WL2811EA

Low noise, High PSRR, High speed, CMOS LDO

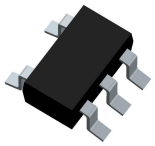
Http://www.ovt.com

Descriptions

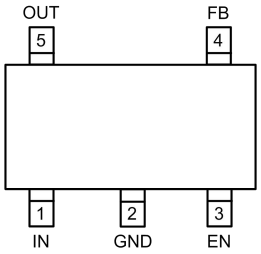
The WL2811EA series is a high accuracy, low noise, high speed, high PSRR, low dropout CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The WL2811EA has the fold-back maximum output current which depends on the output voltage. So the current limit functions both as a short circuit protection and as an output current limiter.

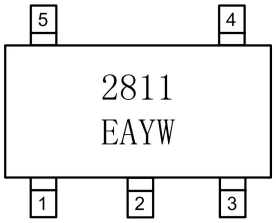
The WL2811EA regulators are available in standard SOT-23-5L Package. Standard products are Pb-free and Halogen-free.



SOT-23-5L



Pin Configuration (Top View)



2811: Device Code
EA : Special Code
Y : Year Code
W: Week Code

Marking

Features

- Input Voltage Range :2V~5.5V
- Output Voltage Range : 0.8V~5V
- Output current : 300mA
- Quiescent current : 75μA Typ.
- Shut-down current : < 1μA
- Dropout voltage : 141mV @ I_{OUT}=0.3A
- PSRR : 70dB @ 1kHz, V_{OUT}=3V
- Low Output Voltage Noise : 12μV_{RMS} Typ.
- Output Voltage Tolerance :±2%
- Recommend capacitor : 1μF
- Thermal-Overload and Short-Circuit Protection

Applications

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

Order Information

Device	Package	Shipping
WL2811EA-5/TR	SOT-23-5L	3000/Reel&Tape

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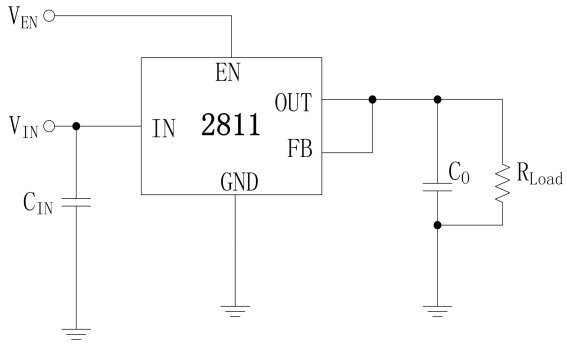
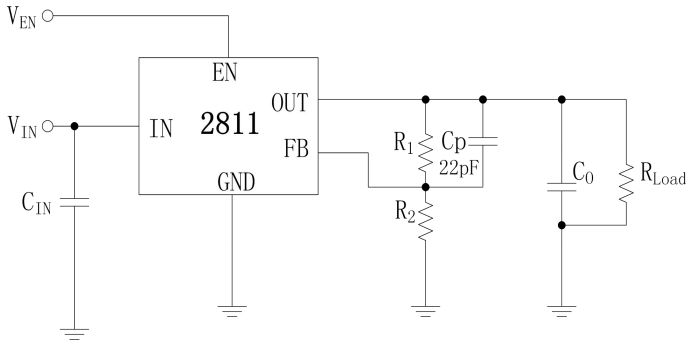
Typical Application



For V_{OUT}=0.8V Application



For V_{OUT} >0.8V Application

$$R_1 = R_2 \times \left(\frac{V_{OUT}}{0.8V} - 1 \right)$$

Pin Description

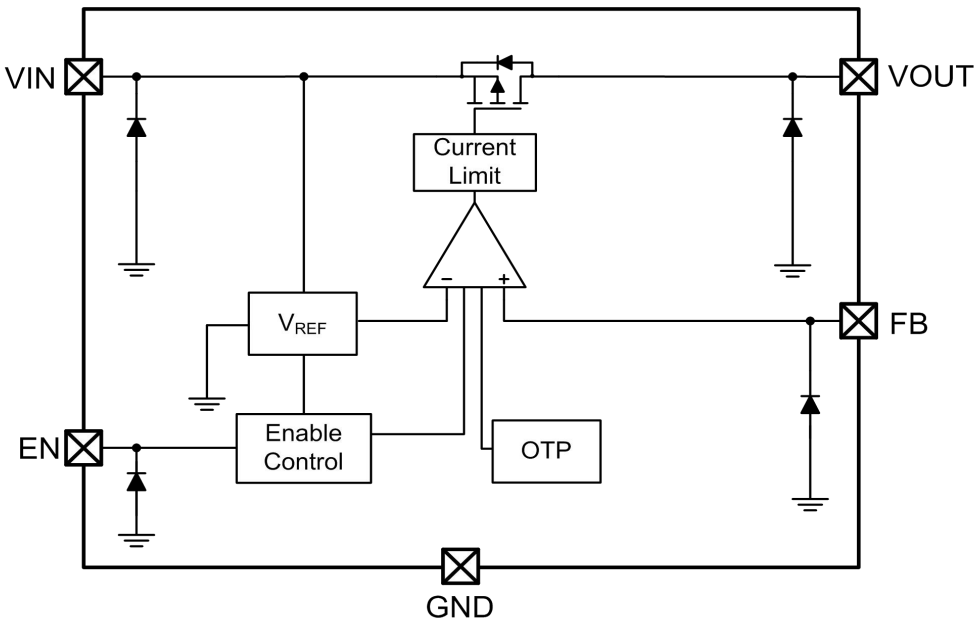
SOT-23-5L

PIN	Symbol	Description
1	IN	Regulator Input .
2	GND	Ground .
3	EN	Enable (Active high).
4	FB	Feedback Pin.This is used to set the output voltage of the device.
5	OUT	Regulator Output .

V_{OUT}(V)	R_1(kΩ)	R_2(kΩ)
1.0	10.5	40.2
1.8	51.1	40.2
2.85	97.6	37.4
3.0	97.6	35.7

Standard 1% Resistor Values for Common Output Voltages of Adjustable Voltage Version

Block Diagram



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Absolute Maximum Ratings

Parameter		Value	Unit
V_{IN} Range		-0.3～6.5	V
V_{EN} Range		-0.3～V_{IN}	V
V_{OUT} Range		-0.3～V_{IN}	V
I_{OUT}		300	mA
Lead Temperature Range		260	°C
Storage Temperature Range		-55 ~ 150	°C
Operating Junction Temperature Range		150	°C
MSL		Level-3	
ESD Ratings	HBM	8000	V
	MM	400	V

Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	2～5.5	V
Operating Junction Temperature Range,Tj	-40～125	°C
Operating Temperature Range	-40～85	°C
Thermal Resistance, $R_{\theta JA}$ (SOT-23-5L), Note1	125	°C/W
Thermal Resistance, $R_{\theta JC}$ (SOT-23-5L)	73	°C/W

Note1. Surface mounted on FR-4 Board using 2 oz, 1 square inch Cu area, PCB board size 1.5*1.5 square inches.

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Electronics Characteristics

(Ta=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1μF, CP=22pF, I_{OUT}=1mA, unless otherwise noted)

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
Feedback Voltage	Vfb	Iout=1mA		0.8*0.98	0.8	0.8*1.02	V
Input Voltage	V_{IN}			2		5.5	V
Current Limit	I_{LIM}	V_{EN}=V_{IN}		300			mA
Dropout Voltage (I_{OUT} = 300mA) (note)	V_{DROP}	1.8V≦V_{OUT} < 2.1V			0.2	0.3	V
		2.1V≦V_{OUT} < 2.5V			0.17	0.26	
		2.5V≦V_{OUT} < 2.8V			0.15	0.23	
		2.8V≦V_{OUT}			0.14	0.21	
Line Regulation	△V_{LINE}	V_{IN}=V_{OUT}+1V~5.5V			1	5.1	mV
Load Regulation	△V_{Load}	I_{OUT}=1~300mA			1	5.1	mV
Quiescent Current	I_Q	I_{OUT}=0			75	100	μA
Short Current	I_{SHORT}	V_{EN}=V_{IN}, V_{OUT} Short to GND with 1Ω			157	280	mA
Shut-down Current	I_{SHDN}	V_{EN}=0V			0.12	<1	μA
Power Supply Rejection Rate	PSRR	V_{IN}=(V_{OUT}+1V)$_{DC}$+0.5V_{P-P},I_{OUT}=10mA, V_{OSET}=3V,Cp=22pF, R2=100KΩ	f=100Hz		70		dB
			f=1kHz		70		dB
			f=10kHz		58		dB
			f=100kHz		45		dB
EN logic high voltage	V_{ENH}	V_{IN}=5.5V		1			V
EN logic low voltage	V_{ENL}	V_{IN}=5.5V				0.4	V
EN Input Current	I_{EN}	V_{EN}=5.5V			0.14		μA
Output Noise Voltage	e_{NO}	10Hz to 100KHz, C_{OUT}=1μF, Iout=10mA, Vout=0.8V			12		μV_{RMS}
Thermal shutdown threshold	T_{SD}				166		℃
Thermal shutdown hysteresis	△ T_{SD}				35		℃

note: When V_{OUT} < 1.8V, V_{DD} should be greater than 2V.

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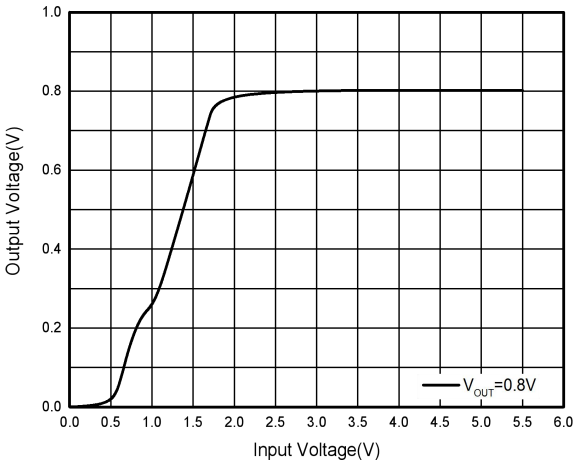
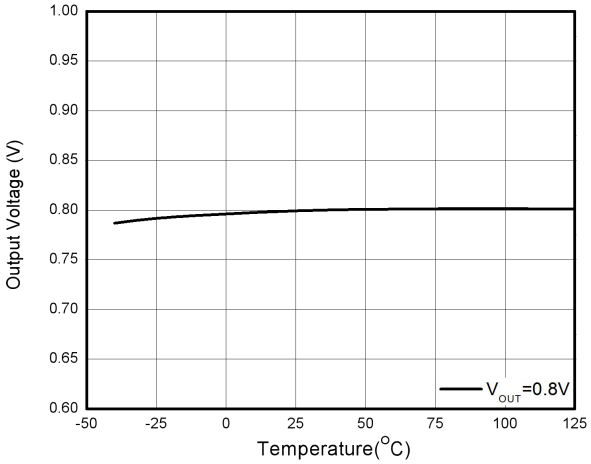
Typical characteristics (Ta=25°C,V_{IN}=V_{OUT}+1V,I_{OUT}=1mA,C_{IN}=C_{OUT}=1 μ F,CP=22pF,unless otherwise noted)

V_{OUT}=0.8V

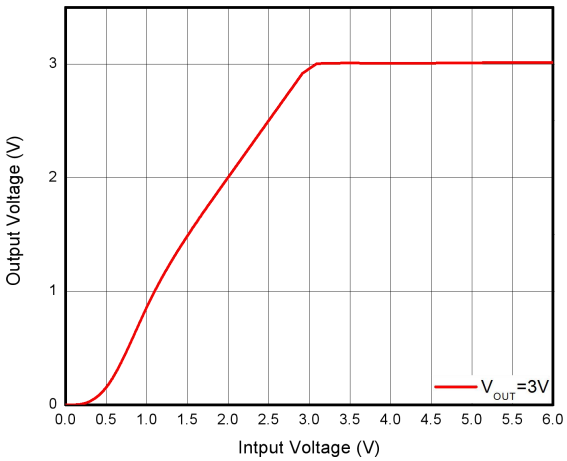


Output Voltage VS Input Voltage

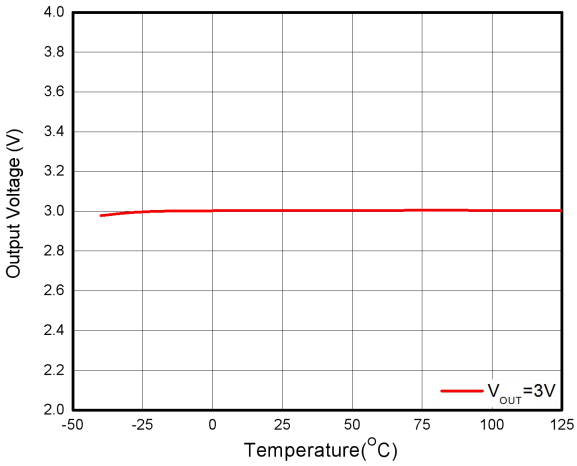


Output Voltage VS Temperature

V_{OUT}=3V

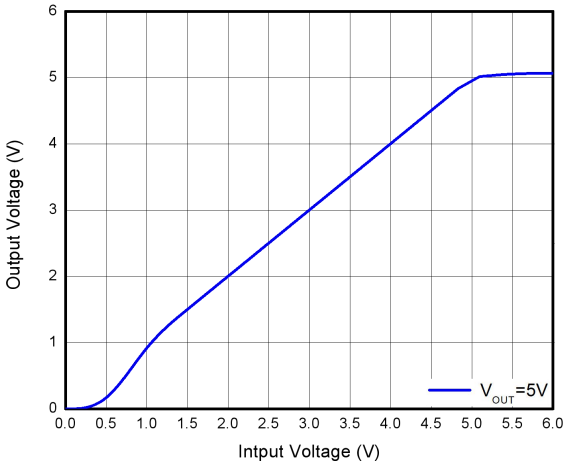


Output Voltage VS Input Voltage

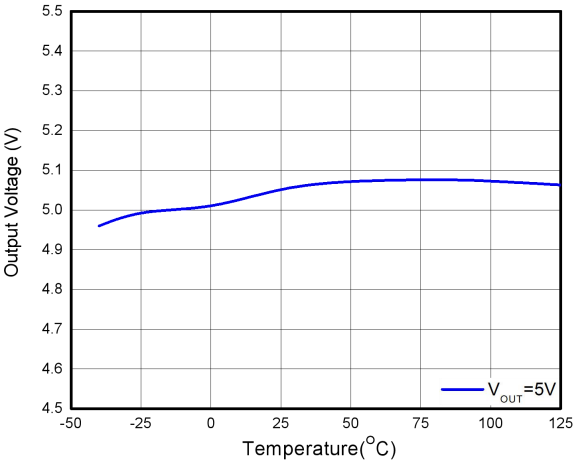


Output Voltage VS Temperature

V_{OUT}=5V



Output Voltage VS Input Voltage



Output Voltage VS Temperature

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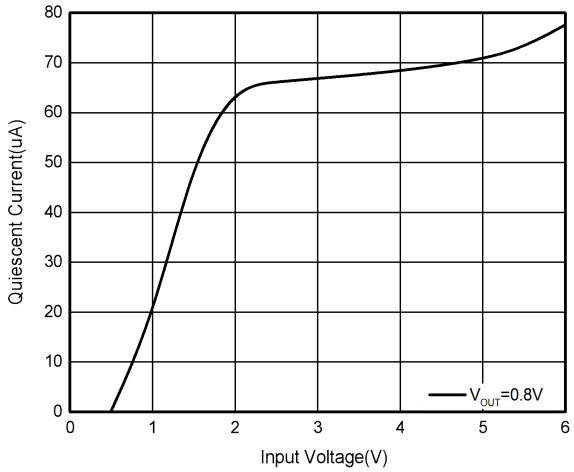
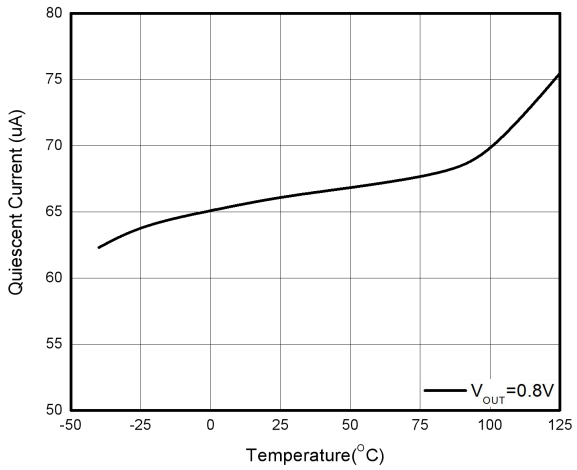
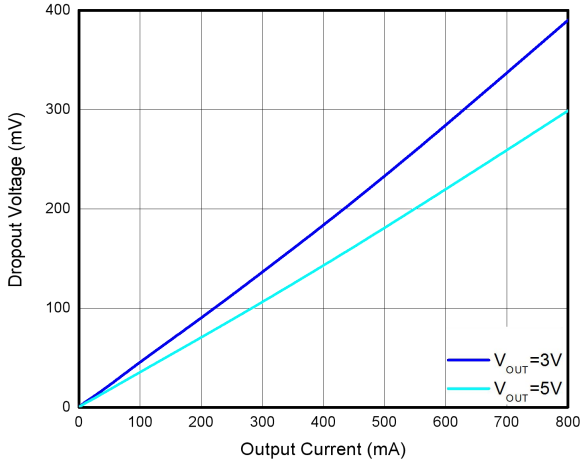


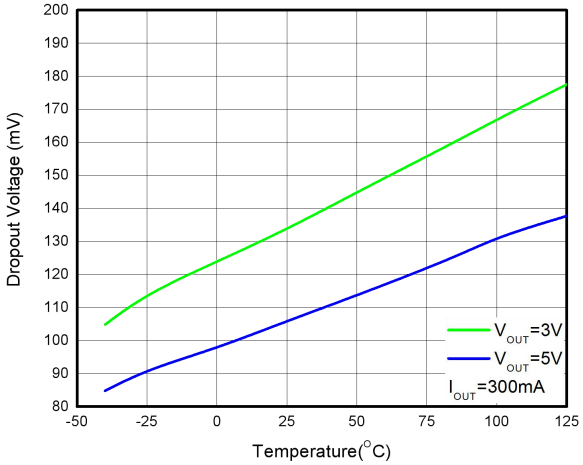
Quiescent Current VS Input Voltage



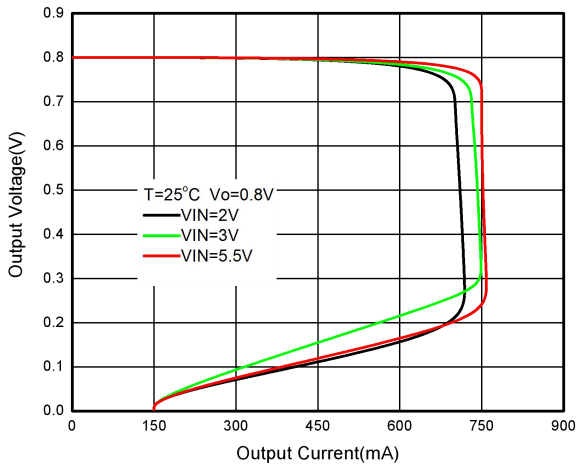
Quiescent Current VS Temperature



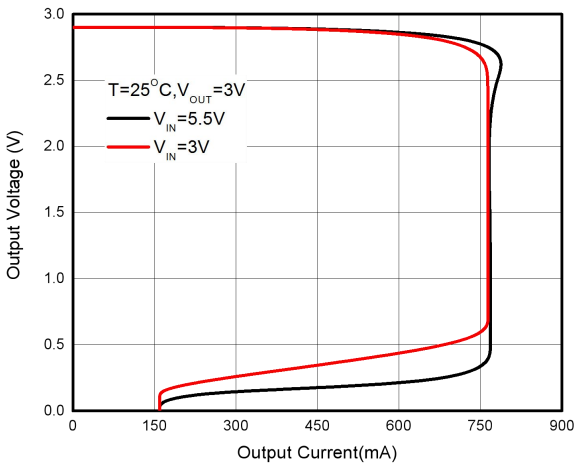
Dropout Voltage VS Output Current



Dropout Voltage VS Temperature



Output Voltage VS Output Current



Output Voltage VS Output Current

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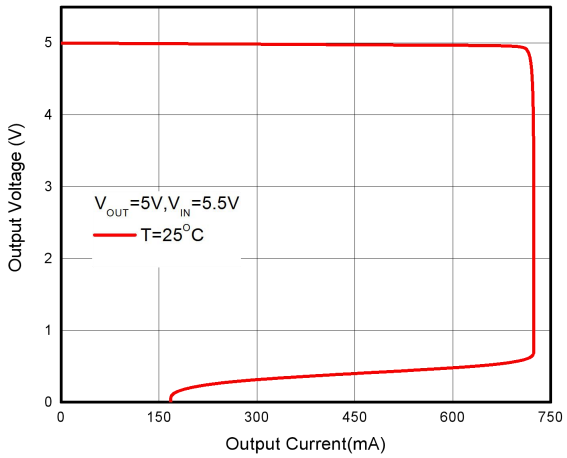
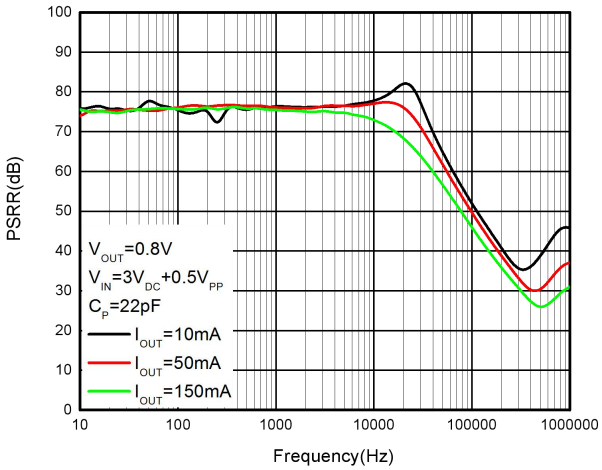
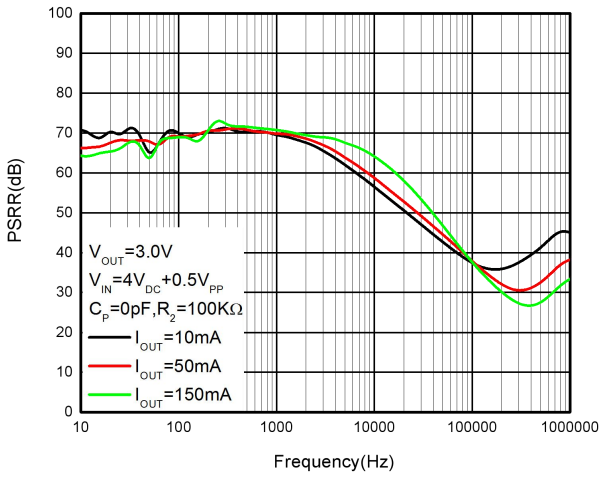


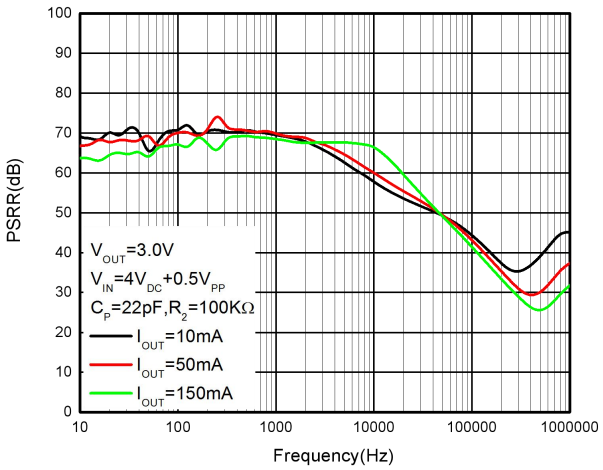
Output Voltage VS Output Current



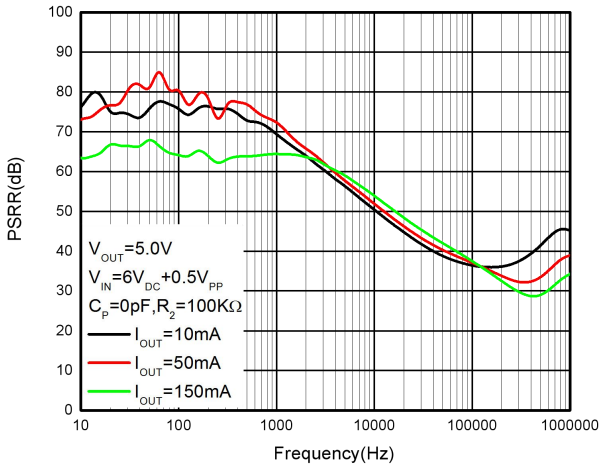
PSRR VS Frequency



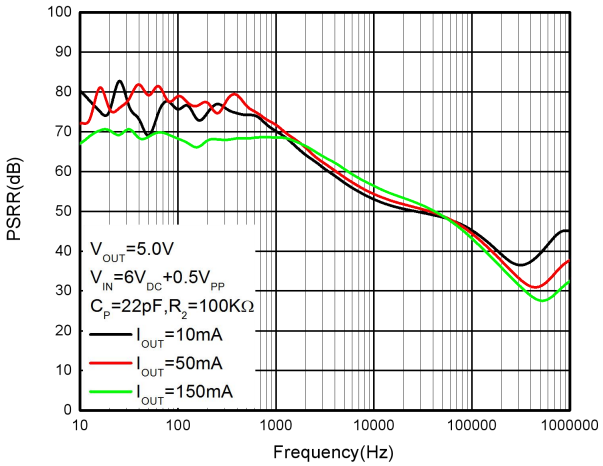
PSRR VS Frequency



PSRR VS Frequency



PSRR VS Frequency



PSRR VS Frequency

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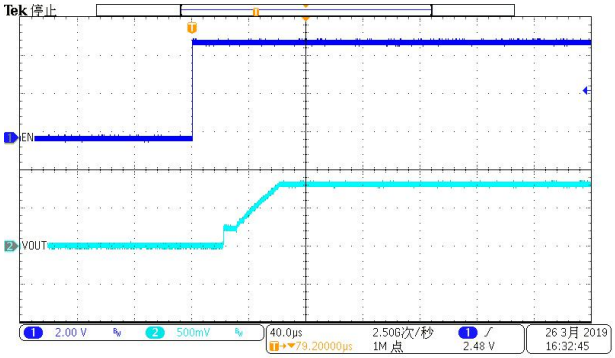
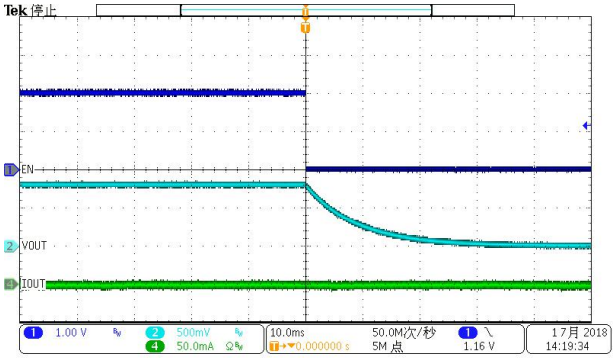
1. Start up & Shutdown(I_{OUT}=1mA)

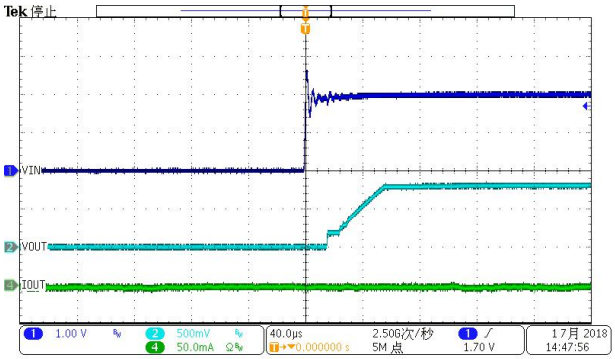
V_{OUT}=0.8V,EN ON



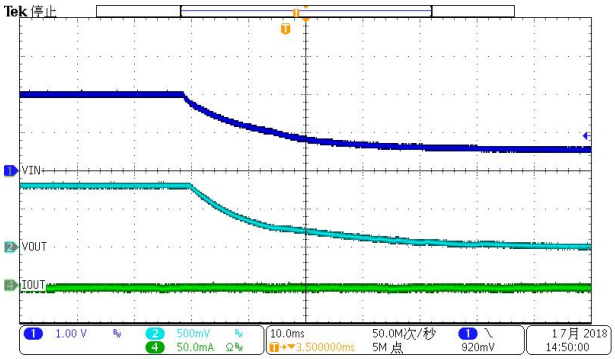
V_{OUT}=0.8V,EN OFF



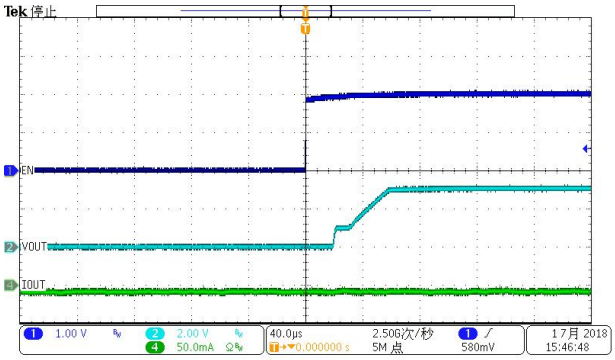
V_{OUT}=0.8V,Power ON



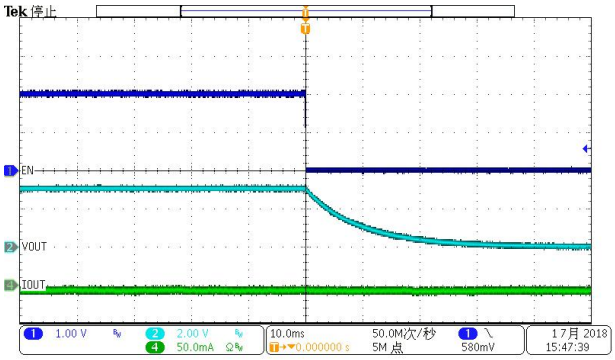
V_{OUT}=0.8V,Power OFF



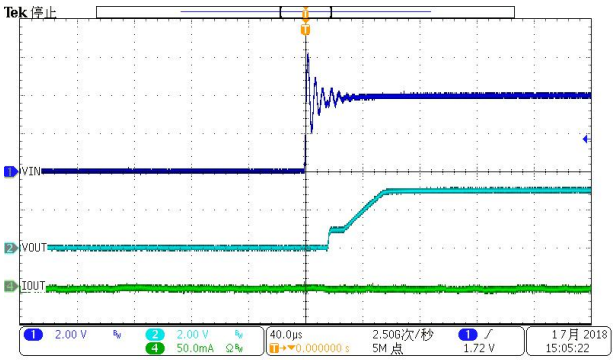
V_{OUT}=3V,R_2=100kΩ,C_P=0,EN ON



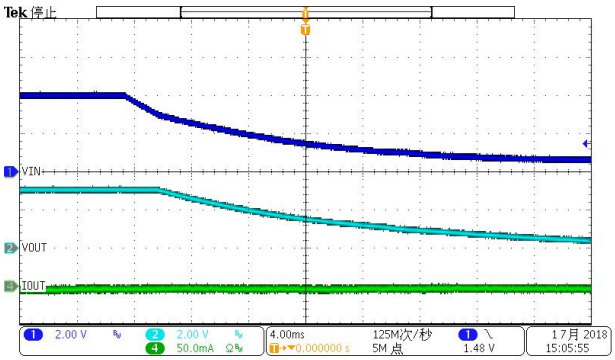
V_{OUT}=3V,R_2=100kΩ,C_P=0,EN OFF



V_{OUT}=3V,R_2=100kΩ,C_P=0,Power ON



V_{OUT}=3V,R_2=100kΩ,C_P=0,Power OFF



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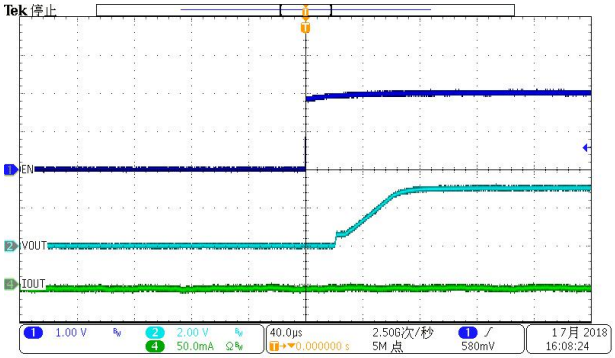
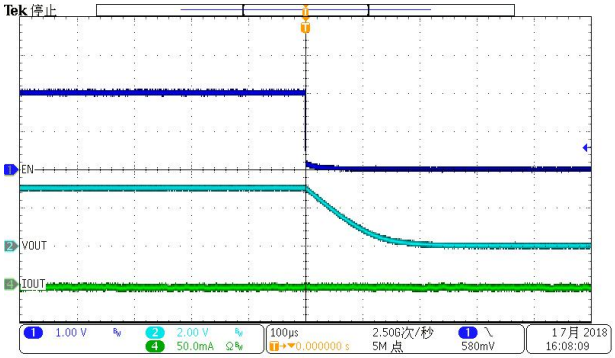
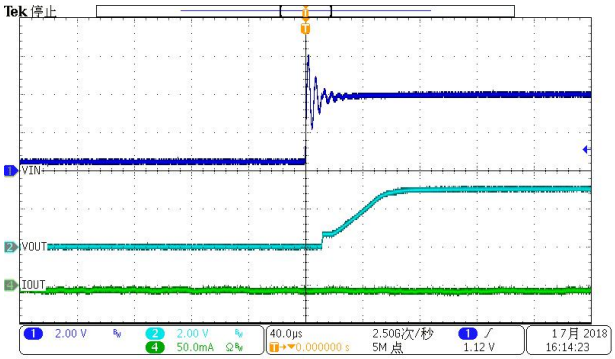
V_{OUT}=3V,R_2=100kΩ,C_P=22pF,EN ON



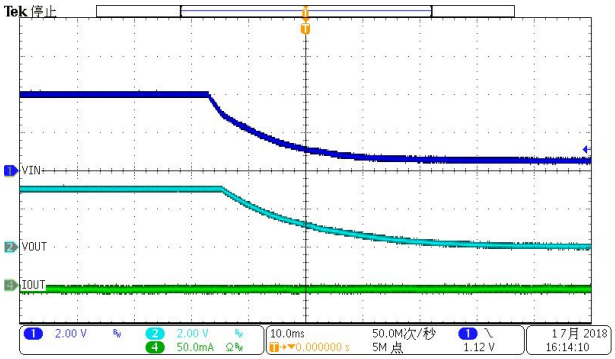
V_{OUT}=3V,R_2=100kΩ,C_P=22pF,EN OFF



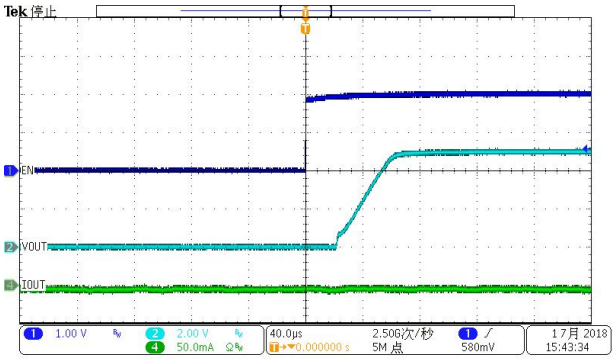
V_{OUT}=3V,R_2=100kΩ,C_P=22pF,Power ON



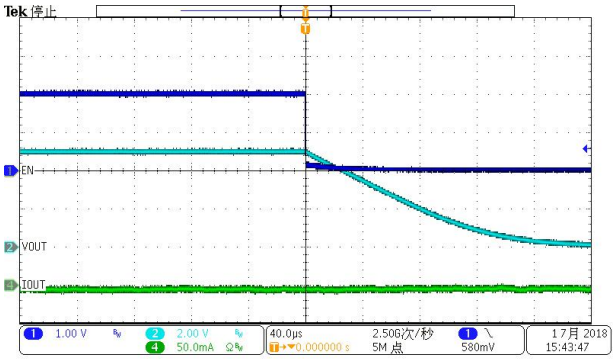
V_{OUT}=3V,R_2=100kΩ,C_P=22pF,Power OFF



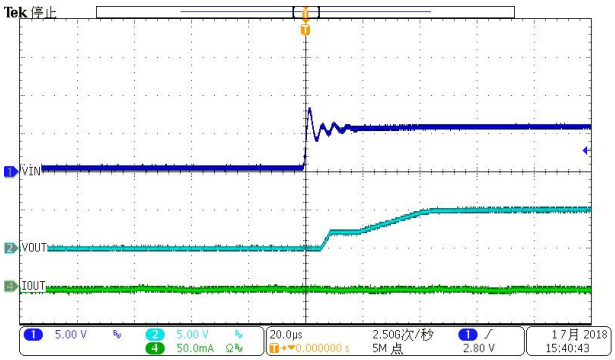
V_{OUT}=5V,R_2=100kΩ,C_P=0,EN ON



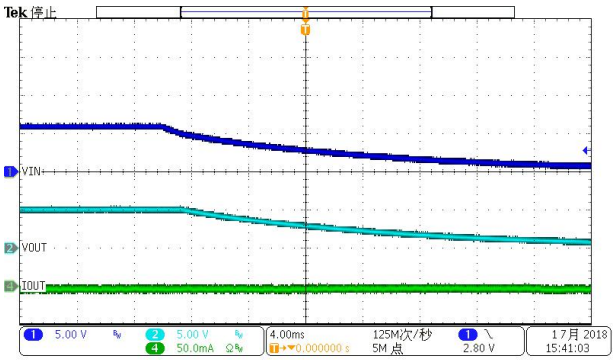
V_{OUT}=5V,R_2=100kΩ,C_P=0,EN OFF



V_{OUT}=5V,R_2=100kΩ,C_P=0,Power ON



V_{OUT}=5V,R_2=100kΩ,C_P=0,Power OFF



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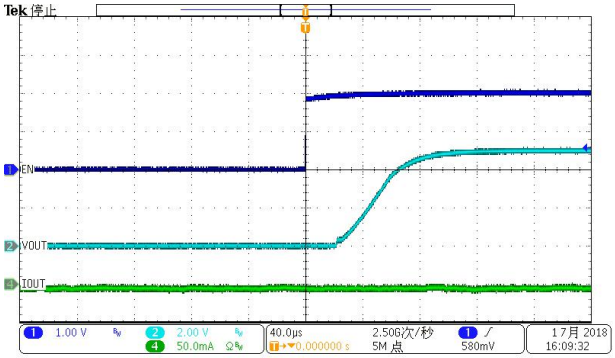
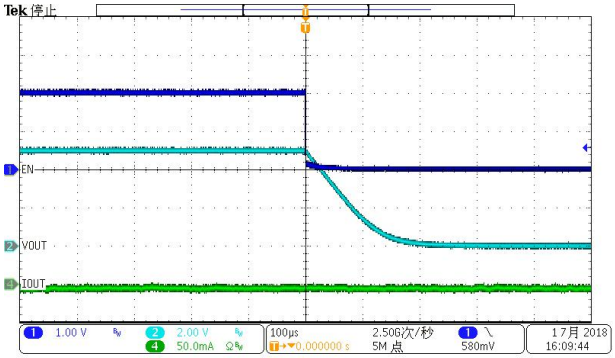
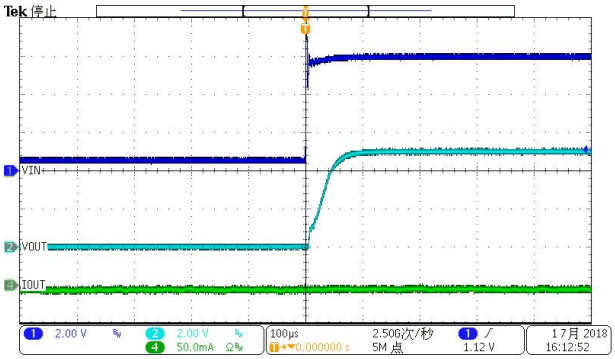
V_{OUT}=5V,R_2=100kΩ,C_P=22pF,EN ON



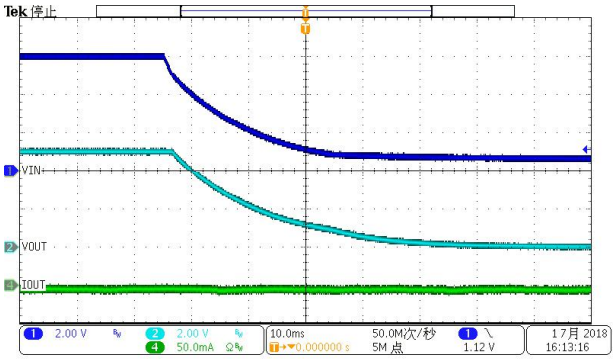
V_{OUT}=5V,R_2=100kΩ,C_P=22pF,EN OFF



V_{OUT}=5V,R_2=100kΩ,C_P=22pF,Power ON

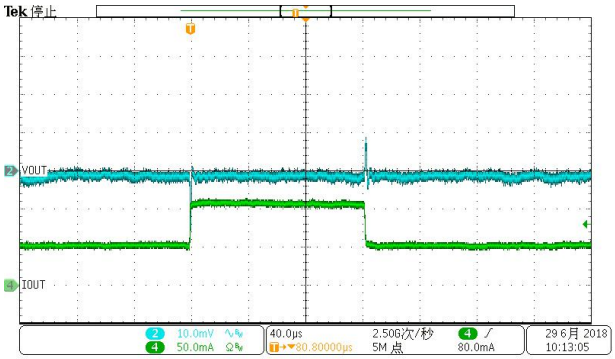


V_{OUT}=5V,R_2=100kΩ,C_P=22pF,Power OFF

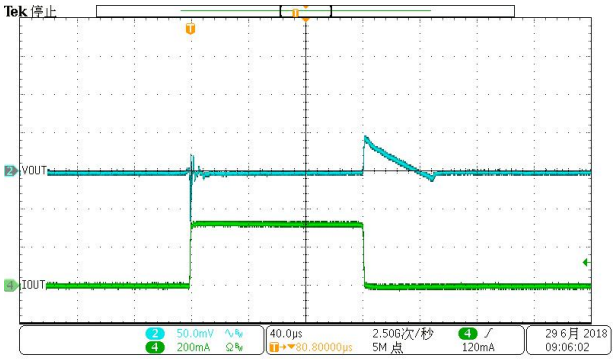


2. Load Transient

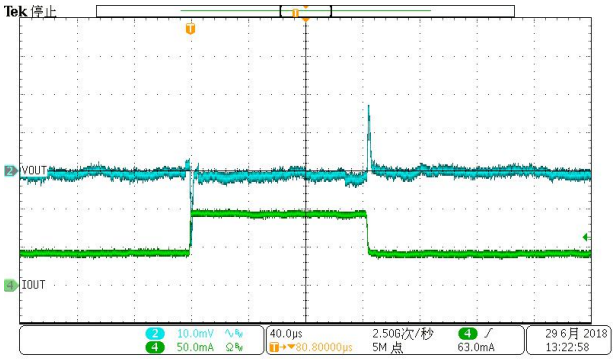
V_{OUT}=0.8V,I_{OUT}=50-100mA



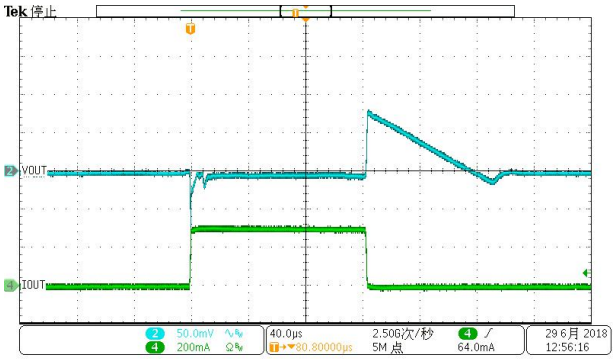
V_{OUT}=0.8V,I_{OUT}=1-300mA



V_{OUT}=3V,R_2=100kΩ,C_P=0,I_{OUT}=50-100mA



V_{OUT}=3V,R_2=100kΩ,C_P=0,I_{OUT}=1-300mA



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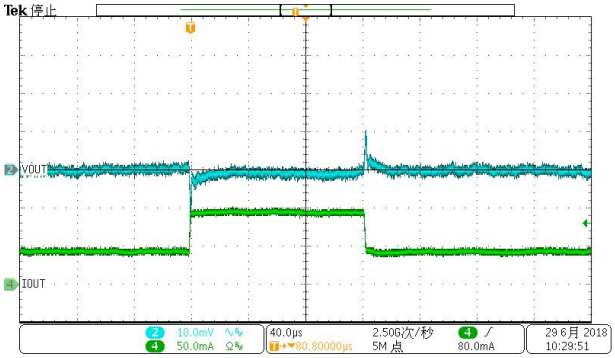
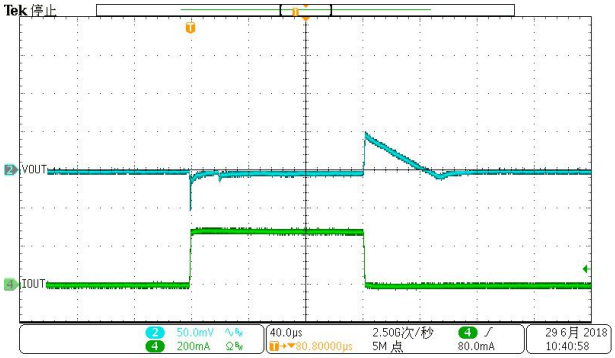
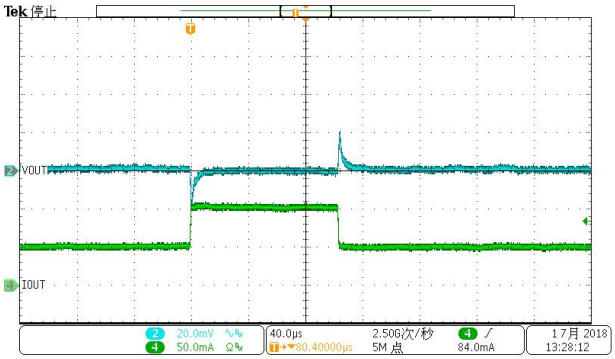
V_{OUT}=3V,R_2=100kΩ,C_P=22pF,I_{OUT}=50-100mA



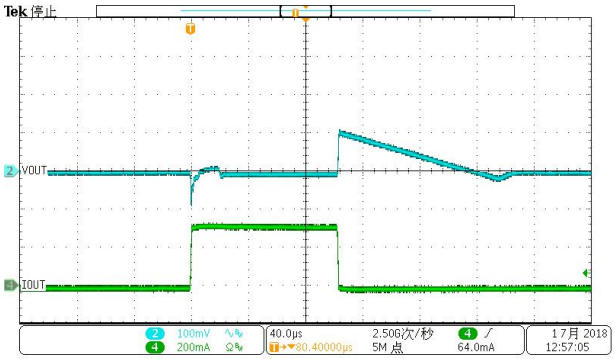
V_{OUT}=3V,R_2=100kΩ,C_P=22pF,I_{OUT}=1-300mA



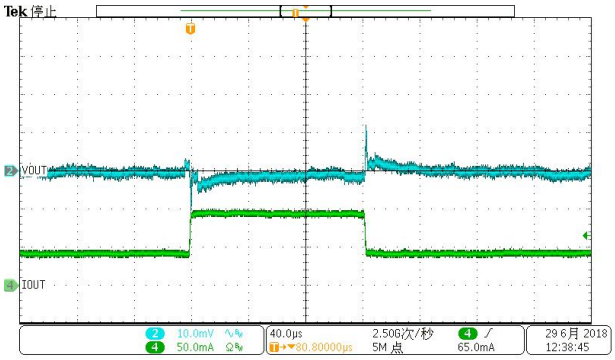
V_{OUT}=5V,R_2=100kΩ,C_P=0,I_{OUT}=50-100mA



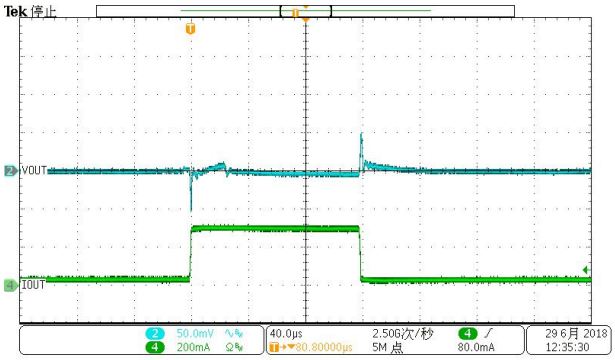
V_{OUT}=5V,R_2=100kΩ,C_P=0,I_{OUT}=1-300mA



V_{OUT}=5V,R_2=100kΩ,C_P=22pF,I_{OUT}=50-100mA

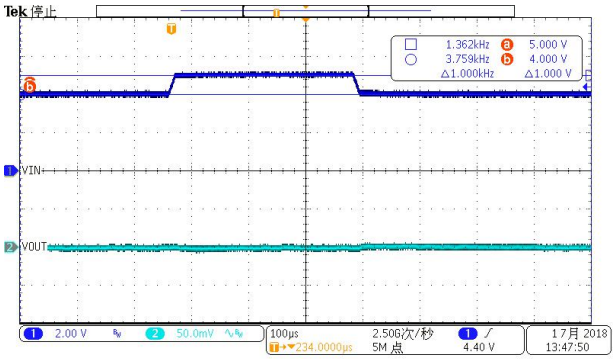


V_{OUT}=5V,R_2=100kΩ,C_P=22pF,I_{OUT}=1-300mA



3. Line Transient

V_{IN}=4V-5V,I_{OUT}=1mA



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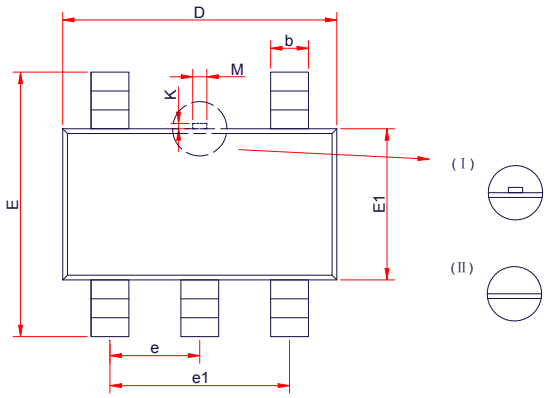
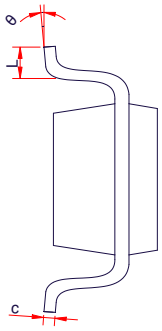
PACKAGE OUTLINE DIMENSIONS

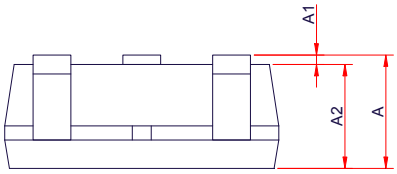
SOT-23-5L



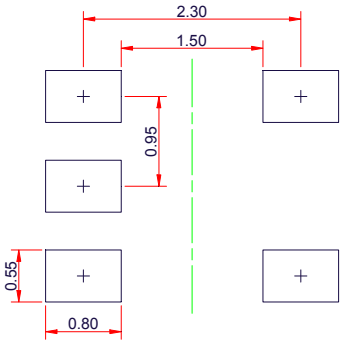
TOP VIEW



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°

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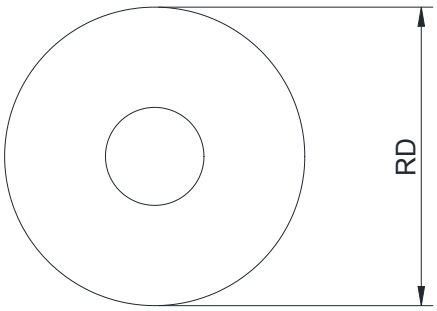
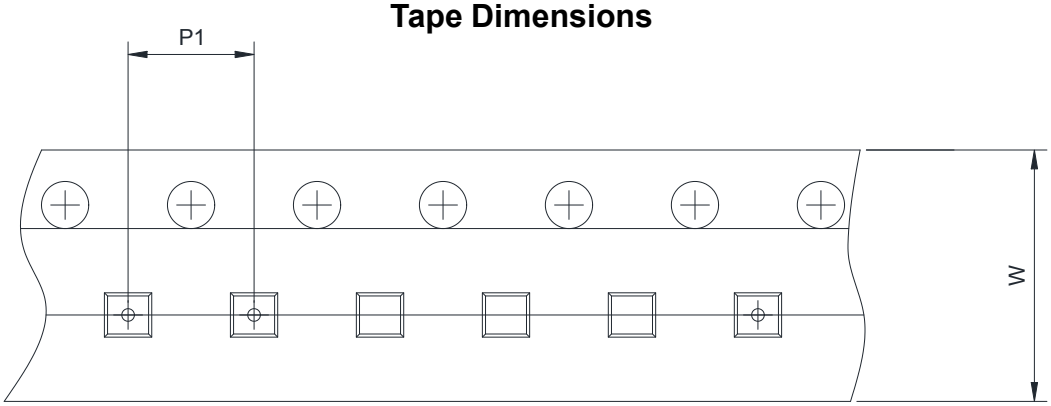
TAPE AND REEL INFORMATION

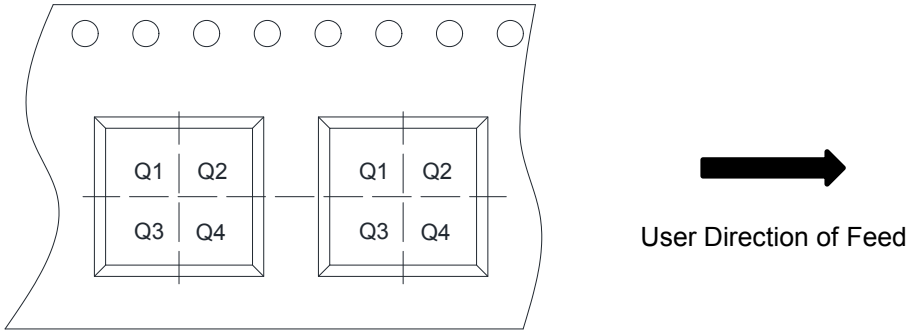
Reel Dimensions



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

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