General Description

The TX833CXX is ultra-low quiescent current regulator features and low dropout voltage. With 2μA quiescent current at no load. The TX833CXX retains all of the features that are common to low dropout regulators including a low dropout PMOS pass device, short circuit protection, and thermal shutdown.

The TX833CXX has 30V maximum operating voltage limit, excellent load transient response, and -40°C to 85°C operating temperature range, and ±2% output voltage tolerance over the entire output current, input voltage, and temperature range.

The TX833CXX regulators are available in standard SOT23-3, SOT23-5 and SOT89 packages.

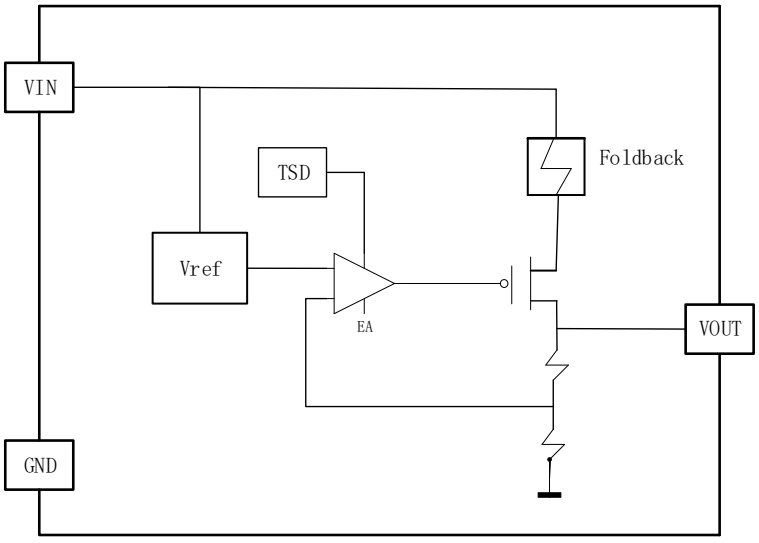
Features

- Vin Range up to 30V
- Output range:2.6V～5.0V
- Maximum output current: 300mA
- PSRR:70dB @1KHz
- Dropout voltage:320mV @ IOUT=100mA
- Ultra low quiescent current:1.5μA Typ.
- Output voltage tolerances of ±2% Over the temperature range
- Internal thermal overload protection
- Built-in Short-Circuit Protection, Current Limiter

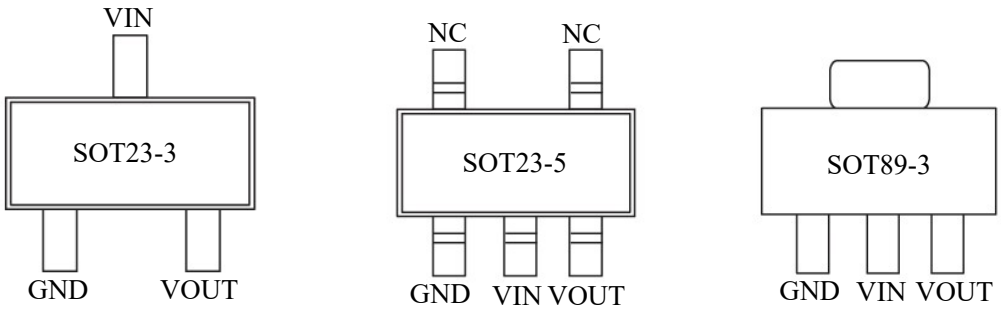
Applications

- E-meters, Water Meters and Gas Meters
- Cell-phones, radiophone, digital cameras
- Fire Alarm, Smoke Detector
- Appliances and White Good

Block Diagram



Pin Assignment



Selection Table

Model No	Package	Output Voltage	Marking
TX833C27Q	SOT89-3	2.7V	TX833C27Q
TX833C27S	SOT23-3		TX833C27S
TX833C27M	SOT23-5		TX833C27M
TX833C30Q	SOT89-3	3.0V	TX833C30Q
TX833C30S	SOT23-3		TX833C30S
TX833C30M	SOT23-5		TX833C30M
TX833C33Q	SOT89-3	3.3V	TX833C33Q
TX833C33S	SOT23-3		TX833C33S
TX833C33M	SOT23-5		TX833C33M
TX833C36Q	SOT89-3	3.6V	TX833C36Q
TX833C36S	SOT23-3		TX833C36S
TX833C36M	SOT23-5		TX833C36M
TX833C40Q	SOT89-3	4.0V	TX833C40Q
TX833C40S	SOT23-3		TX833C40S
TX833C40M	SOT23-5		TX833C40M
TX833C44Q	SOT89-3	4.4V	TX833C44Q
TX833C44S	SOT23-3		TX833C44S
TX833C44M	SOT23-5		TX833C44M
TX833C50Q	SOT89-3	5.0V	TX833C50Q
TX833C50S	SOT23-3		TX833C50S
TX833C50M	SOT23-5		TX833C50M

Absolute Maximum Ratings

Power Consumption (SOT89-3)	500mW		Supply Voltage	-0.3V to 36V
Power Consumption (SOT23-3)	250mW		Storage Temperature	-65℃ to 150℃
Power Consumption (SOT23-5)	250mW		Operating Temperature	-40℃ to 85℃
Junction Temperature	-40℃ to 125℃		Output Current	300mA

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.

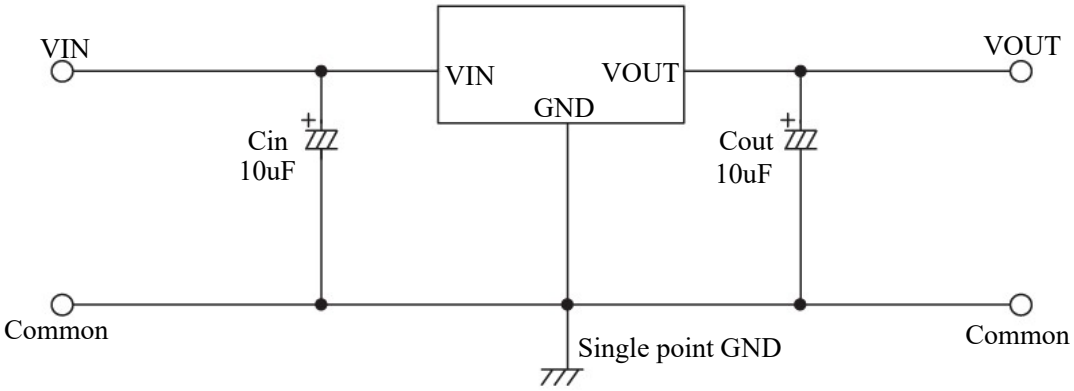
Electrical Characteristics

The following specifications apply for V_{IN}=12V, I_{OUT}=1mA, C_{IN}=C_{OUT}=10uF, T_J=25℃, unless specified otherwise.

SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage		2.7	--	30	V
V_{OUT}	Output Range		2.6	---	5.0	V
ΔV_{OUT}	Output Voltage Accuracy		-2	V_{OUT}	2	%
I_Q	Quiescent Current	T_J = 25℃	---	1.5	3	μA
I_{LIMIT}	Current Limit		270	320	---	mA
V_{DROP}	Dropout Voltage	I_{OUT}=100mA	---	320	---	mV
		I_{OUT}=250mA	---	900	---	
$\triangle V_{LINE}$	Line Regulation	V_{IN} = V_{OUT} + 1V to 40V, or V_{IN} = 5V to 40V, if V_{OUT}< 4V	---	10	30	mV
$\triangle V_{LOAD}$	Load Regulation	I_{OUT} = 1mA to 100mA	---	0.4	---	%
		I_{OUT} = 1mA to 250mA	---	1	---	
PSRR	Power Supply Rejection Rate	F=1KHz	---	70	---	dB
		F=10KHz	---	60	---	
T_{SD}	Thermal Shutdown		---	140	---	℃
T_{HY}	Thermal Shutdown Hysteresis		---	20	---	℃

Note: The parameters of Cin and Cout must be greater than 10uF.

Application Circuits

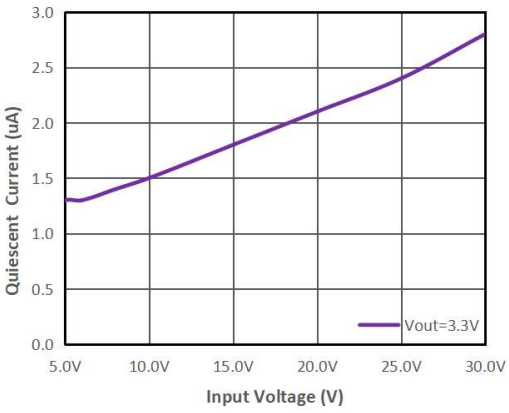


Note: The parameters of Cin and Cout must be greater than 10uF.

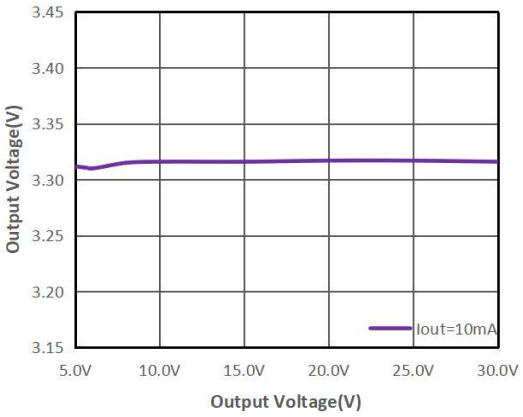
Typical Performance Characteristics

C_{IN}=10uF, C_{OUT}=10uF, V_{IN}=5.3V, V_{OUT}=3.3V T_J=25°C, unless specified otherwise

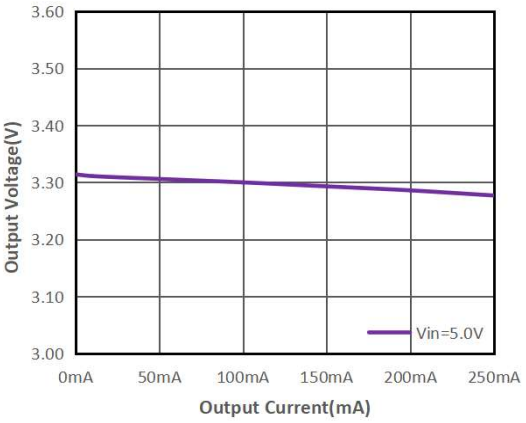
1) Quiescent Current VS Input Voltage



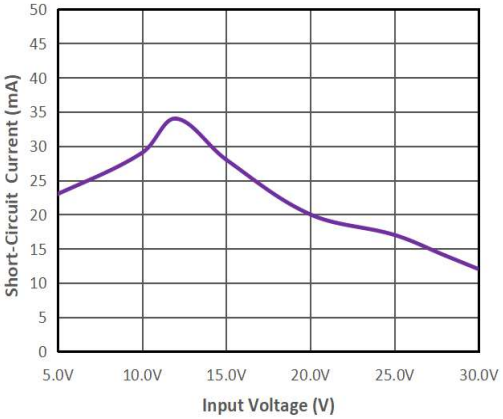
2) Output Voltage VS Input Voltage



3) Output Voltage VS Output Current

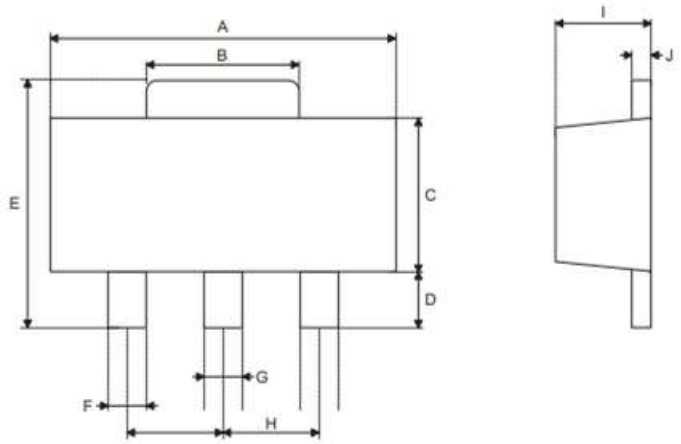


4) Input Voltage VS Short-Circuit Current



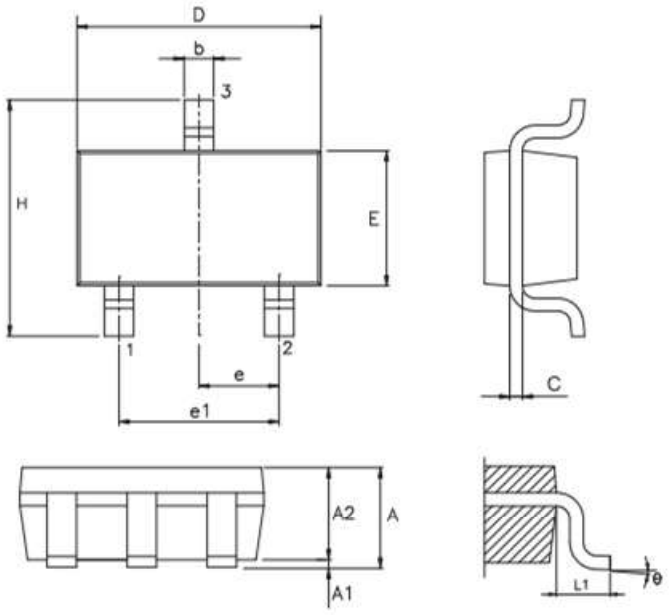
Package Information

① SOT-89-3



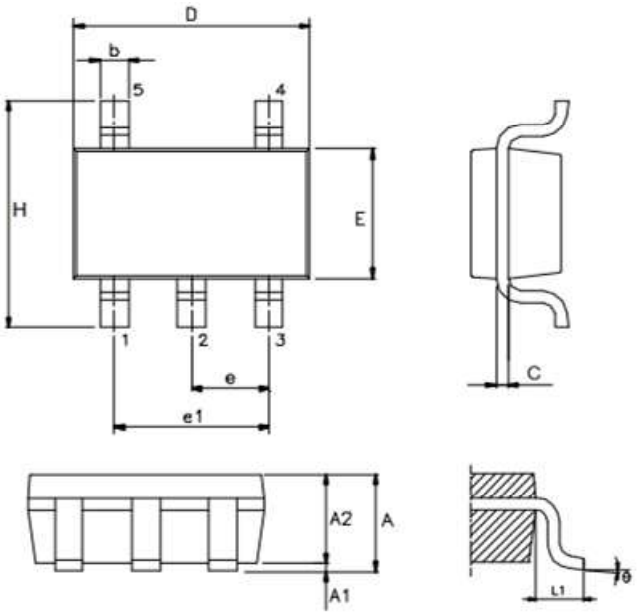
Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	4.40	—	4.60
B	1.35	—	1.83
C	2.29	—	2.60
D	0.89	—	1.20
E	3.94	—	4.25
F	0.36	—	0.48
G	0.44	—	0.56
H	—	1.50 BSC	—
I	1.40	—	1.60
J	0.35	—	0.44

② SOT-23-3



Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	—	—	1.45
A1	—	—	0.15
A2	0.9	1.15	1.3
b	0.3	—	0.5
c	0.08	—	0.22
D	—	2.90 BSC	—
E	—	1.60 BSC	—
e	—	0.95 BSC	—
el	—	1.90 BSC	—
H	—	2.80 BSC	—
L	—	0.60 BSC	—
0	0°	—	8°

③ SOT-23-5



Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	—	—	1.45
A1	—	—	0.15
A2	0.9	1.15	1.3
b	0.3	—	0.5
c	0.08	—	0.22
D	—	2.90 BSC	—
E	—	1.60 BSC	—
e	—	0.95 BSC	—
el	—	1.90 BSC	—
H	—	2.80 BSC	—
L	—	0.60 BSC	—
0	0°	—	8°

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