High PSRR Low Noise 300mA LDO

General Description

The ET526XX family are the 300mA LDO with auto discharge function, it uses an advanced CMOS process and a PMOSFET pass device to achieve high power supply rejection ratio (PSRR), low noise, low dropout, low ground current, fast start-up and excellent output accuracy.

The ET526XX family are stable with a 1.0μF ceramic output capacitor, uses a precision voltage reference and feedback loop to achieve excellent Regulation and transient response.

The ET526XX family offered in small DFN4 and SOT23-5 package, which are ideal for small form factor portable equipment.

Features

- Wide Input Voltage Range from 1.8V to 5.5V
- Up to 300mA Load Current
- Standard Fixed Output Voltage Options: 1.2V to 3.3V
- Very Low I_Q is 45μA Typical
- Low Dropout is Typical 350mV@1.8V at 300mA Load
- Very High PSRR: 80dB at 1KHz 20mA
- Very Low Noise is 40uVrms at 1.8V Output
- Excellent Load/Line Transient Response
- Part No. and Package Information

Part No.	Package	Packing Option	MSL
ET526XXYB	DFN4 (1mm × 1mm)	Tape and Reel, 10K/Reel	1
ET526XX	SOT23-5 (2.9mm × 1.6mm)	Tape and Reel, 3K/Reel	3

Applications

- Smart Phones and Cellular Phones
- Digital Still Cameras
- Portable Instruments

Mark Specification

Part No.	Marking		V_{OUT}	Auto Discharge Function
	DFN4	SOT23-5		
	XXYB	XX		
ET52612	$\overline{AX}$	26A	1.2V	Y
ET52615	$\overline{BX}$	26B	1.5V	Y
ET52618	$\overline{CX}$	26C	1.8V	Y
ET52628	$\overline{DX}$	26D	2.8V	Y
ET52630	$\overline{GX}$	26G	3.0V	Y
ET52633	$\overline{EX}$	26E	3.3V	Y

Pin Configuration

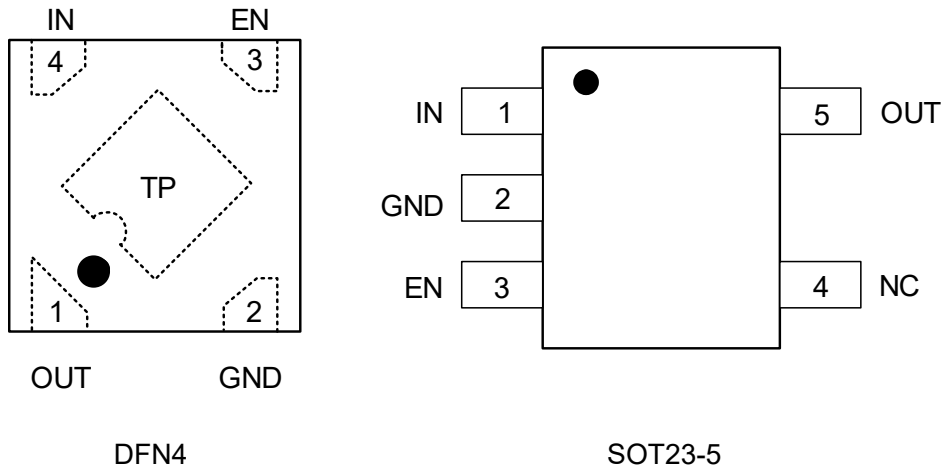


Figure1. Pin Configuration

Pin Function

Pin NO.		Symbol	Pin Description
DFN4	SOT23-5		
1	5	OUT	Output Pin
2	2	GND	Power Supply Ground
3	3	EN	Chip Enable Pin (Active “H”)
4	1	IN	Power Supply Input Voltage
TP	4	Thermal Pad / NC	Thermal Pad for DFN4 Package, Connect to GND or Leave Floating. Do not connect to any potential other than GND. NC for SOT23-5 no connection.

Block Diagram

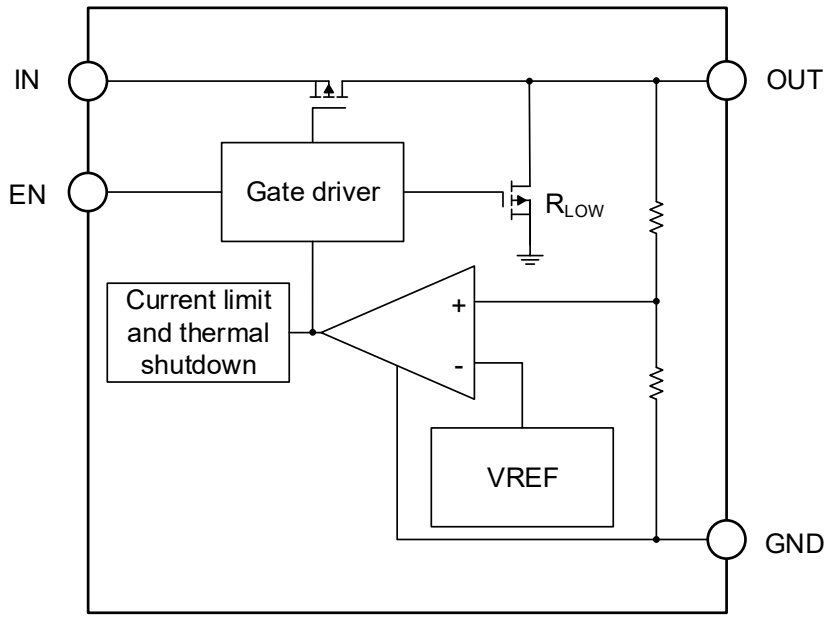


Figure2. Block Diagram

Functional Description

Input Capacitor

A 1μF ceramic capacitor is recommended to connect between V_{IN} and GND pins to decouple input power supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and less noise. For PCB layout, a wide copper trace is required for both V_{IN} and GND.

Output Capacitor

An output capacitor is required for the stability of the LDO. The recommended output capacitance is 0.47μF or larger, the effective capacitance needs to take the DC-Bias characteristic, tolerance and temperature into consideration, and temperature characteristics is X7R or X5R. Higher capacitance values help to improve load/line transient response. The output capacitance may be increased to keep low undershoot/overshoot. Place output capacitor as close as possible to OUT and GND pins.

ON/OFF Input Operation

The ET526XX is turned on by setting the EN pin high, and is turned off by pulling it low. If this feature is not used, the EN pin should be tied to IN pin to keep the regulator output on at all time.

Ultra-Fast Start-up

After enabled, the ET526XX is able to provide full power in as little as tens of microseconds, typically 150μs. This feature will help load circuitry move in and out of standby mode in real time, eventually extend battery life for mobile phones and other portable devices.

Current Limit Protection

When output current at the OUT pin is higher than current limit threshold or the OUT pin, the current limit protection will be triggered and clamp the output current to approximately 500mA to prevent over-current and to protect the regulator from damage due to overheating.

Thermal Shutdown Protection

Thermal protection disables the output when the junction temperature rises to approximately +160°C, allowing the device to cool down. When the junction temperature reduces to approximately +125°C the output circuitry is enabled again. Depending on power dissipation, thermal resistance, and ambient temperature, the thermal protection circuit may cycle on and off. This cycling limits the heat dissipation of the regulator, protecting it from damage due to overheating.

Absolute Maximum Ratings

Symbol	Parameters (Items)	Value	Unit
V_{IN}	IN Voltage	-0.3 to 6.0	V
V_{EN}	Input Voltage (EN Pin)	-0.3 to V_{IN}+0.3	V
V_{OUT}	Output Voltage	-0.3 to V_{IN}+0.3	V
I_{MAX}	Maximum Load Current	300	mA
P_D	Maximum Power Consumption	400	mW
$R_{\theta JA}$	Junction-to-ambient thermal resistance	250	°C/W
V_{ESD}	Human Body Model (JEDEC JS-001)	±2000	V
	Charged Device Model (JEDEC JS-002)	±1500	
L_U	Latch up (JESD78F)	±200	mA
T_J	Operating Junction Temperature	-40 to 150	°C
T_{STG}	Storage Temperature	-65 to 150	°C
T_{SLOD}	Lead Temperature (Soldering, 10 sec)	300	°C

Recommended Operating Conditions

Symbol	Item	Rating	Unit
V_{IN}	Input Voltage	1.8 to 5.5	V
I_{OUT}	Output Current	0 to 300	mA
T_A	Operating Ambient Temperature	-40 to 85	°C
C_{IN}	Effective Input Ceramic Capacitor Value	0.47 to 4.7	μF
C_{OUT}	Effective Output Ceramic Capacitor Value	0.47 to 4.7	μF
ESR	Input and Output Capacitor Equivalent Series Resistance (ESR)	5 to 100	mΩ

Electrical Characteristics[(1)]

(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{IN}	Input Voltage Operation Range		1.8		5.5	V
V_{DROP}	Dropout Voltage[(2)] (T_A = 25°C)	V_{OUT} = 1.2V, I_{OUT} = 300mA		600		mV
		V_{OUT} = 1.8V, I_{OUT} = 300mA		350		mV
		V_{OUT} = 2.8V, I_{OUT} = 300mA		300		mV
		V_{OUT} = 3.0V, I_{OUT} = 300mA		300		mV
		V_{OUT} = 3.3V, I_{OUT} = 300mA		300		mV
I_{Q_ON}	DC Supply Quiescent Current	Active Mode: V_{EN} = V_{IN}		45		μA
I_{Q_OFF}	DC Supply Shutdown Current	V_{EN} = 0V		0.01	1	μA
V_{OUT}	Regulated Output Voltage	I_{OUT} = 1mA, -40°C ≤ T_A ≤ 85°C	-2		2	%
Reg_{LINE}	Output Voltage Line Regulation	V_{IN} = V_{OUT} + 1V to 5.5V, I_{OUT} = 10mA			0.2	%/V
Reg_{LOAD}	Output Voltage Load Regulation	I_{OUT} from 0mA to 300mA V_{OUT} = 1.8V		20		mV
t_{ON}	Soft-start Time	From Enable to Power On V_{OUT} = 1.8V		150		μs
I_{LIMIT}	Current Limit	R_{LOAD} = 1Ω	350	500		mA
I_{SHORT}	Short Current Limit	V_{OUT} = 0V		75		mA
PSRR[(3)]	Power Supply Rejection Ratio	f = 1kHz, I_{OUT} = 20mA		80		dB
		f = 10kHz, I_{OUT} = 20mA		65		dB
e_N[(3)]	Output Noise	10Hz to 100kHz, I_{OUT} = 20mA, C_{OUT} = 1μF		22* V_{OUT}		μV_{RMS}
V_{ENL}	EN Low Threshold				0.3	V
V_{ENH}	EN High Threshold		0.9			V
I_{EN}	EN Pin Input Current	V_{EN} = 0V		0	0.1	μA
		V_{EN} = 1.8V		0.2		μA
R_{DIS}	Output Resistance of Auto Discharge at off State	EN = 0V, V_{IN} = 5V, I_{OUT} = 10mA		40	80	Ω
T_{SD}[(3)]	Over-temperature Shutdown Threshold	T_J Rising		160		°C
T_{HYS}[(3)]	Over-temperature Shutdown Hysteresis	T_J Falling from Shutdown		35		°C

Note1: Production test at 25°C. Specifications over the temperature range are guaranteed by design and characterization.

Note2: The minimum operating voltage is 1.8V. The calculation formula is as follows:

$$V_{DROP} = V_{IN(min)} - V_{OUT}$$

Note3: Guaranteed by design and characterization. Not a FT item.

Application Circuits

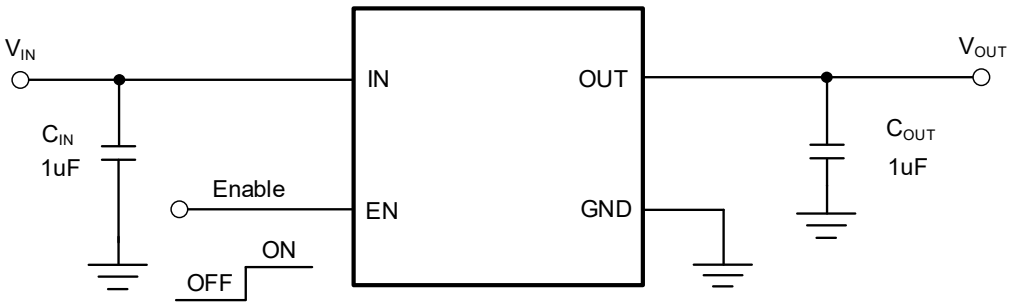
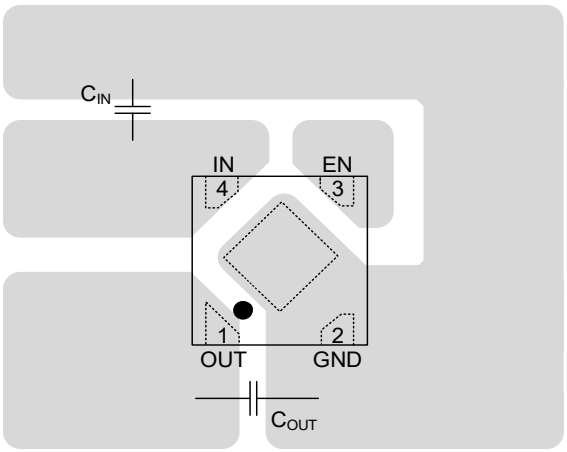
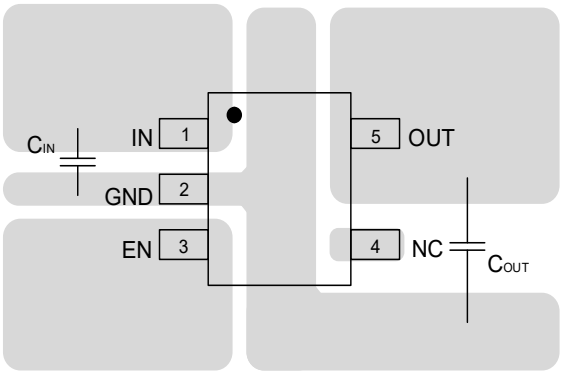


Figure3. Applications Information

PCB Layout Guide



DFN4



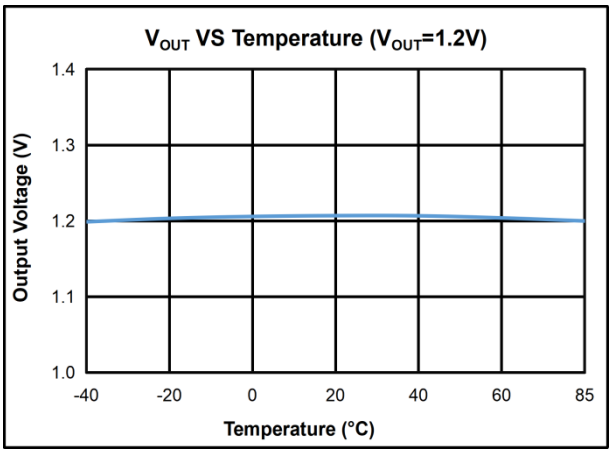
SOT23-5

Figure4. PCB Layout Guide

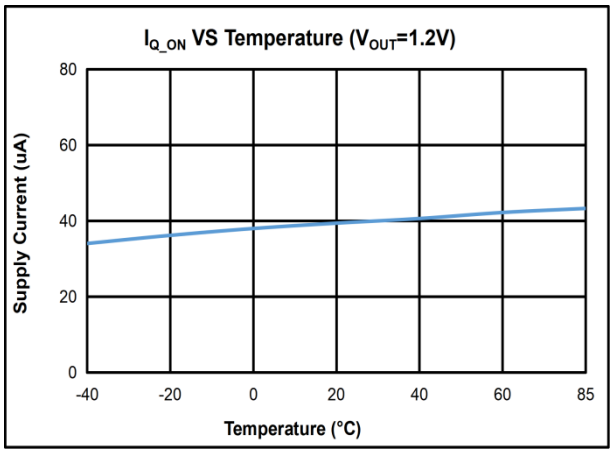
Typical Characteristics

VOLTAGE VERSION 1.2V

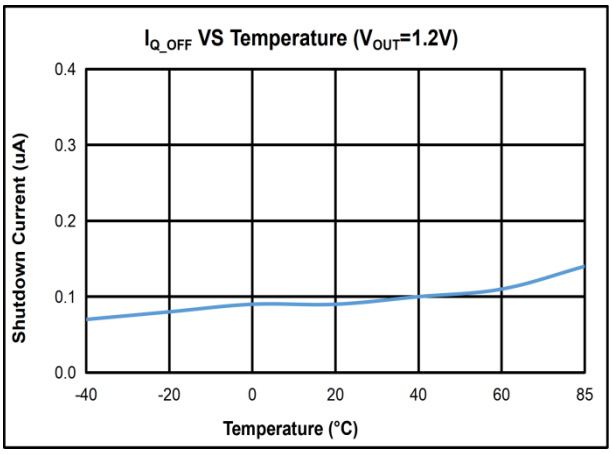
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



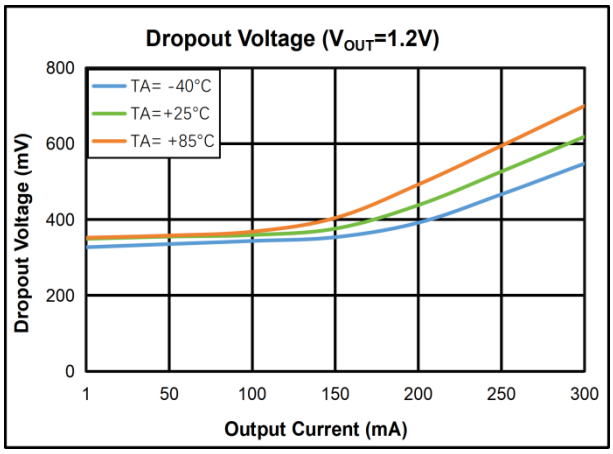
Output Voltage VS Temperature



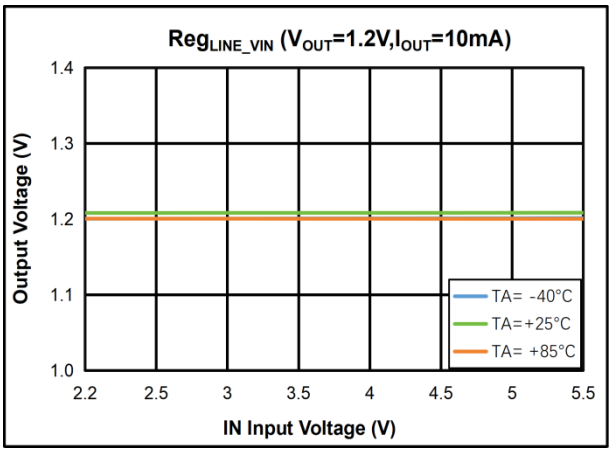
Supply Current VS Temperature



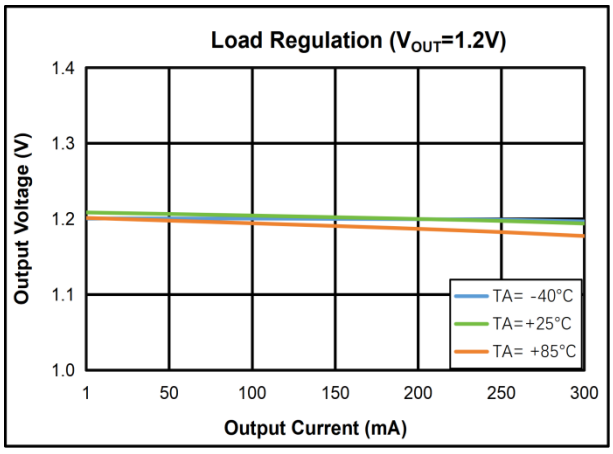
Shutdown Current VS Temperature



Dropout Voltage VS Output Current



Output Voltage VS Input Voltage

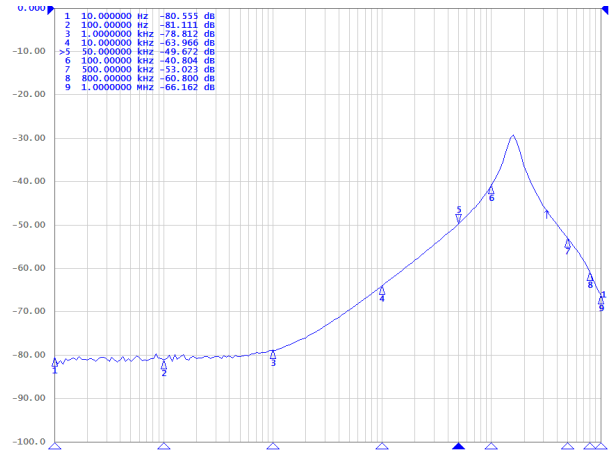


Output Voltage VS Output Current

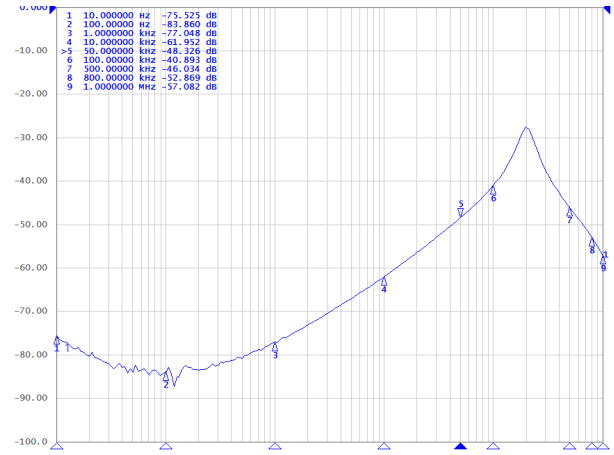
Typical Characteristics(Continued)

VOLTAGE VERSION 1.2V

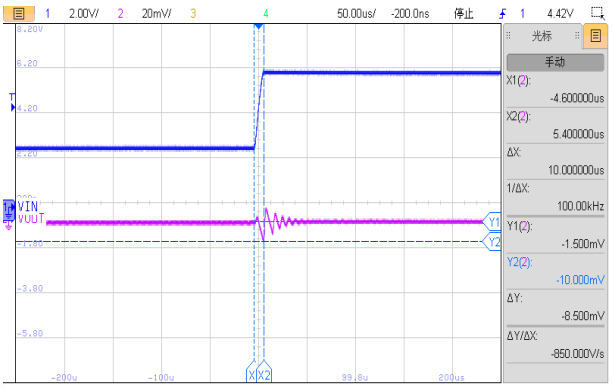
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



PSRR (I_{OUT} = 20mA, C_{OUT} = 2.2uF)

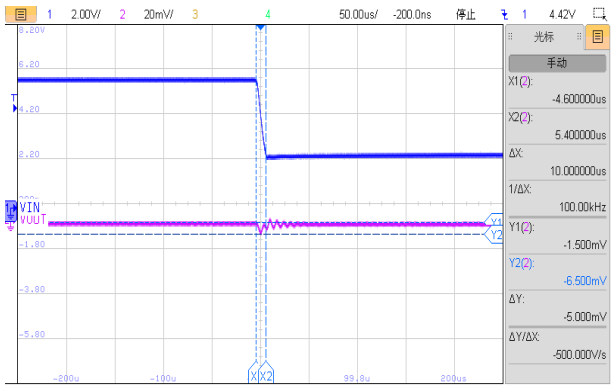


PSRR (I_{OUT} = 100mA, C_{OUT} = 2.2uF)



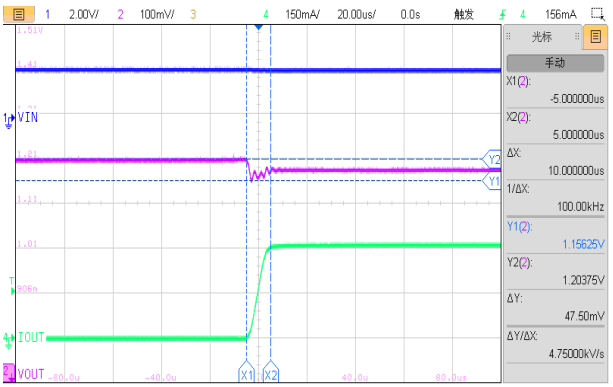
Line Transient Response

V_{IN} = 2.2V~5.5V, V_{OUT} = 1.2V, I_{OUT} = 1mA



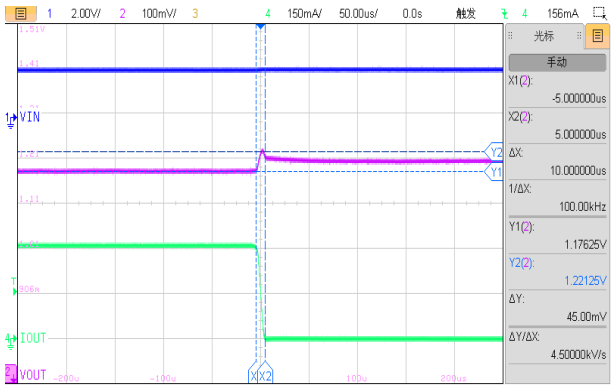
Line Transient Response

V_{IN} = 5.5V~2.2V, V_{OUT} = 1.2V, I_{OUT} = 1mA



Load Transient Response

V_{IN} = 2.2V, V_{OUT} = 1.2V, I_{OUT} = 1mA~300mA



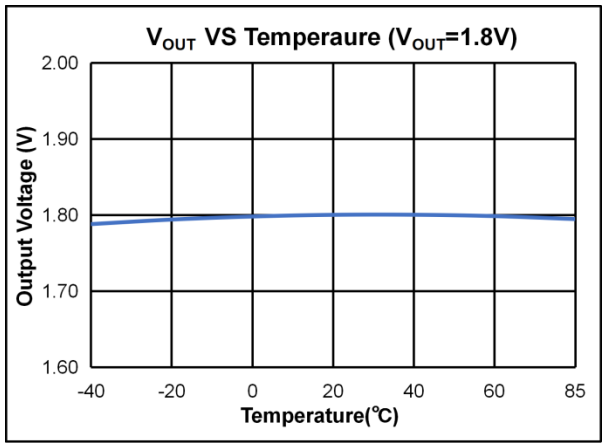
Load Transient Response

V_{IN} = 2.2V, V_{OUT} = 1.2V, I_{OUT} = 300mA~1mA

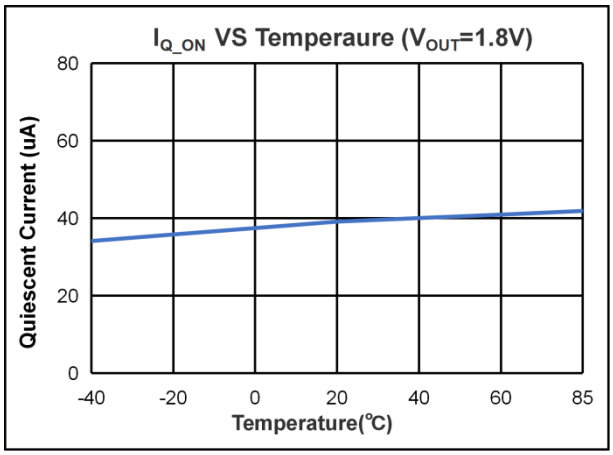
Typical Characteristics(Continued)

VOLTAGE VERSION 1.8V

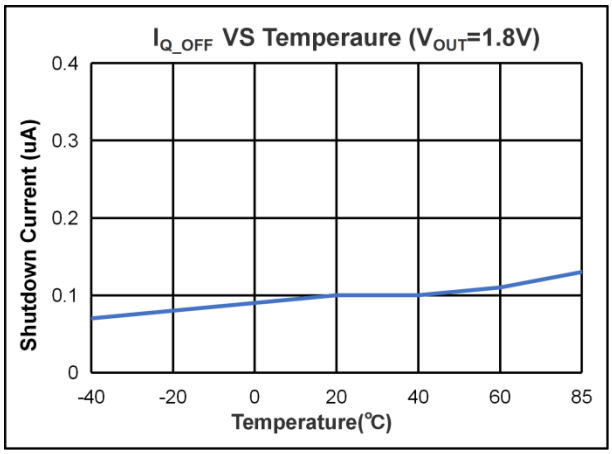
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



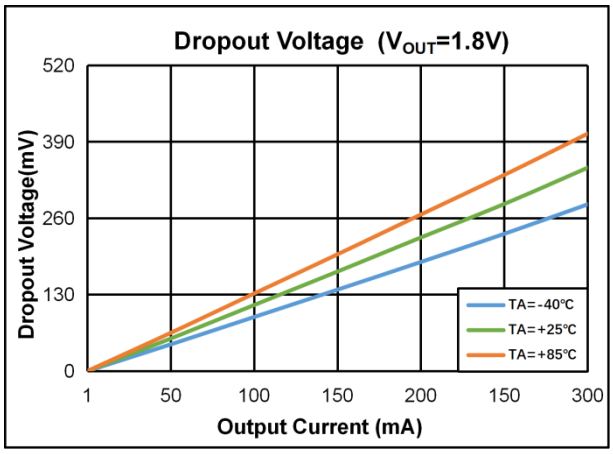
Output Voltage VS Temperature



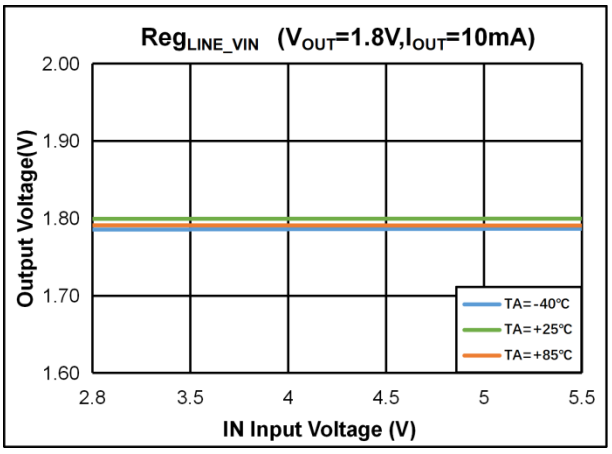
Supply Current VS Temperature



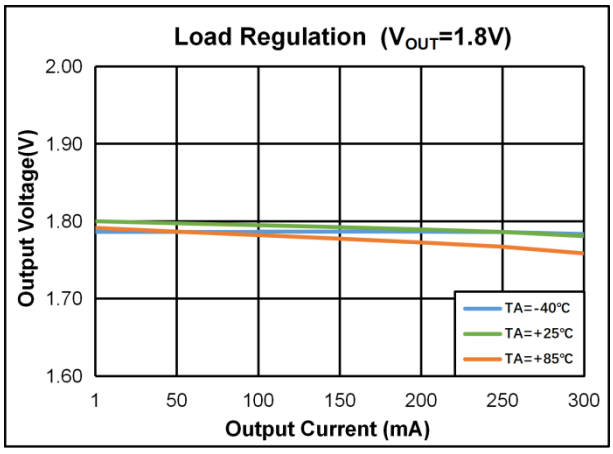
Shutdown Current VS Temperature



Dropout Voltage VS Output Current



Output Voltage VS Input Voltage

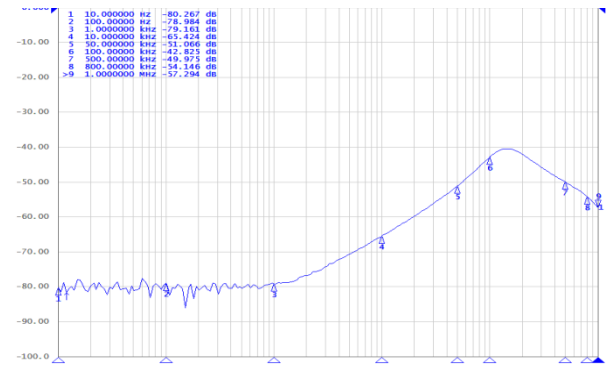


Output Voltage VS Output Current

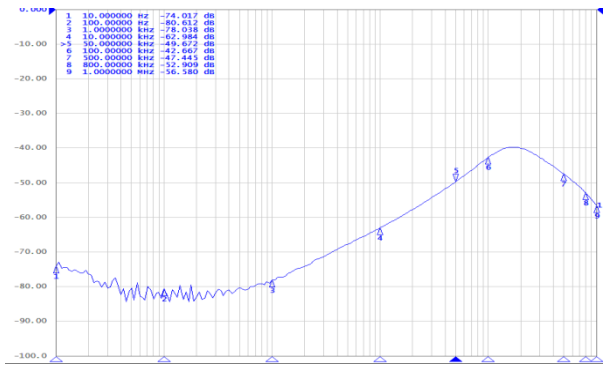
Typical Characteristics(Continued)

VOLTAGE VERSION 1.8V

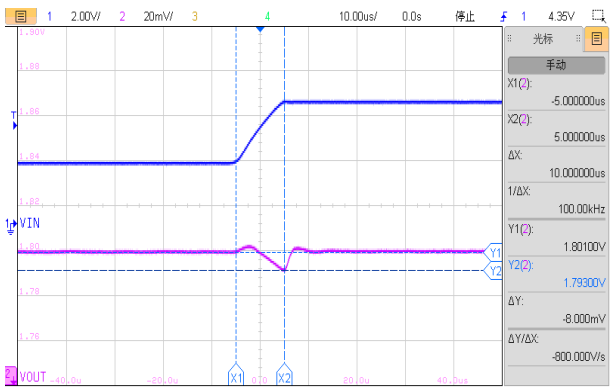
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PSRR (I_{OUT} = 20mA, C_{OUT} = 2.2uF)

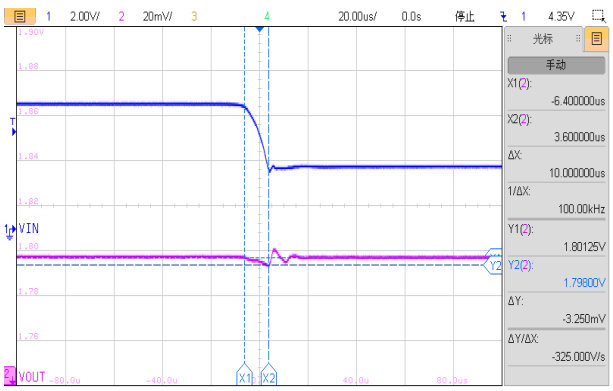


PSRR (I_{OUT} = 100mA, C_{OUT} = 2.2uF)



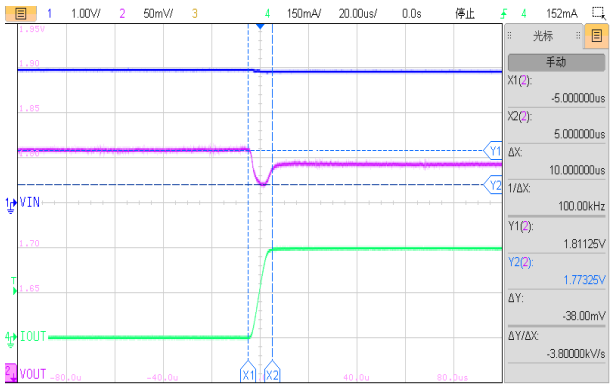
Line Transient Response

V_{IN} = 2.8V~5.5V, V_{OUT} = 1.8V, I_{OUT} = 1mA



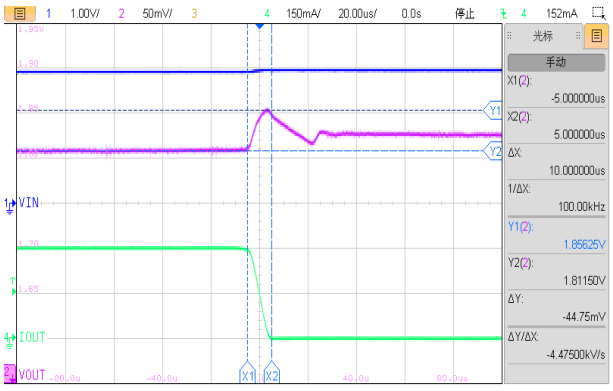
Line Transient Response

V_{IN} = 5.5V~2.8V, V_{OUT} = 1.8V, I_{OUT} = 1mA



Load Transient Response

V_{IN} = 2.8V, V_{OUT} = 1.8V, I_{OUT} = 1mA~300mA



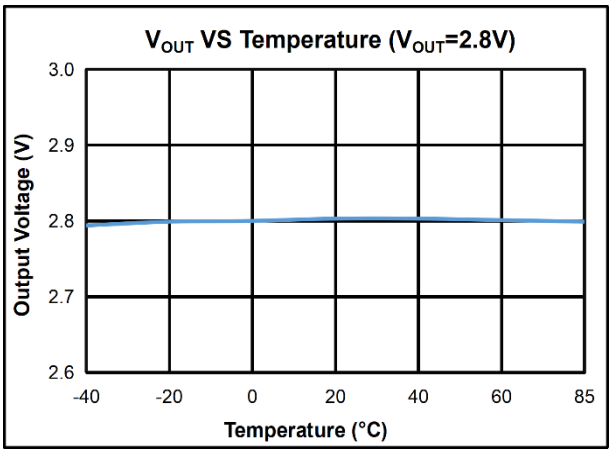
Load Transient Response

V_{IN} = 2.8V, V_{OUT} = 1.8V, I_{OUT} = 300mA~1mA

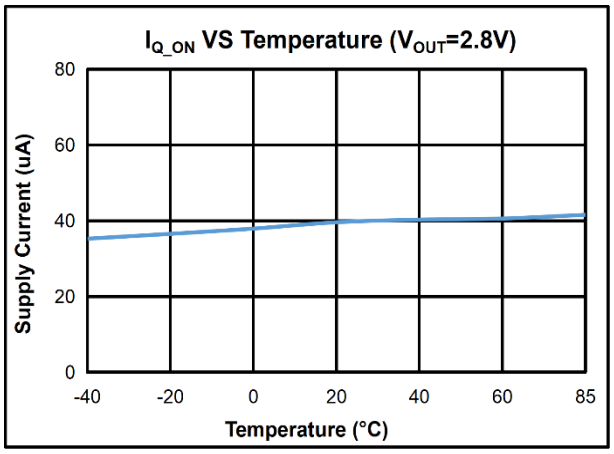
Typical Characteristics(Continued)

VOLTAGE VERSION 2.8V

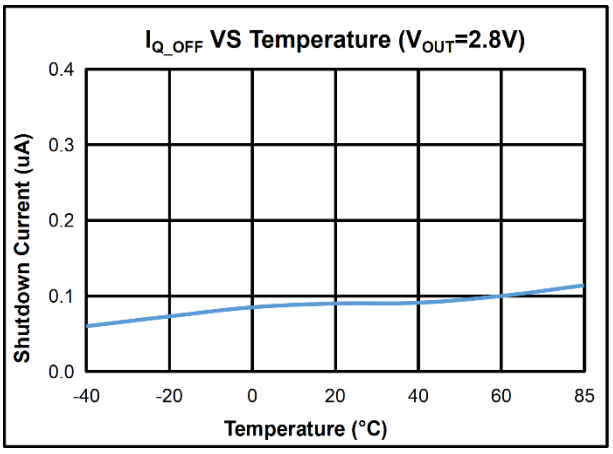
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



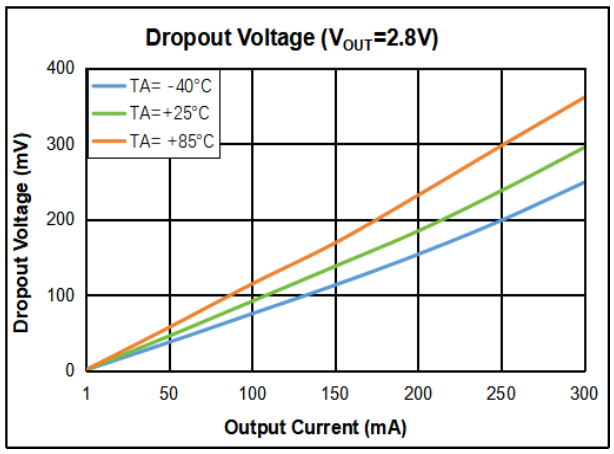
Output Voltage VS Temperature



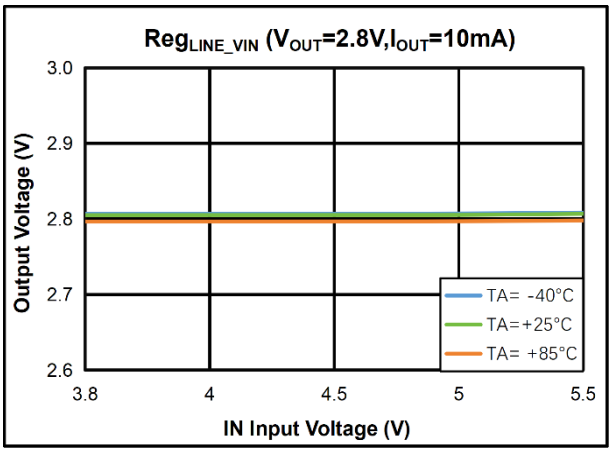
Supply Current VS Temperature



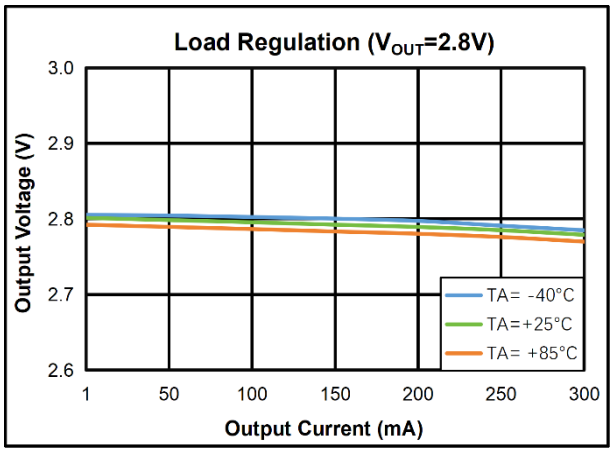
Shutdown Current VS Temperature



Dropout Voltage VS Output Current



Output Voltage VS Input Voltage

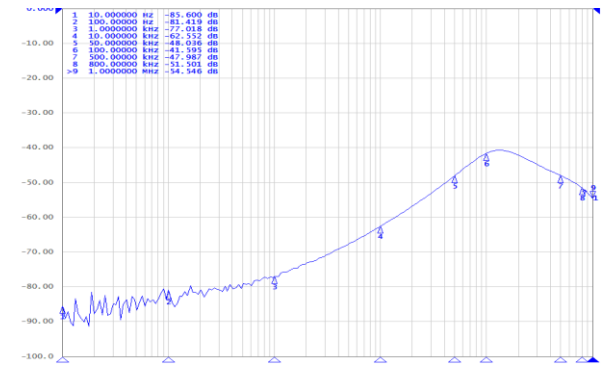


Output Voltage VS Output Current

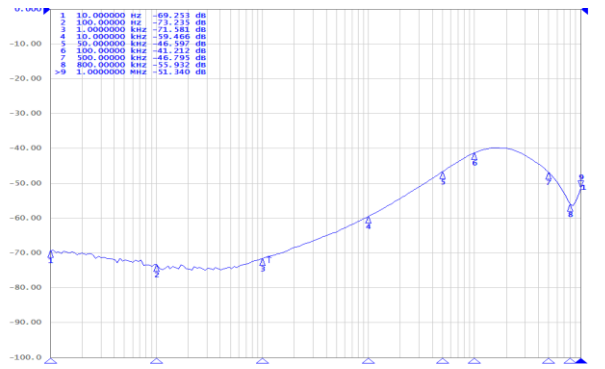
Typical Characteristics(Continued)

VOLTAGE VERSION 2.8V

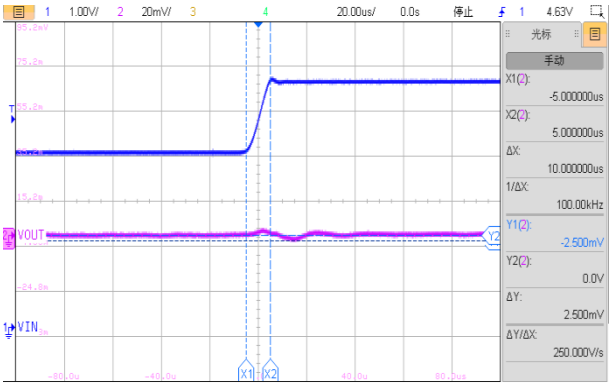
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



PSRR (I_{OUT} = 20mA, C_{OUT} = 2.2uF)

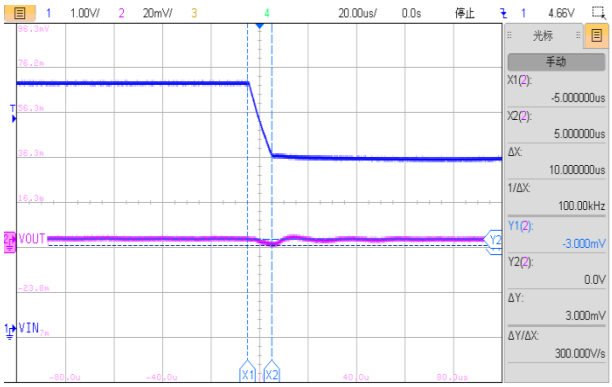


PSRR (I_{OUT} = 100mA, C_{OUT} = 2.2uF)



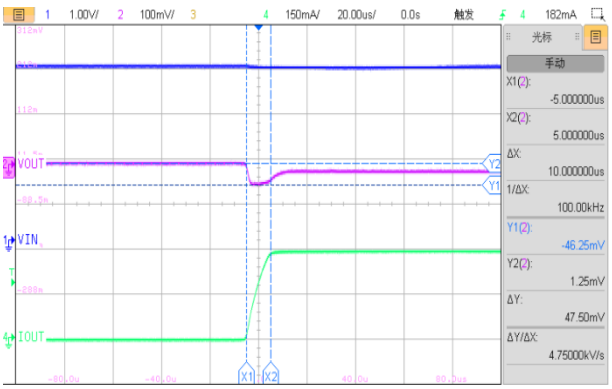
Line Transient Response

V_{IN} = 3.8V~5.5V, V_{OUT} = 2.8V, I_{OUT} = 1mA



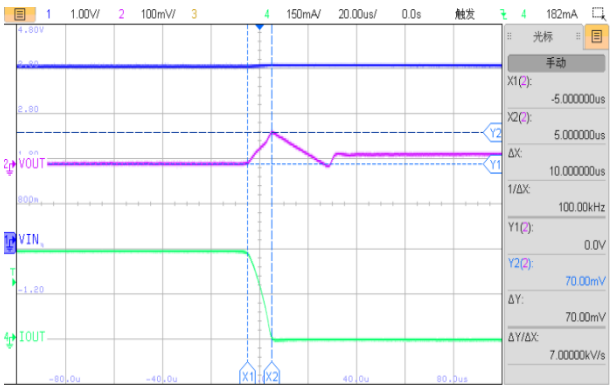
Line Transient Response

V_{IN} = 5.5V~3.8V, V_{OUT} = 2.8V, I_{OUT} = 1mA



Load Transient Response

V_{IN} = 3.8V, V_{OUT} = 2.8V, I_{OUT} = 1mA~300mA



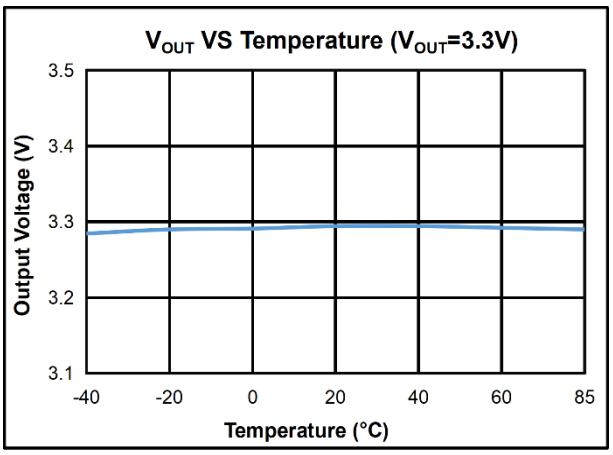
Load Transient Response

V_{IN} = 3.8V, V_{OUT} = 2.8V, I_{OUT} = 300mA~1mA

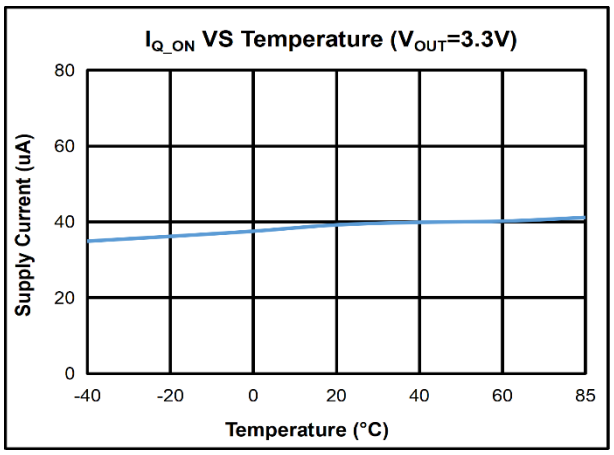
Typical Characteristics(Continued)

VOLTAGE VERSION 3.3V

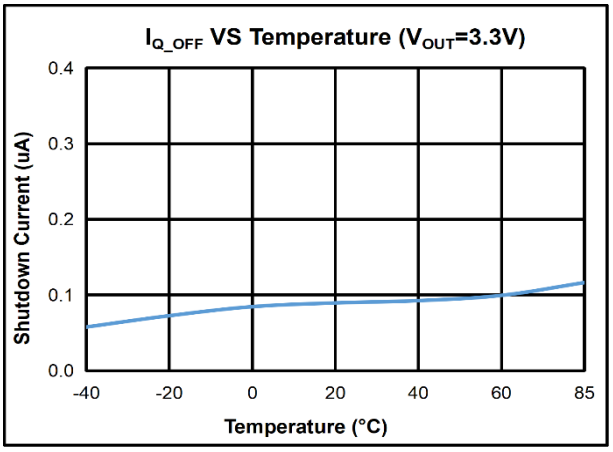
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



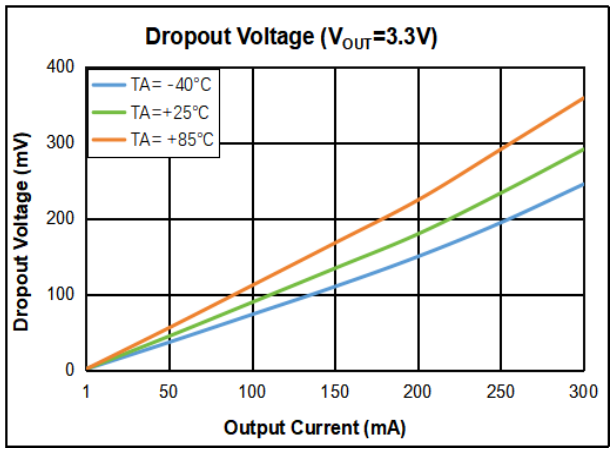
Output Voltage VS Temperature



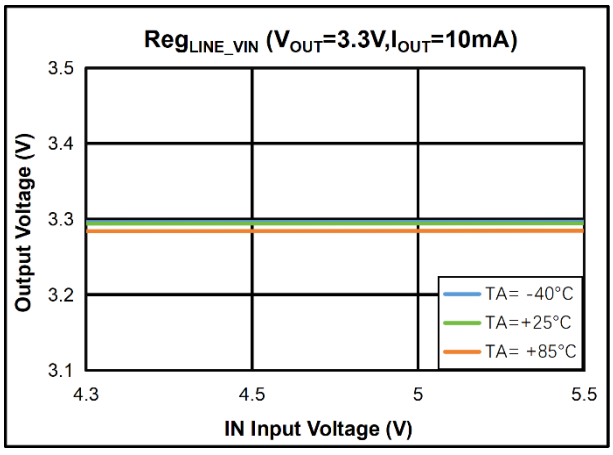
Supply Current VS Temperature



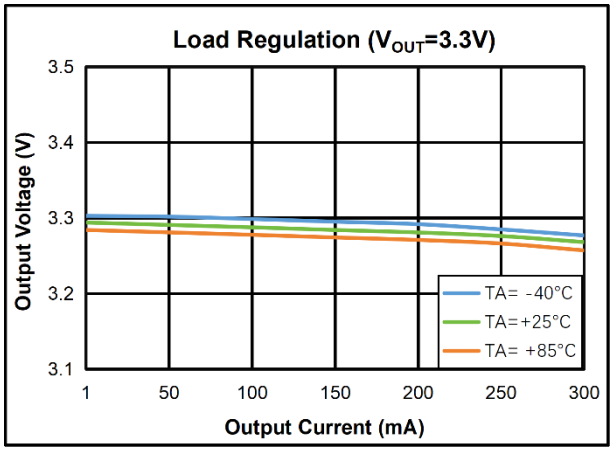
Shutdown Current VS Temperature



Dropout Voltage VS Output Current



Output Voltage VS Input Voltage

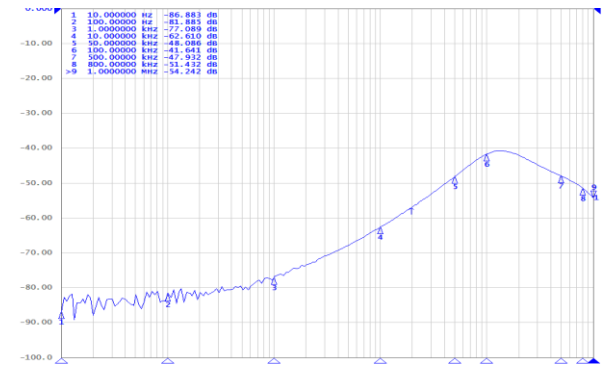


Output Voltage VS Output Current

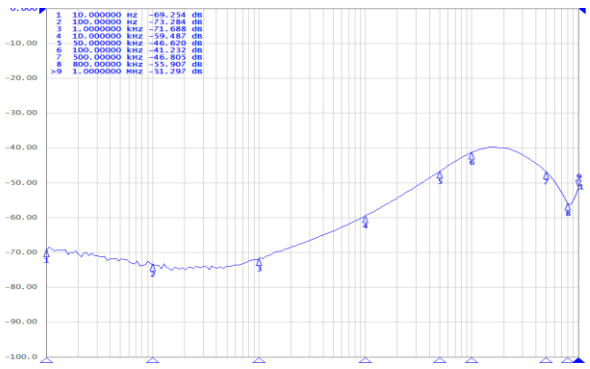
Typical Characteristics(Continued)

VOLTAGE VERSION 3.3V

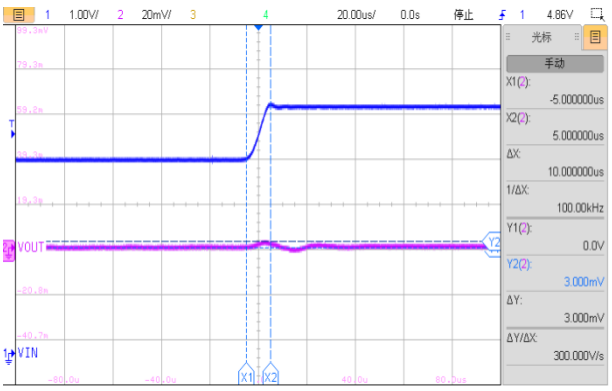
(V_{IN} = V_{EN} = V_{OUT} + 1.0V, I_{OUT} = 1mA, C_{IN} = 1μF, C_{OUT} = 1μF, Typical values are at T_A = 25°C unless otherwise noted)



PSRR (I_{OUT} = 20mA, C_{OUT} = 2.2uF)

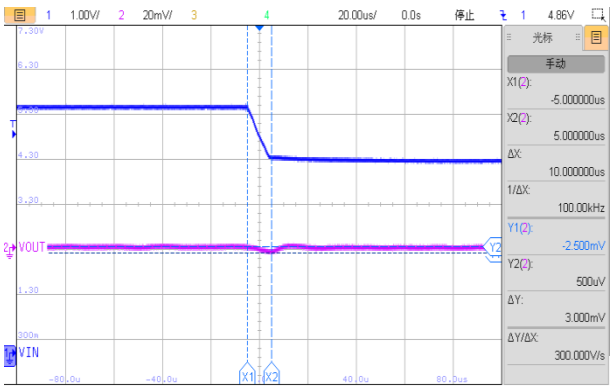


PSRR (I_{OUT} = 100mA, C_{OUT} = 2.2uF)



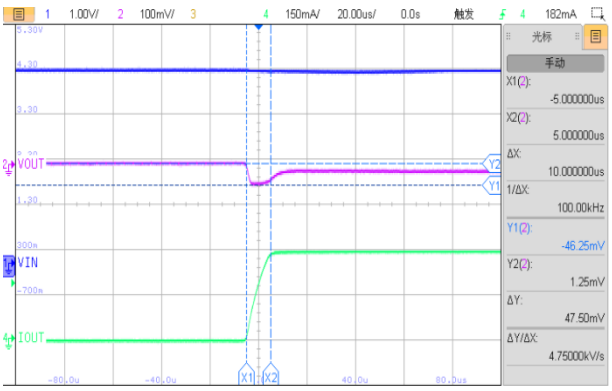
Line Transient Response

V_{IN} = 4.3V~5.5V, V_{OUT} = 3.3V, I_{OUT} = 1mA



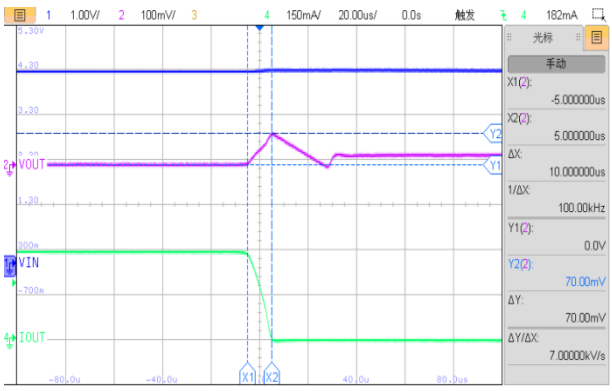
Line Transient Response

V_{IN} = 5.5V~4.3V, V_{OUT} = 3.3V, I_{OUT} = 1mA



Load Transient Response

V_{IN} = 4.3V, V_{OUT} = 3.3V, I_{OUT} = 1mA~300mA

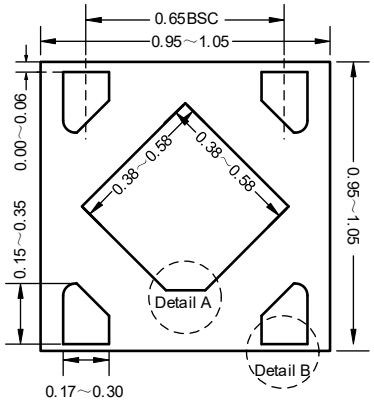


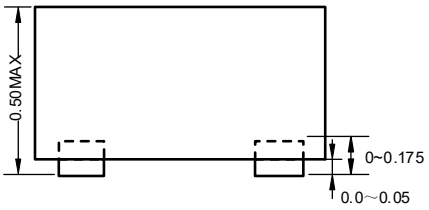
Load Transient Response

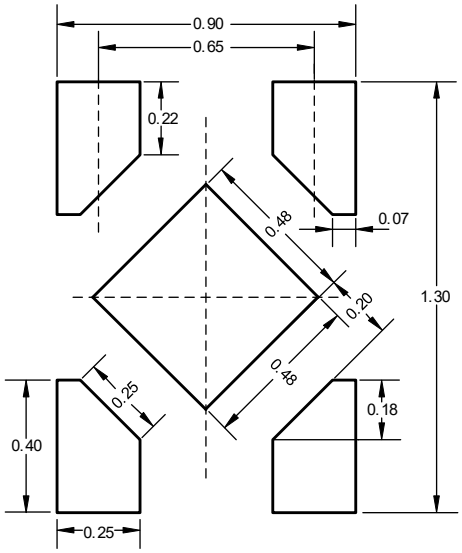
V_{IN} = 4.3V, V_{OUT} = 3.3V, I_{OUT} = 300mA~1mA

Package Dimension

DFN4 (1.0mm × 1.0mm)

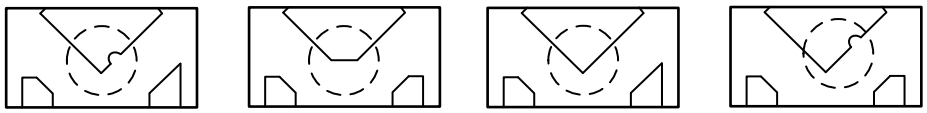






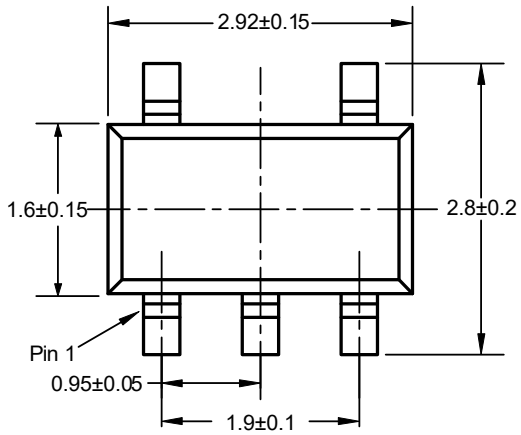
Recommended Land Pattern

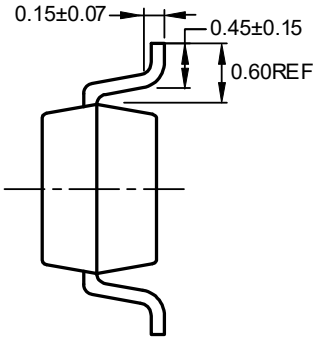
Detail A&B shape

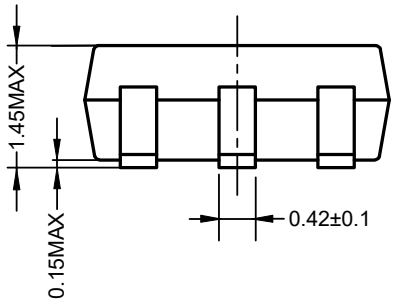


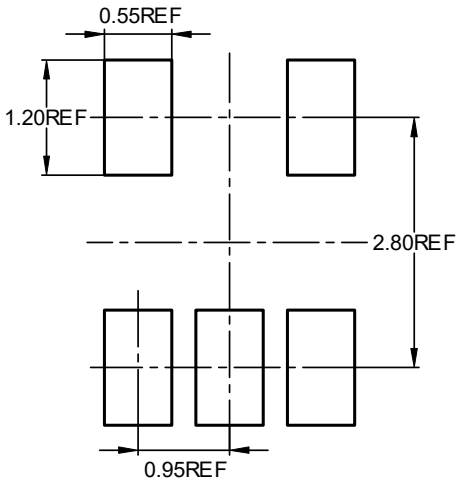
Unit: mm

SOT23-5 (2.9mm × 1.6mm)







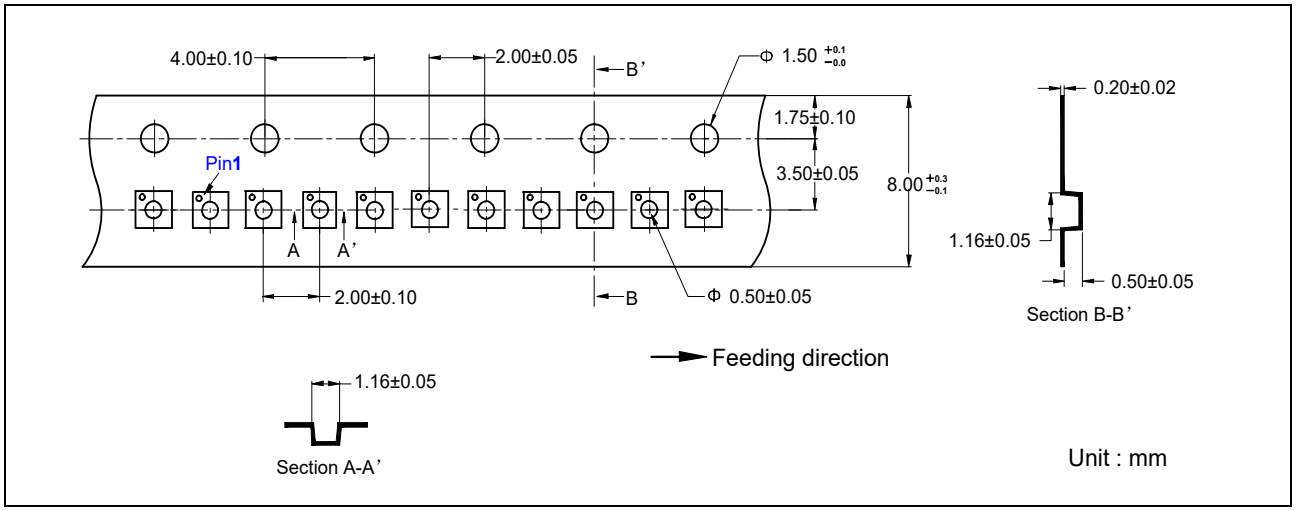


Recommended Land Pattern

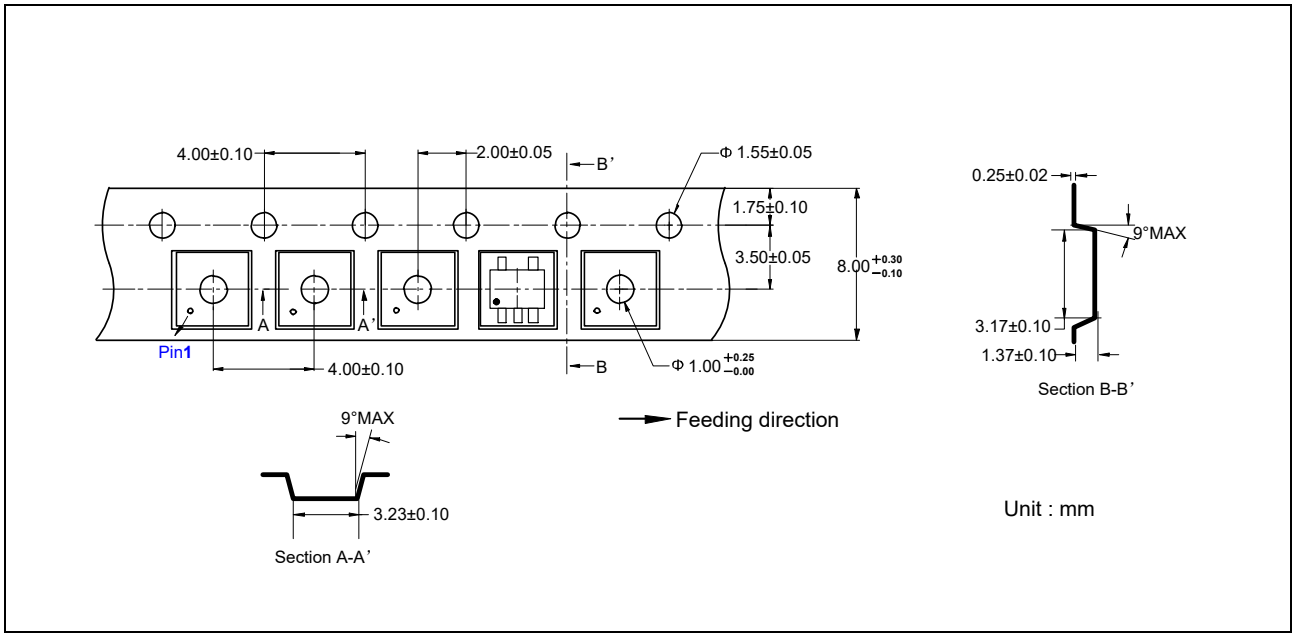
Unit: mm

Tape Information

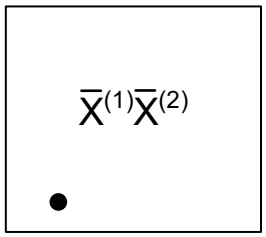
DFN4 (1.0mm × 1.0mm)



SOT23-5 (2.9mm × 1.6mm)



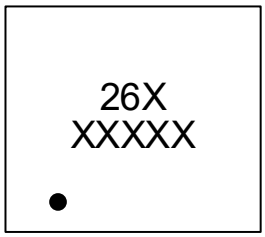
Marking



ET526XXYB

$\overline{X}^{(1)}$ = V_{OUT} Version

$\overline{X}^{(2)}$ = Tracking Number



ET526XX

26 = Part Number

X = V_{OUT} Version

XXXXX = Tracking Number

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
0.0	2025-06-04	Original Version	Yangxiaoxu	Shenjun	Liujiaying
0.1	2026-01-28	Update EC Table and Typical Characteristics	Maruijie	Shenjun	Liujiaying
0.2	2026-02-28	Update EC Table	Maruijie	Shenjun	Liujiaying
1.0	2026-05-11	Official Version	Yangxiaoxu	Shenjun	Liujiaying
1.1	2026-05-20	Update EC Table and Typical Characteristics	Yangxiaoxu	Shenjun	Liujiaying
1.2	2026-05-27	Update EC Table and Typical Characteristics	Yangxiaoxu	Shenjun	Liujiaying
1.2.a	2026-06-09	Update Noise and V_{ENL}	Yangxiaoxu	Shenjun	Liujiaying
1.2.b	2026-08-20	Add Marking	Yangxiaoxu	Shenjun	Liujiaying
1.2.c	2026-09-07	Add V_{OUT}=1.2V Characteristics	Xutao	Shenjun	Liujiaying