General Description

The Devices is a low-dropout (LDO) voltage regulator with enable function that operates from a 1.2V to 5.5V supply. It provides up to 300mA of output current in miniaturized packaging.

The feature of 2μA low quiescent current and 0.5μA shutdown current are ideal for the battery application with long service life. The other features include current limit function, over temperature protection and output discharge function.

Features

- 2μA Ground Current at no Load
- ±2% Output Accuracy
- 300mA Output Current
- 10nA Disable Current (by option)
- Wide Operating Input Voltage Range: 1.2V to 5.5V
- Dropout Voltage: 0.18V at 300mA (V_{OUT}=3.3V)
- Support Fixed Output Voltage 1.2V, 1.5V, 1.6V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V
- Stable with Ceramic or Tantalum Capacitor
- Current Limit Protection
- Over-Temperature Protection
- SOT23-5 Package

Applications

- Portable, Battery Powered Equipment
- Low Power Microcontrollers
- Laptop, Palmtops and PDAs
- Wireless Communication Equipment
- Audio/Video Equipment

Ordering Information

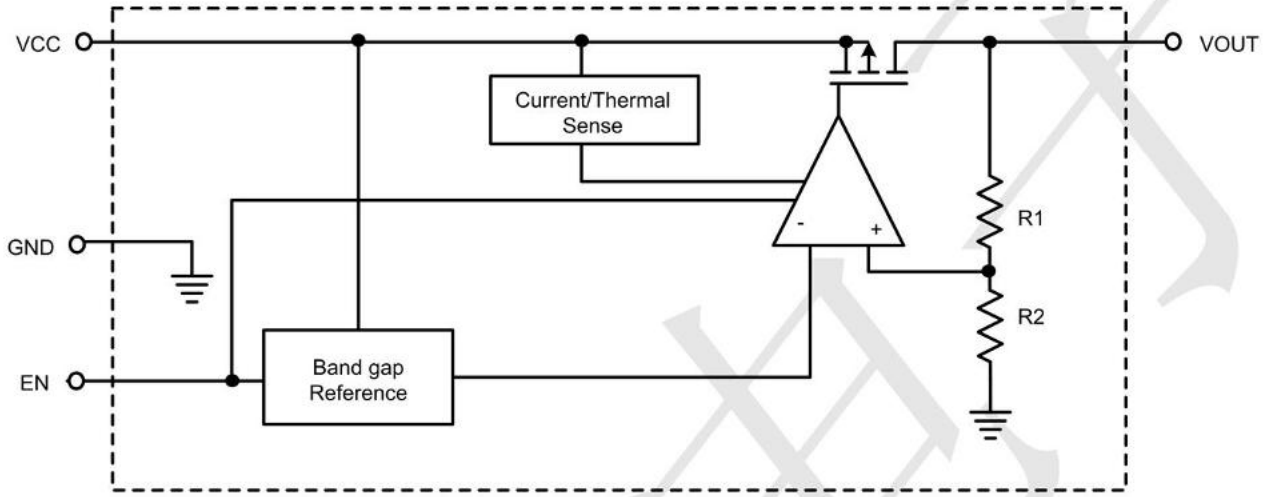
TPS79318DBVR-TP

- DBVR:SOT23-5 Package
- Output voltage: 12=1.2V, 15=1.5V, 18=1.8V, 30=3.0V, 33=3.3V

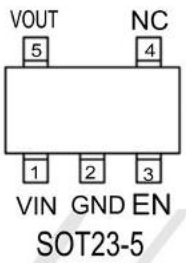
TPS79333DBVR-TP Marking: PHUI

TPS79318DBVR-TP Marking: PHHI

BLOCK DIAGRAM



PIN CONFIGURATION



Pin No	Pin Name	Pin Function
1	VIN	Input of Supply Voltage.
2	GND	Ground
3	EN	Enable Control Input.
4	NC	No Internal Connection.
5	VOUT	Output of the Regulator

Absolute Maximum Rating (T_A=25°C unless otherwise noted)

- VIN, VOUT, , EN to GND ---------- –0.3V to 6.5V
- VOUT to VIN ---------- –6.5V to 0.3V
- Power Dissipation, P_D @ T_A = 25°C
  SOT-23-5 ---------- 0.43W
- Package Thermal Resistance (Note 2)
  SOT-23-5, θ_{JA} ---------- 230.6°C/W
  SOT-23-5, θ_{JC} ---------- 21.8°C/W
- Lead Temperature (Soldering, 10 sec.) ---------- 260°C
- Junction Temperature ---------- 150°C
- Storage Temperature Range ---------- –65°C to 150°C
- ESD Susceptibility (Note 3)
  HBM (Human Body Model) ---------- 2kV

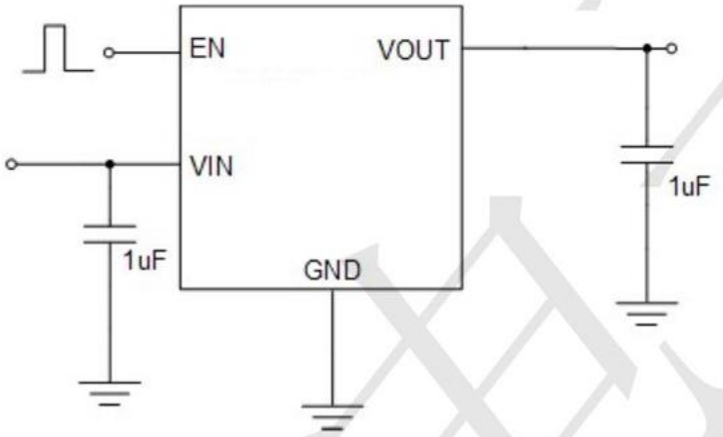
Electrical Characteristics (T =25°C unless otherwise noted)

(V_{OUT} + 1 < V_{IN} < 5.5V, T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Fixed Output Voltage Range	V_{OUT}		0.8	--	3.45	V
DC Output Accuracy		I_{LOAD} = 1mA	–2	--	2	%
Dropout Voltage (I_{LOAD} = 300mA) (Note 5)	V_{DROP}	0.8V ≤ V_{OUT} < 1.05V	--	0.7	0.97	V
		1.05V ≤ V_{OUT} < 1.2V	--	0.5	0.92	
		1.2V ≤ V_{OUT} < 1.5V	--	0.4	0.57	
		1.5V ≤ V_{OUT} < 1.8V	--	0.3	0.47	
		1.8V ≤ V_{OUT} < 2.1V	--	0.24	0.33	
		2.1V ≤ V_{OUT} < 2.5V	--	0.21	0.3	
		2.5V ≤ V_{OUT} < 2.8V	--	0.18	0.25	
		2.8V ≤ V_{OUT} < 3V	--	0.16	0.23	
		3V ≤ V_{OUT}	--	0.15	0.2	
Dropout Voltage (I_{LOAD} = 200mA) (Note 6)	V_{DROP}	1.8V ≤ V_{OUT} < 2.1V	--	0.16	0.2	V
V_{CC} Consumption Current	I_Q	I_{LOAD} = 0mA, V_{OUT} ≤ 5.5V V_{IN} ≥ V_{OUT} + V_{DROP}	--	2	4	μA

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Shutdown GND Current (Note 7)		V_{EN} = 0V		--	0.1	0.5	μA
Shutdown Leakage Current (Note 7)		V_{EN} = 0V, V_{OUT} = 0V		--	0.1	0.5	μA
EN Input Current	I_{EN}	V_{EN} = 5.5V		--	--	0.1	μA
Line Regulation	ΔLINE	I_{LOAD} = 1mA	1.2V ≤ V_{IN} < 1.5V	--	0.3	0.6	%
			1.5V ≤ V_{IN} < 1.8V	--	0.15	0.3	
			1.8V ≤ V_{IN} ≤ 5.5V	--	0.13	0.35	
Load Regulation	ΔLOAD	1mA < I_{LOAD} < 300mA		--	0.5	1	%
Power Supply Rejection Ratio	PSRR	V_{IN} = 3V, I_{LOAD} = 50mA, C_{OUT} = 1μF, V_{OUT} = 2.5V, f = 1kHz		--	75	--	dB
Output Voltage Noise		C_{OUT} = 1μF, I_{LOAD} = 150mA, BW = 10Hz to 100kHz, V_{IN} = V_{OUT} + 1V	V_{OUT} = 0.8V	--	38	--	μV_{RMS}
			V_{OUT} = 1.2V	--	46	--	
			V_{OUT} = 1.8V	--	48	--	
			V_{OUT} = 3.3V	--	51	--	
Output Current Limit	I_{LIM}	V_{OUT} = 90% of $V_{OUT(NOM)}$		350	600	--	mA
Enable Threshold Voltage H-Level	V_{ENH}	V_{IN} = 5V		0.5	0.7	0.9	V
Enable Threshold Voltage L-Level	V_{ENL}	V_{IN} = 5V		0.4	0.65	0.85	
Thermal Shutdown Temperature	T_{SD}	I_{LOAD} = 30mA, V_{IN} ≥ 1.5V		--	150	--	°C
Thermal Shutdown Hysteresis	ΔT_{SD}			--	20	--	°C
Discharge Resistance		EN = 0V, V_{OUT} = 0.1V		--	80	--	Ω

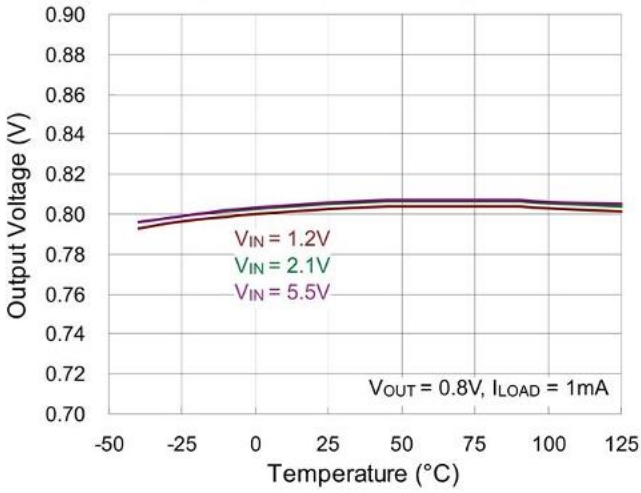
TYPICAL APPLICATION



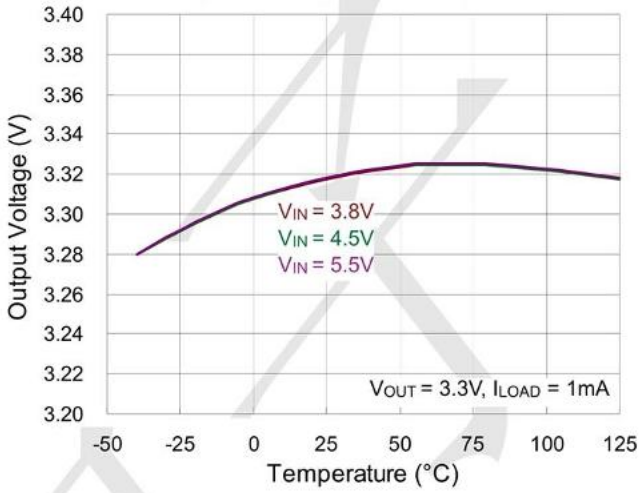
Application circuit of Fixed V_{OUT} LDO with enable function

Typical Operating Characteristics

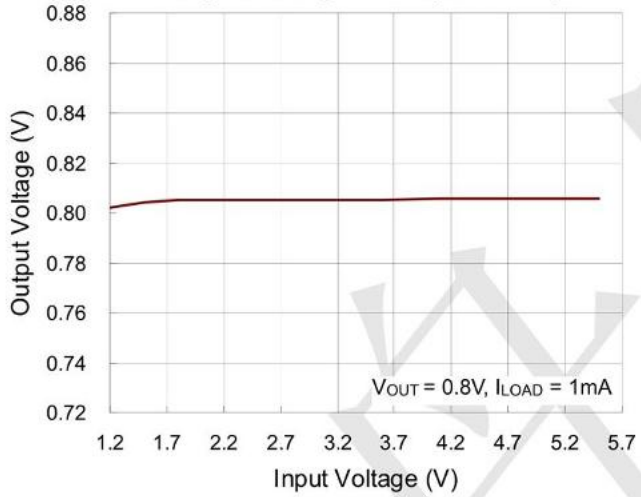
Output Voltage vs. Temperature



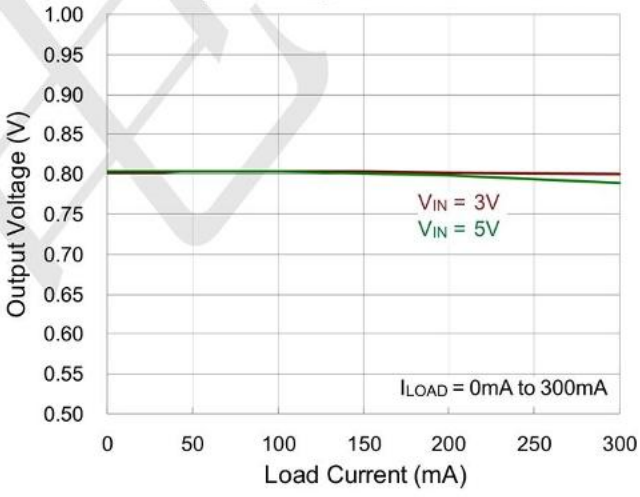
Output Voltage vs. Temperature



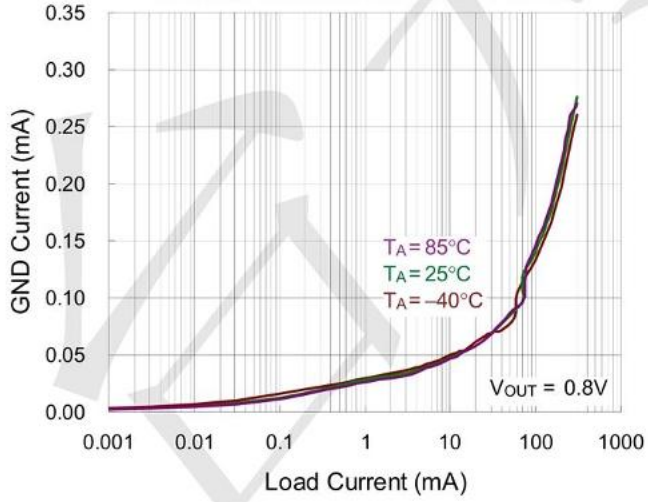
Output Voltage vs. Input Voltage



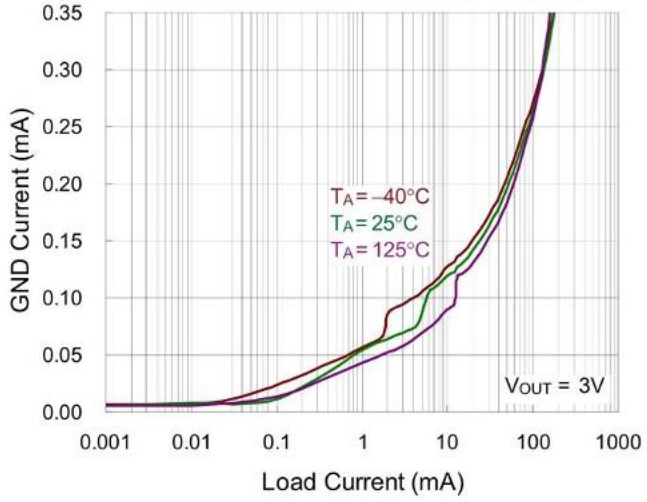
Output Voltage vs. Load Current



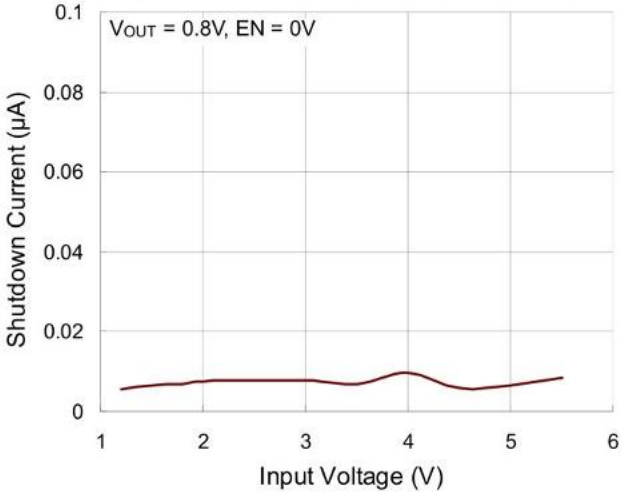
Ground Current vs. Load Current



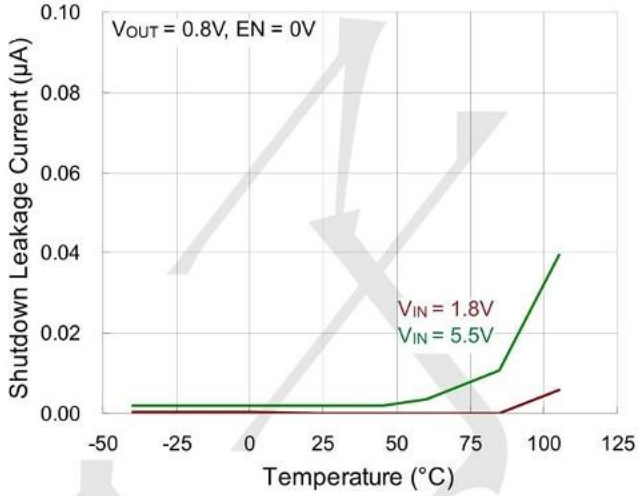
Ground Current vs. Load Current



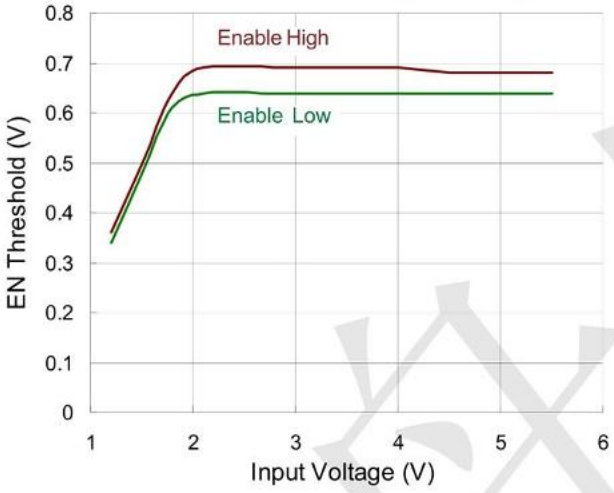
Shutdown Current vs. Input Voltage



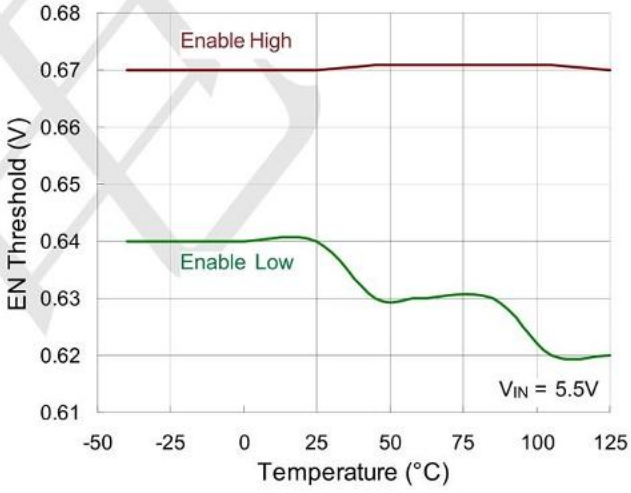
Shutdown Leakage Current vs. Temperature



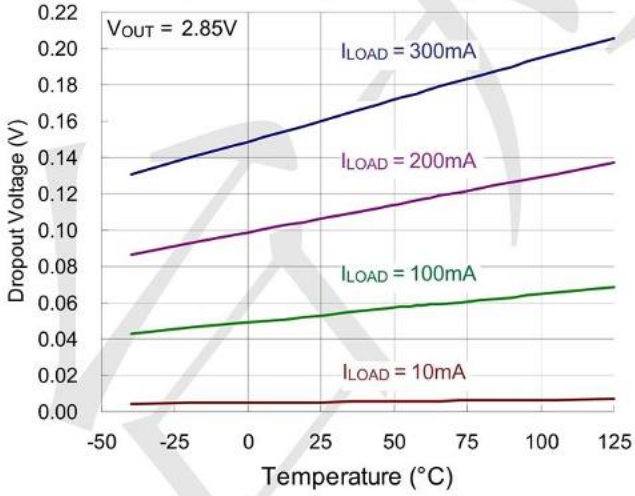
EN Threshold vs. Input Voltage



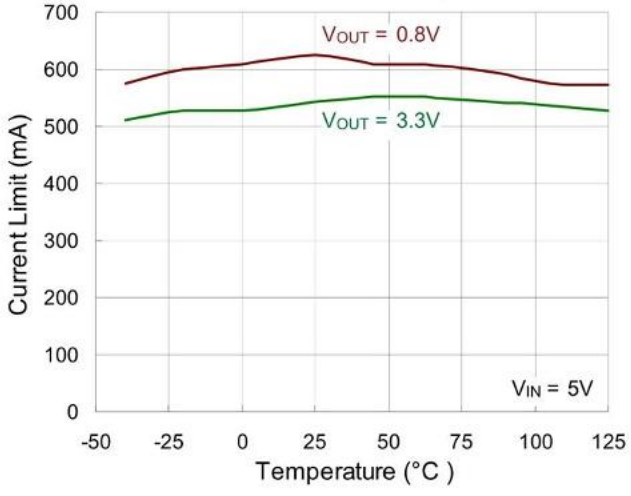
EN Threshold vs. Temperature



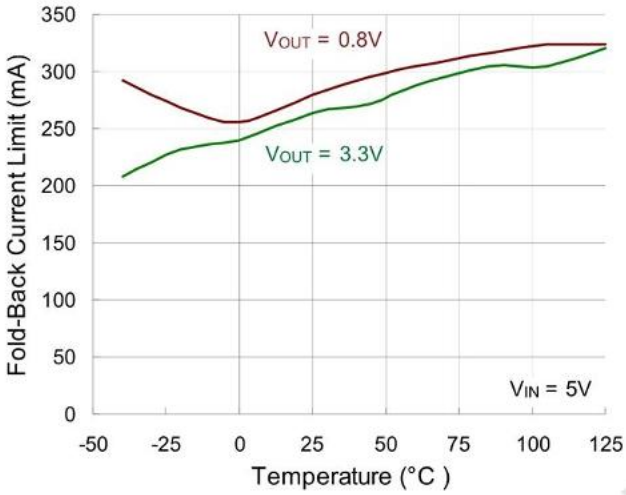
Dropout Voltage vs. Temperature



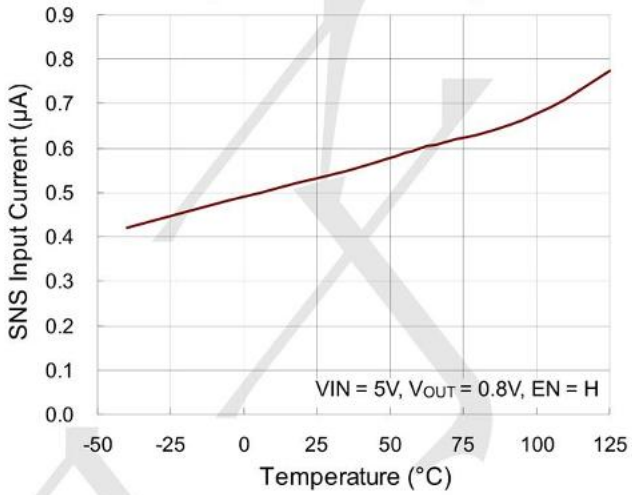
Current Limit vs. Temperature



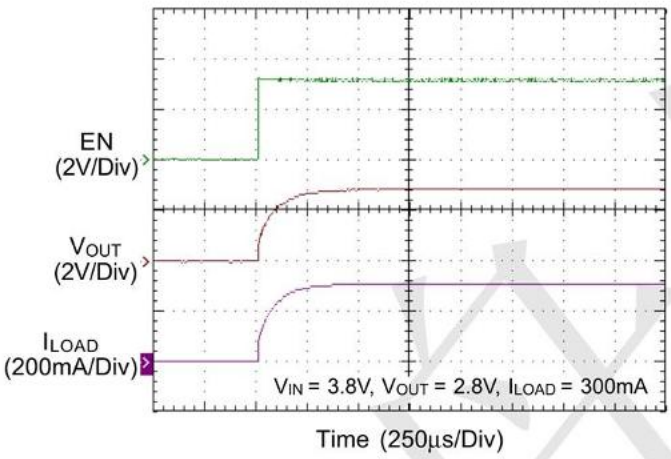
Fold-Back Current Limit vs. Temperature



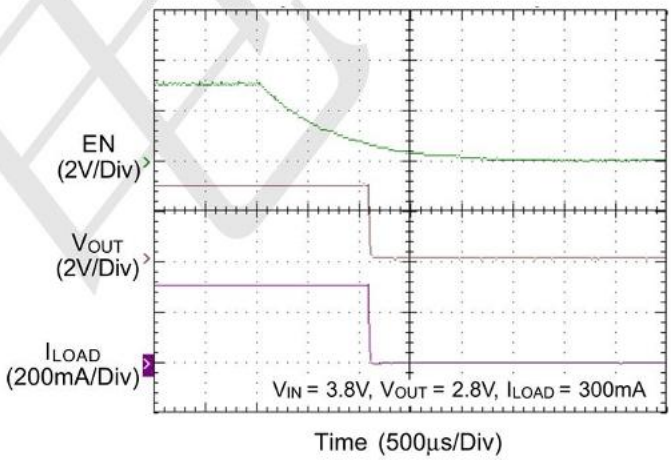
SNS Input Current vs. Temperature



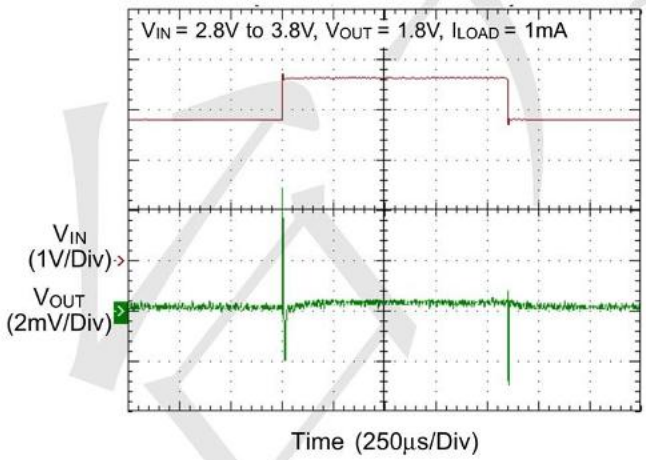
Power On from EN



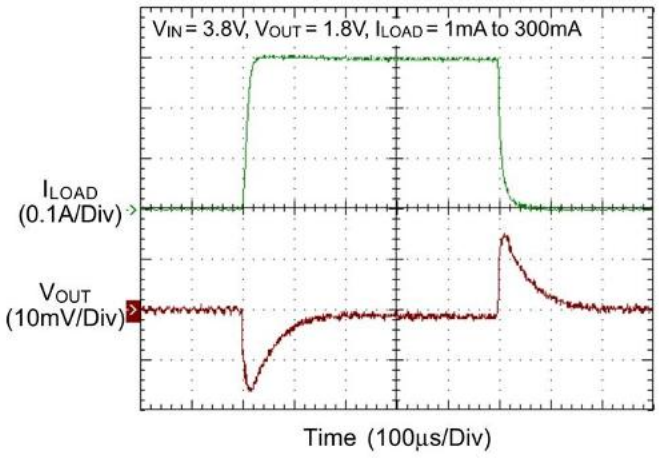
Power Off from EN



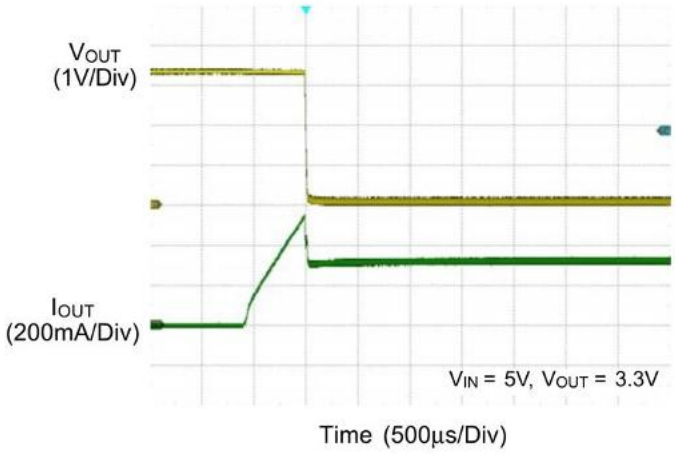
Line Transient



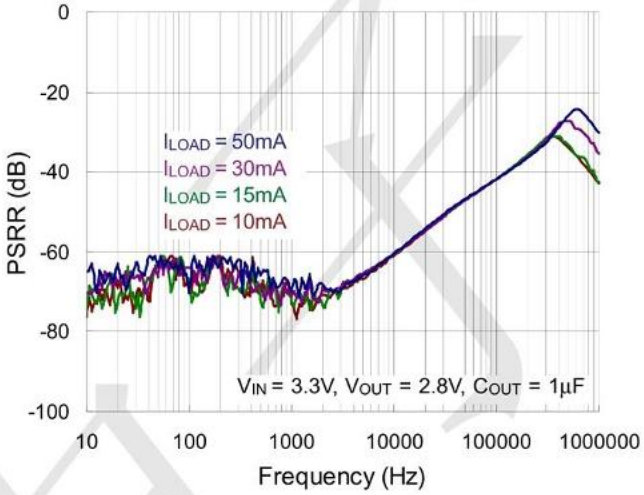
Load Transient



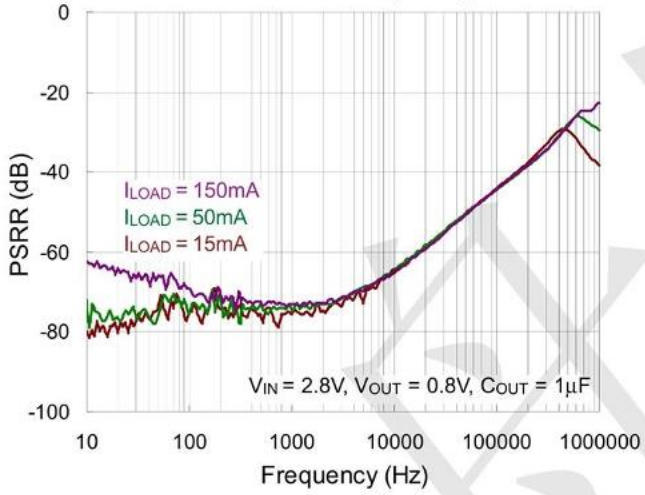
Output Current Limit Protection



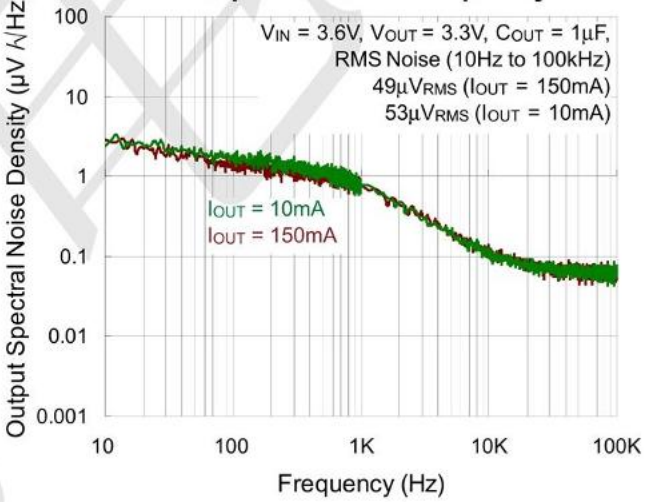
PSRR vs. Frequency



PSRR vs. Frequency

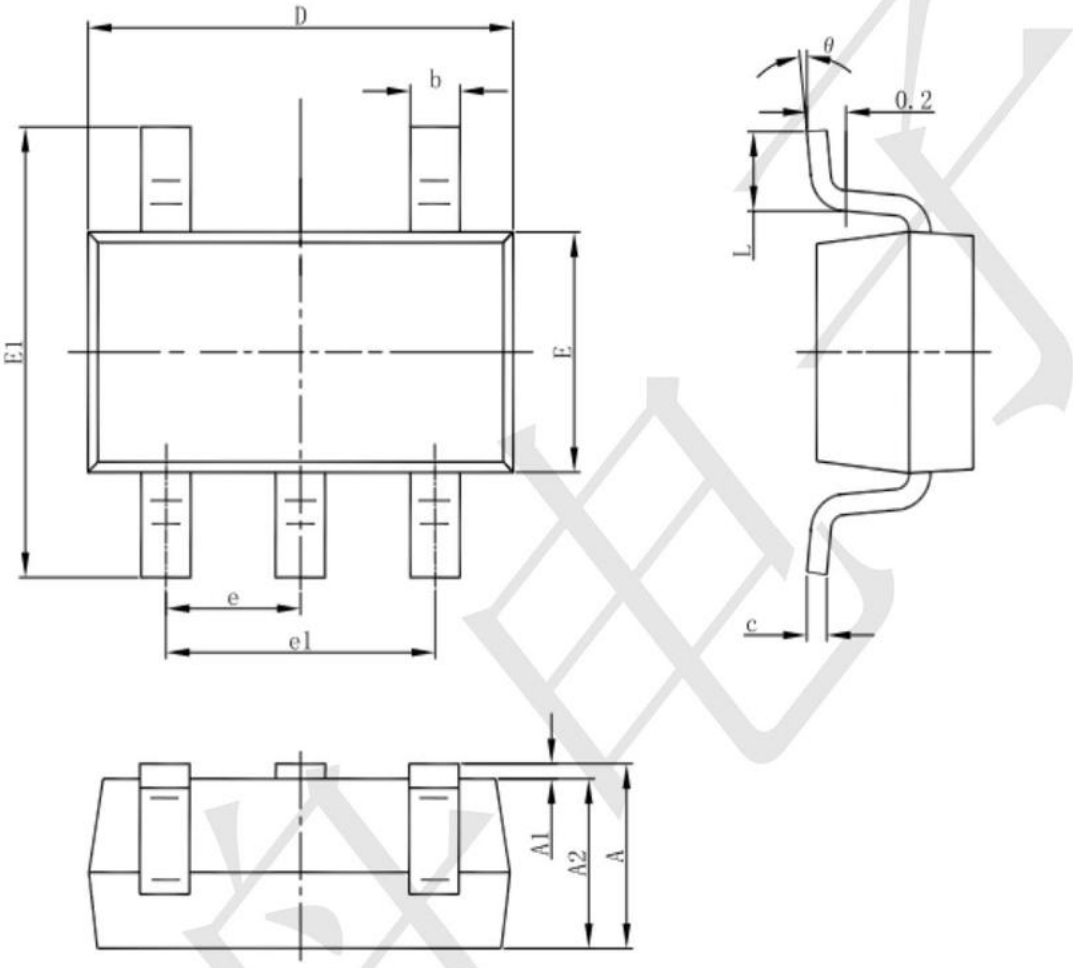


Output Noise vs. Frequency



Package informantion

3-pin SOT23-5 Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°