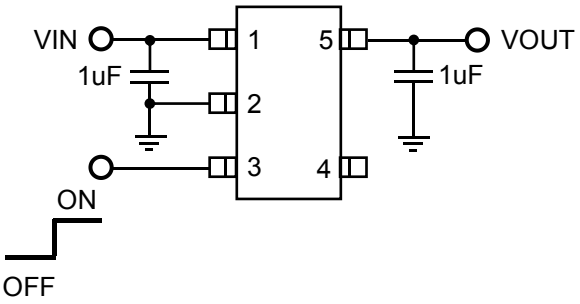
Applications

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

Order Information

For detail order information, please see page 10.

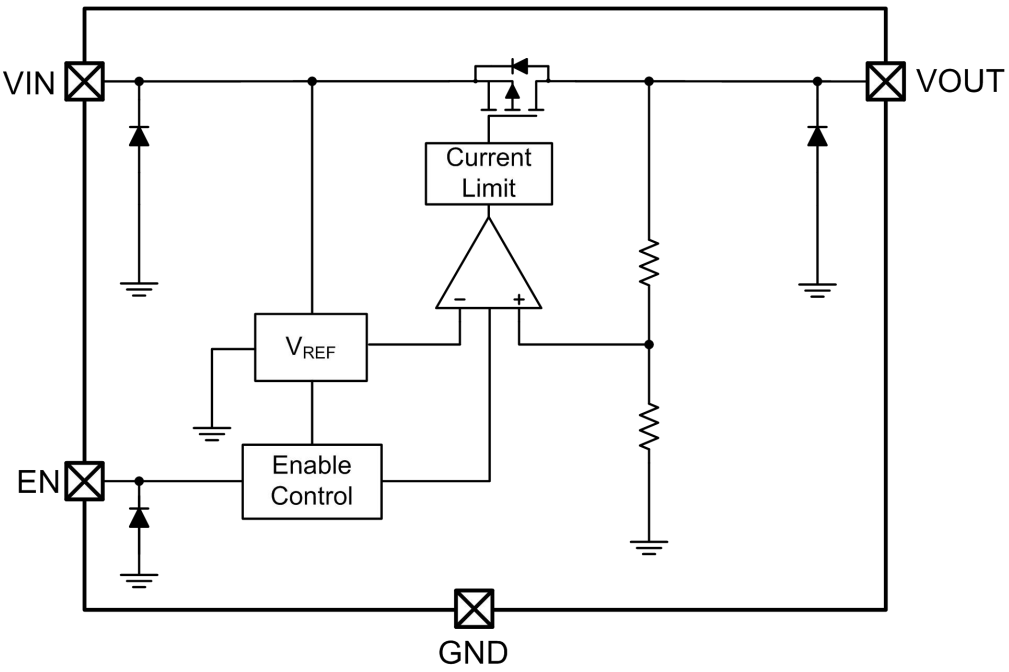
Typical Application



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_{IN} Range	-0.3～6.5	V
V_{EN} Range	-0.3～V_{IN}	V
V_{OUT} Range	-0.3～V_{IN}	V
Lead Temperature Range	260	°C
Storage Temperature Range	-55 ~ 150	°C
Operating Junction Temperature Range	150	°C

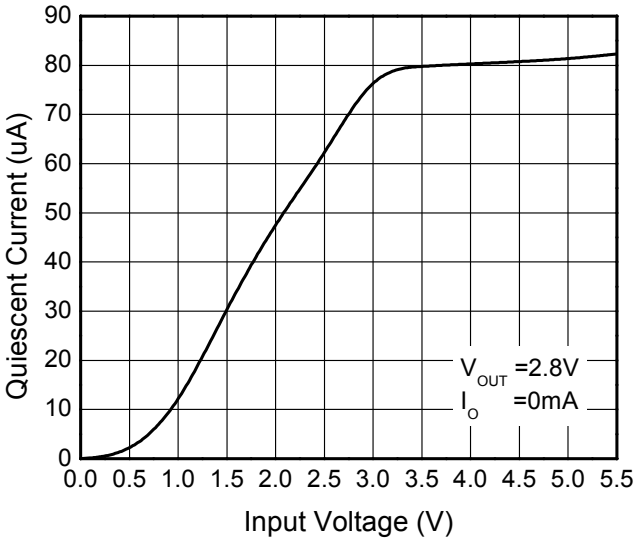
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	2.7～5.5	V
Operating Temperature Range	-40～85	°C
Thermal Resistance, $R_{\theta JA}$	250	°C/W
Theta-JC	70	°C/W
Theta-JA	250	°C/W

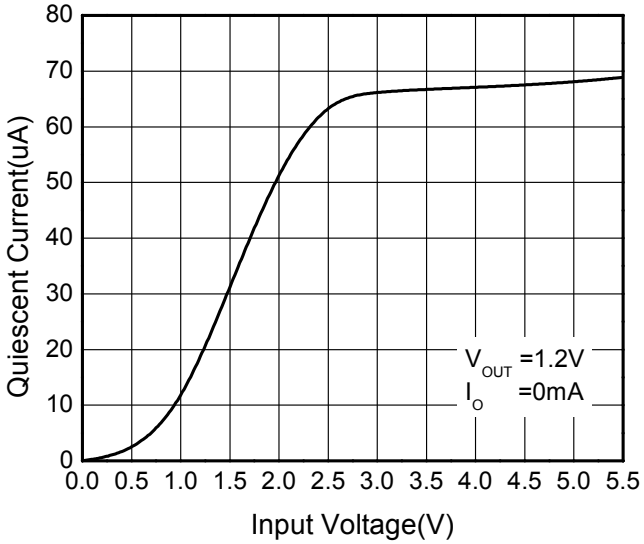
Electronics Characteristics (T_a=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, unless otherwise noted)

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

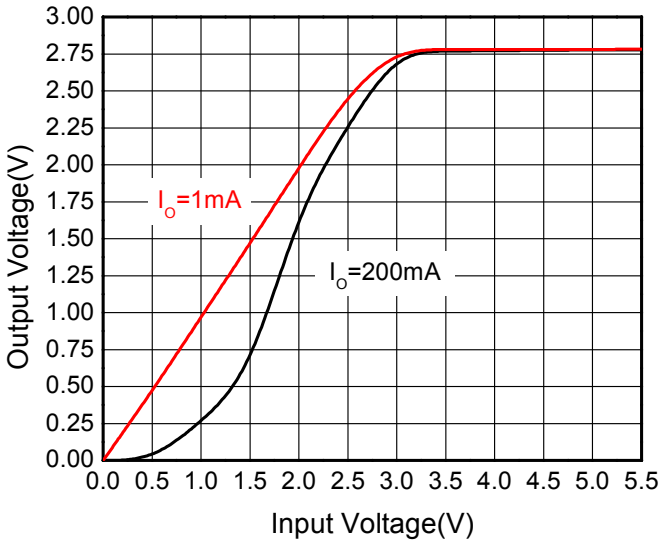
Typical characteristics (Ta=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, unless otherwise noted)



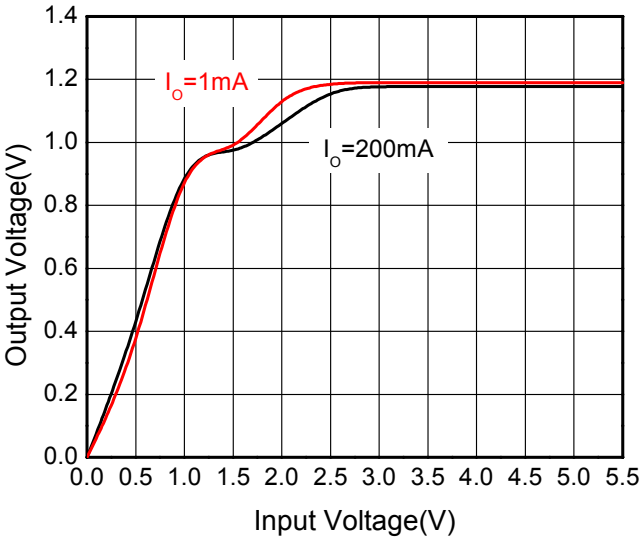
Quiescent current vs. Supply voltage



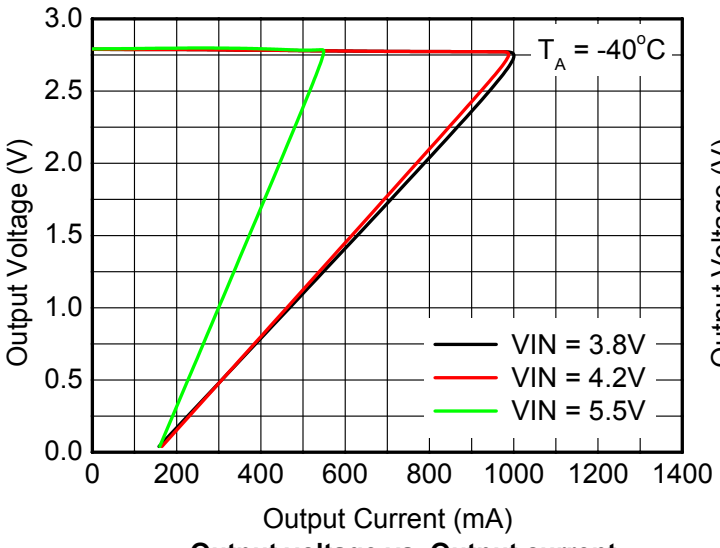
Quiescent current vs. Supply voltage



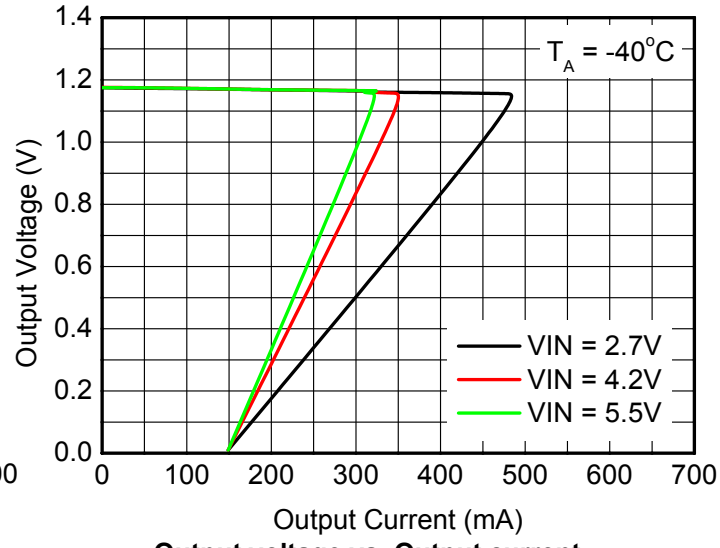
Output voltage vs. Supply voltage



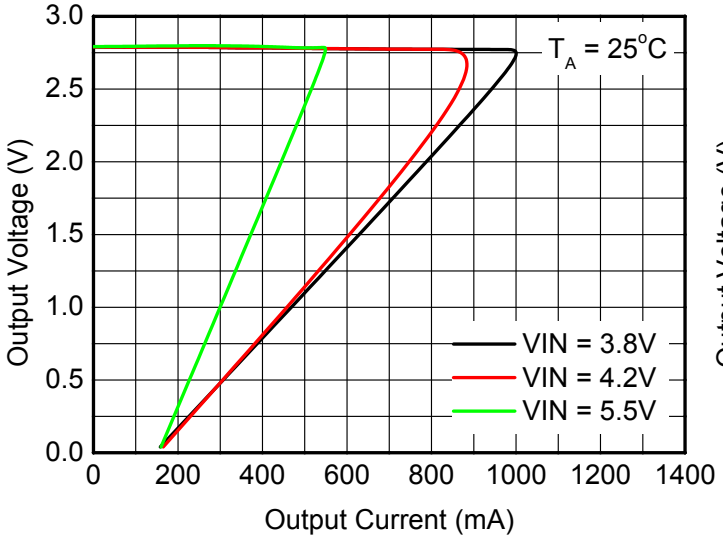
Output voltage vs. Supply voltage



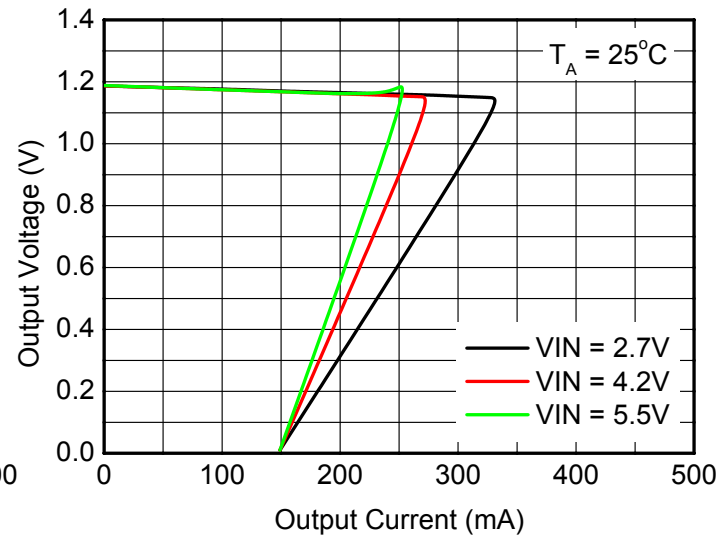
Output voltage vs. Output current



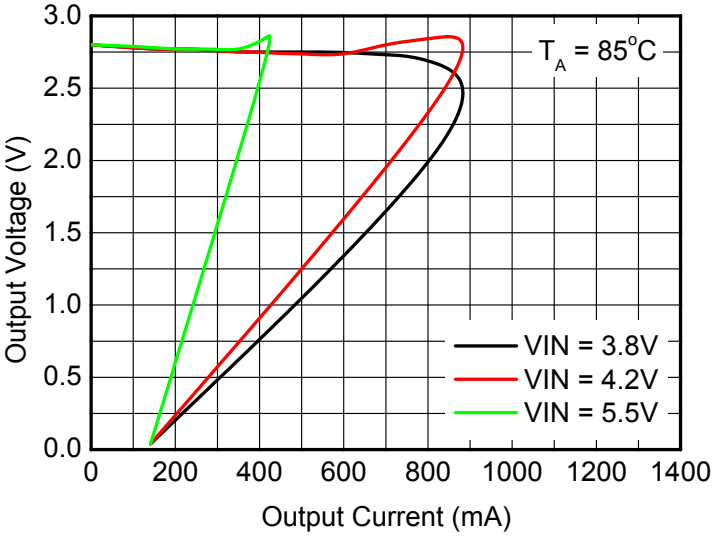
Output voltage vs. Output current



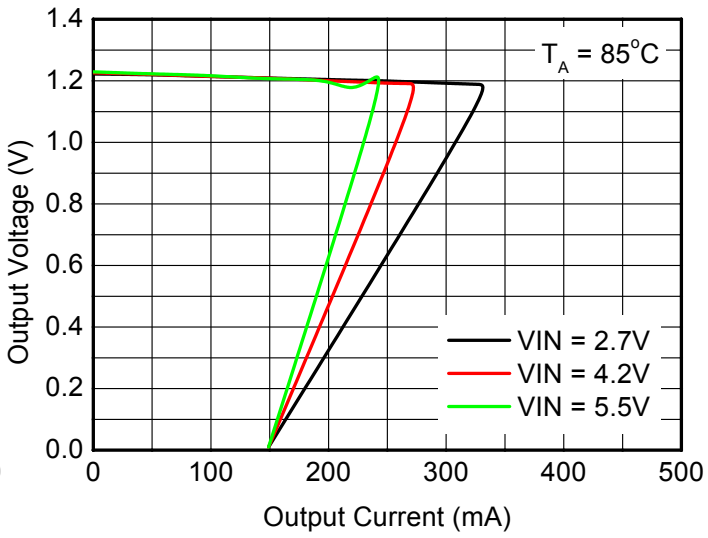
Output voltage vs. Output current



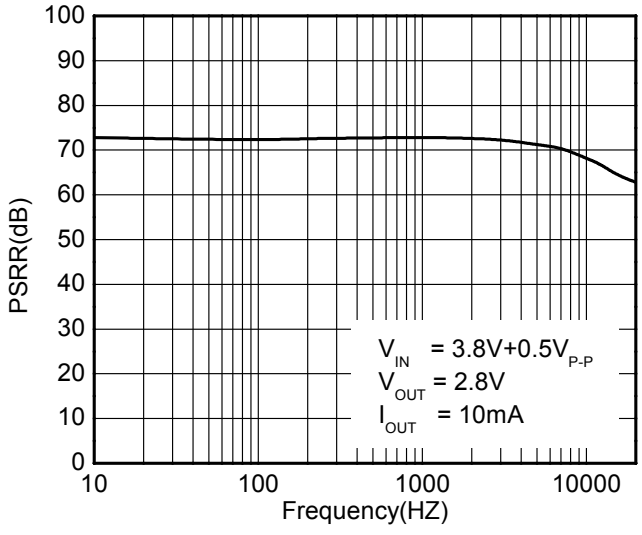
Output voltage vs. Output current



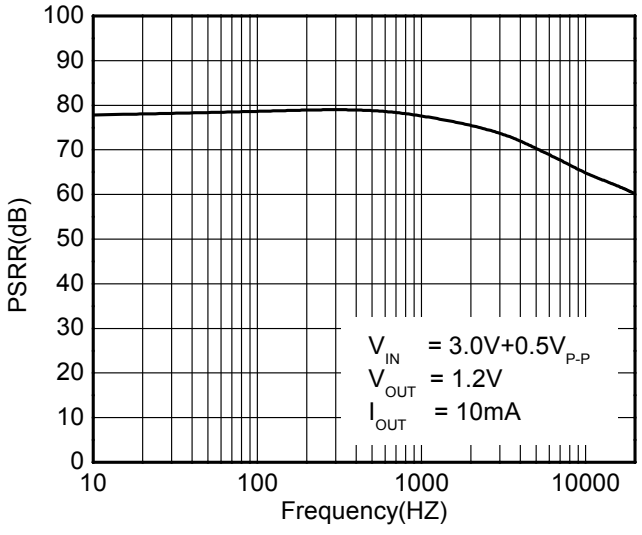
Output voltage vs. Output current



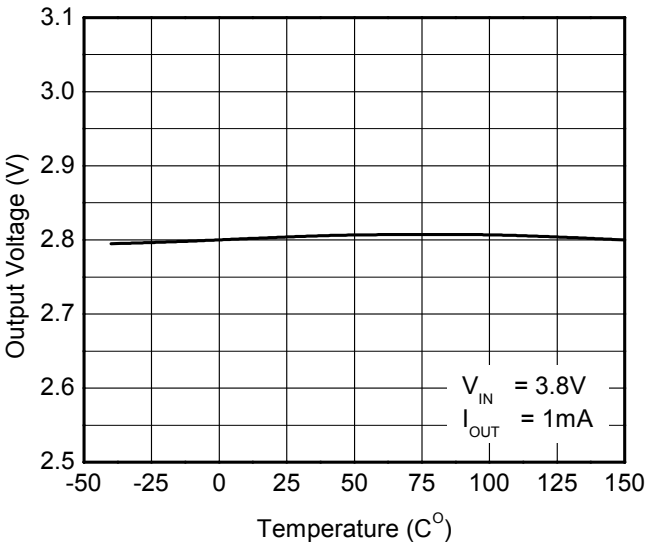
Output voltage vs. Output current



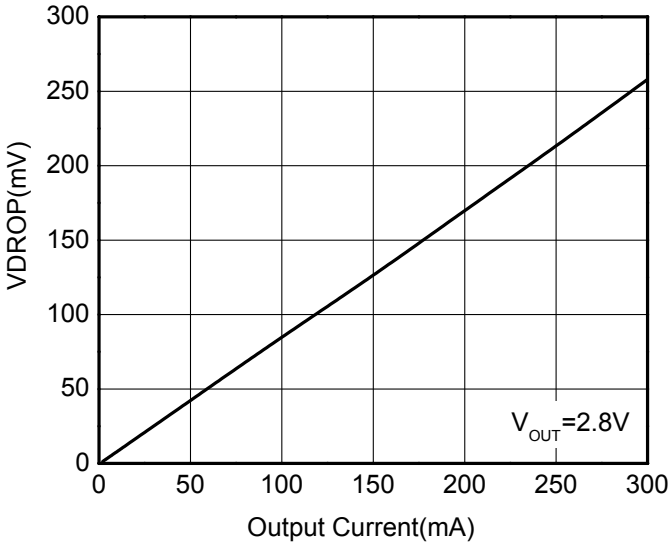
PSRR



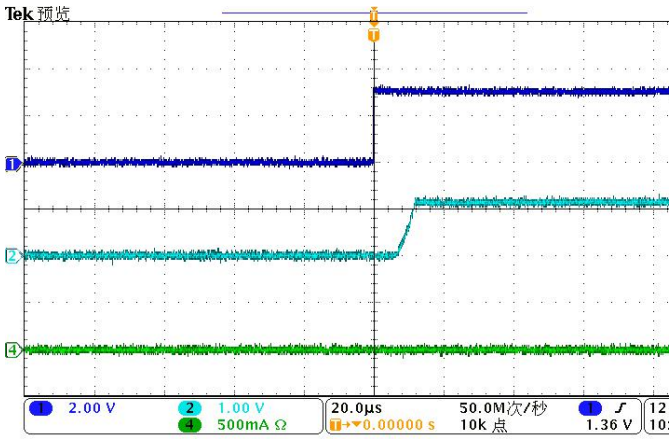
PSRR



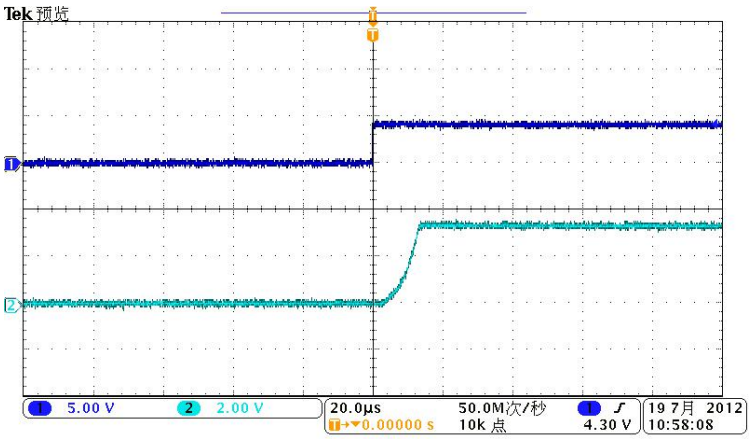
Output voltage vs. Temperature



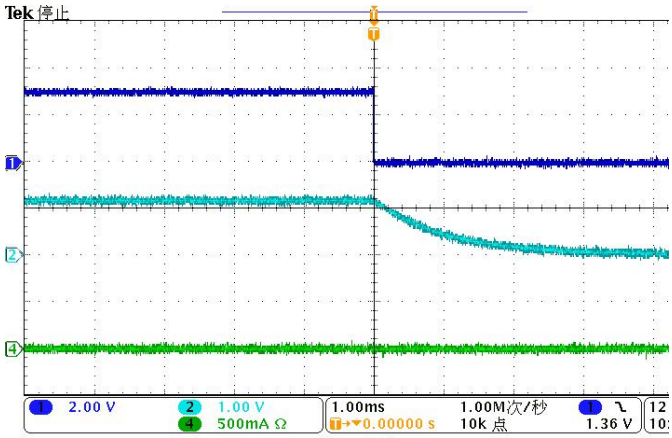
Dropout Voltage vs. Output Current



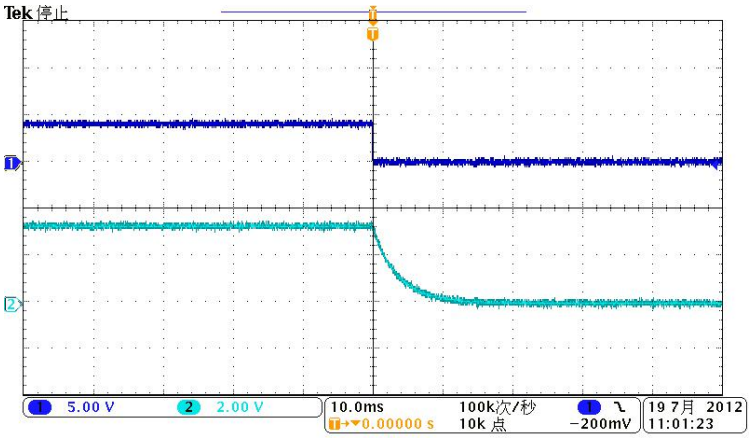
Start Up



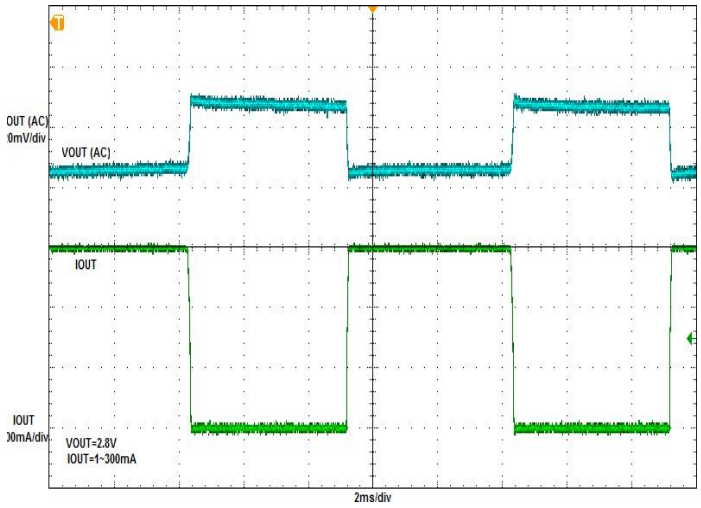
Start Up



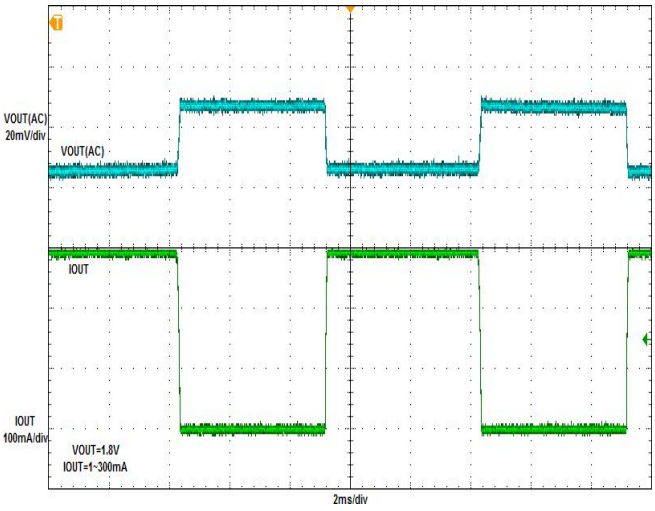
Shutdown



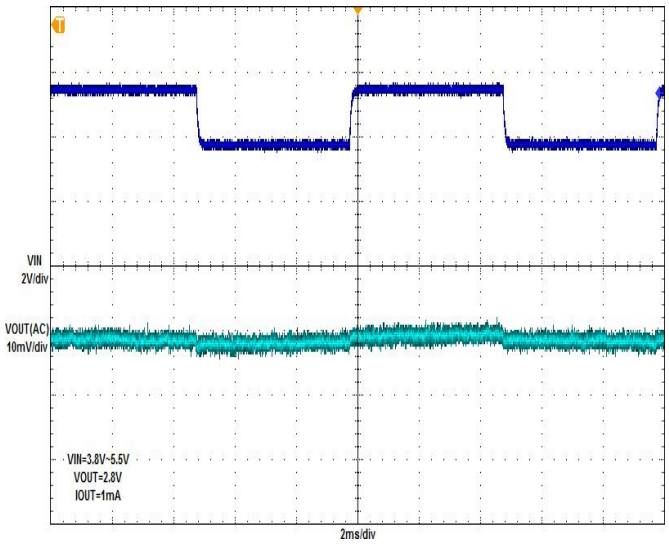
Shutdown



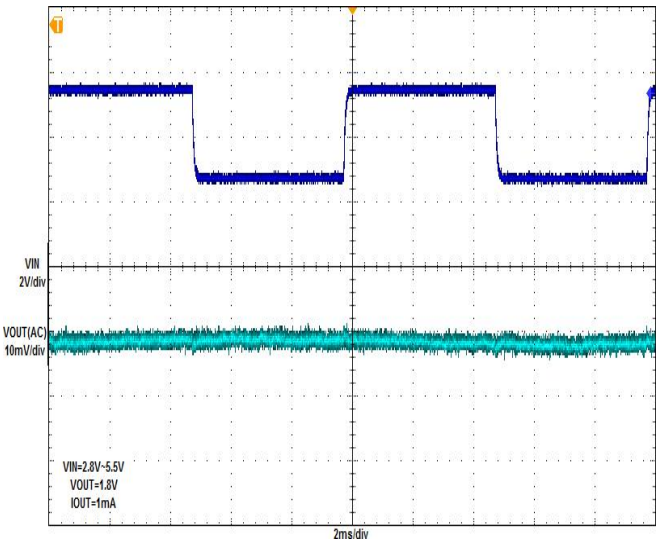
Load Step



Load Step



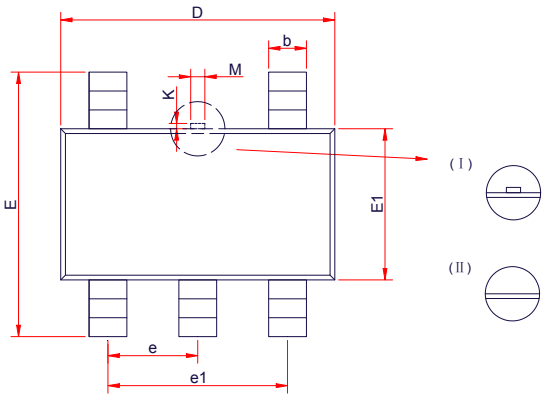
Line Step



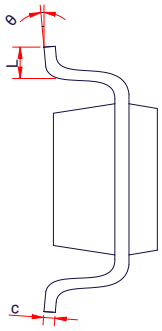
Line Step

PACKAGE OUTLINE DIMENSIONS

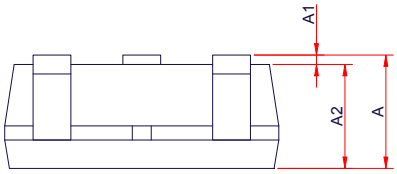
SOT-23-5L



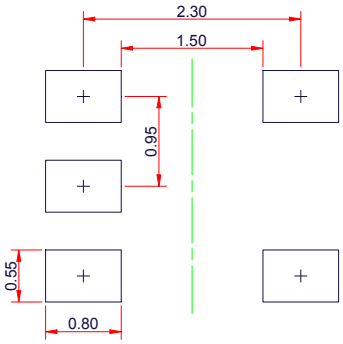
TOP VIEW



SIDE VIEW



SIDE VIEW

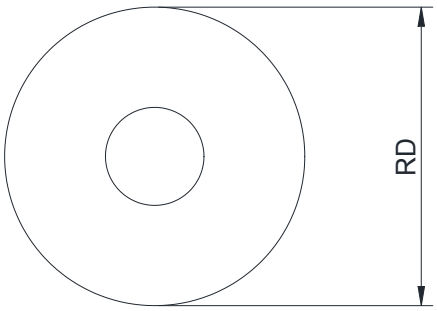


RECOMMENDED LAND PATTERN (unit: mm)

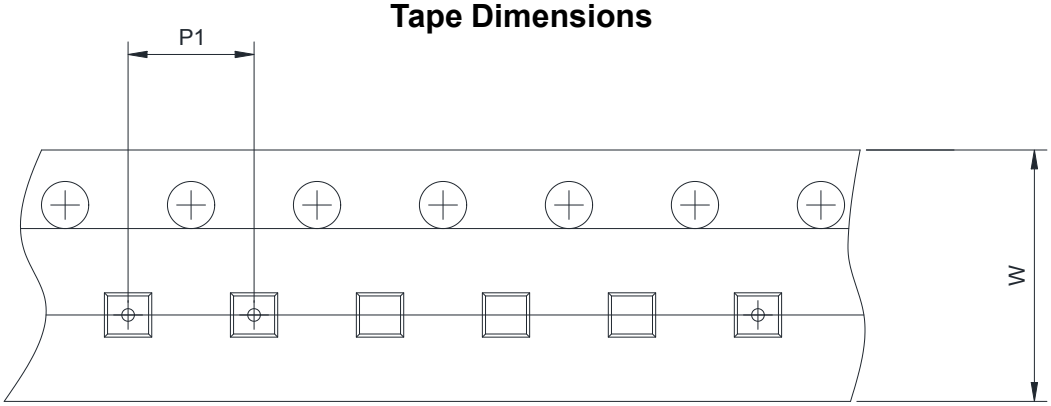
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	-	-	1.45
A1	0.00	-	0.15
A2	0.90	1.10	1.30
b	0.30	0.40	0.50
c	0.10	-	0.21
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.45	0.60
M	0.10	0.15	0.25
K	0.00	-	0.25
θ	0°	-	8°

TAPE AND REEL INFORMATION

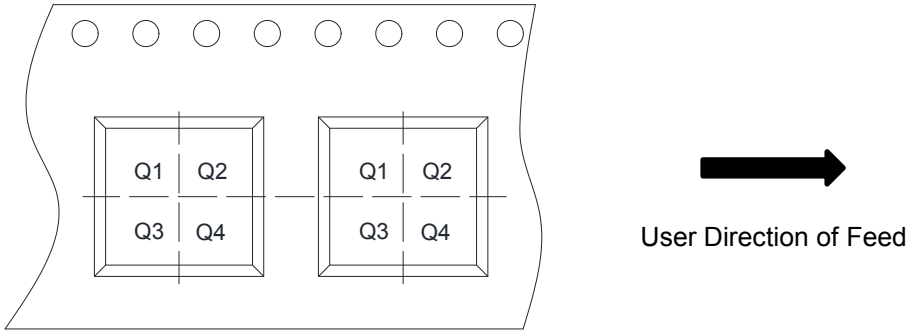
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	☑ 7inch ☐ 13inch
W	Overall width of the carrier tape	☑ 8mm ☐ 12mm ☐ 16mm
P1	Pitch between successive cavity centers	☐ 2mm ☑ 4mm ☐ 8mm
Pin1	Pin1 Quadrant	☐ Q1 ☐ Q2 ☑ Q3 ☐ Q4

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**