

General Description

TCS3187Bseries is a high efficiency, low ripple , high frequency PFM control DC-DC boost converter.

TCS3187Bseries requires only three external components, the device can change the low voltage input of battery step-up into output voltages for electronic devices.

Applications

- 1 to 3 batteries of electronic equipment
- Electronic dictionaries, digital cameras
- LED flashlights, LED Light,
- Blood pressure monitors, MP3, remote control toys,
- Wireless headsets,wireless mouse, keyboard
- Medical devices, anti-lost alarm,
- Car alarm,charger,VCR,PDA and other handheld electronic devices

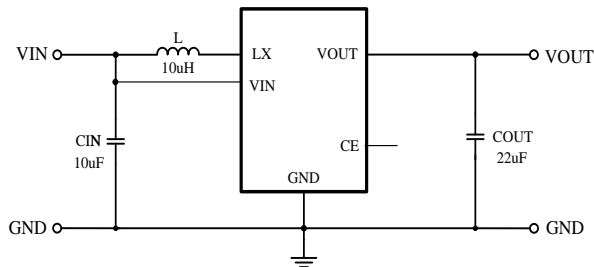
Features

- Maximum efficiency: 94%
- Maximum operating frequency: 300KHz
- Low Quiescent Current: 8 μ A
- Output Voltage: 1.8V ~ 5.0V (step 0.1V)
- Output Accuracy: \pm 2.5%
- Input voltage: 0.9V ~ 6.5V
- low ripple and low noise
- Small volume

Package

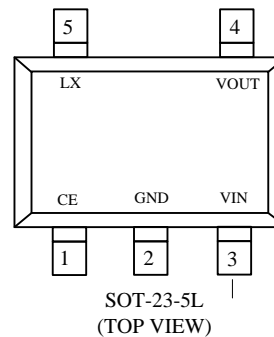
- SOT-23-5L

Typical Application Circuit



Note: CIN=10 μ F, COUT=22 μ F, L=10 μ H.

Pin Assignment



Ordering Information

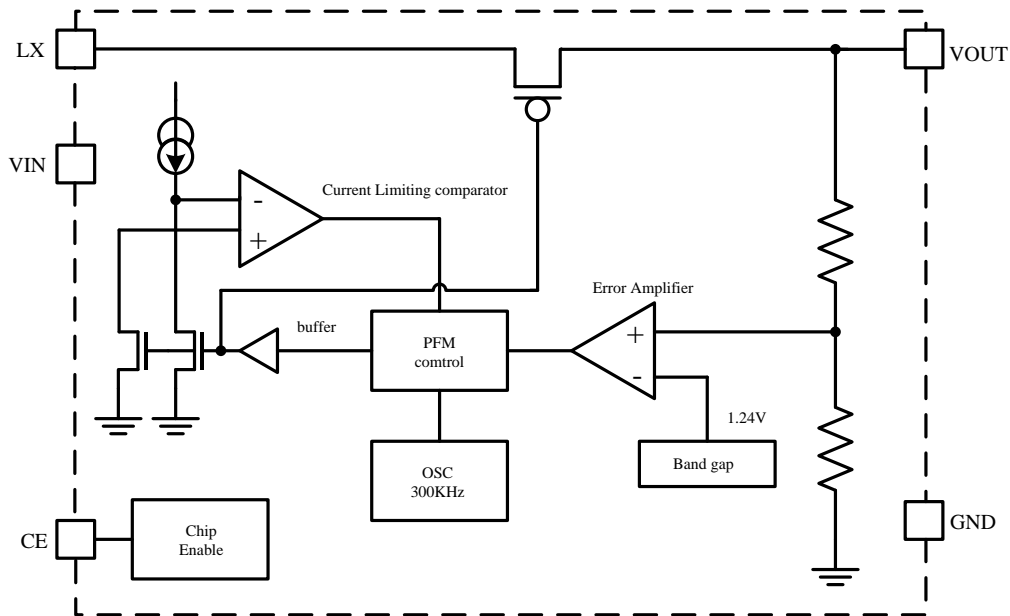
product model	Description
TCS3187B_E30	V _{OUT} =3.0V: Package: SOT23-5
TCS3187B_E33	V _{OUT} =3.3V: Package: SOT23-5
TCS3187B_E50	V _{OUT} =5.0V: Package: SOT23-5

Note: E : Represents SOT23-5 Package;30 :Represents Output Voltage 3.0V

Functional Pin Description

Pin Number SOT-23-5L	Pin Name	Function Description
1	CE	Chip enable pin
2	GND	Ground
3	VIN	Power
4	VOUT	Output pin
5	LX	Switch pin

Function Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Description	Typical	Unit
Input voltage	V_{max}	Maximum voltage supply for V_{in} , V_{OUT} and V_{LX} pin	6.5	V
Current	I_{LXmax}	Maximum current in LX pin	1000	mA
Power dissipation	P_D	SOT-23-5L maximum power dissipation	350	mW
Temperature	$T_{min-max}$	Operating Ambient Temperature	-40—85	°C
	$T_{storage}$	Storage Temperature	-40—165	
ESD	V_{ESD}	Body static pressure values	2000	V

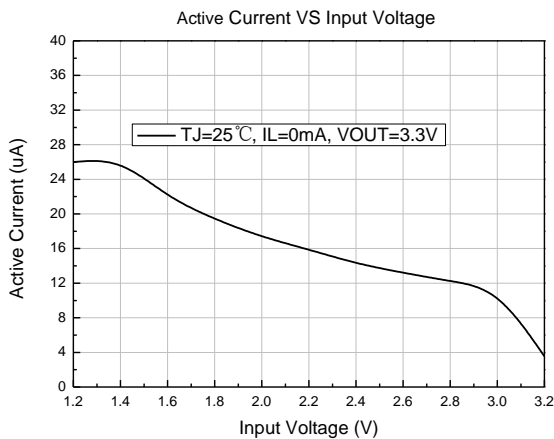
Electrical Characteristics

(TA=25°C unless otherwise noted)

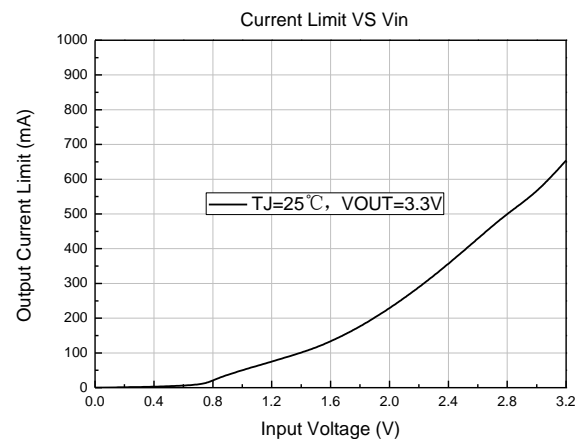
Parameter	Symbol	Test condition	Min	Typ	Max	Units
Output voltage accuracy	ΔV_{OUT}	-	-2.5	-	2.5	%
Maximum input voltage	V_{INMAX}	-	0.9	-	6.5	V
Start voltage	V_{START}	$I_{LOAD}=1mA, V_{IN}:0 \rightarrow 2V$	-	-	0.8	V
Hold voltage	V_{HOLD}	$I_{LOAD}=1mA, V_{IN}:2 \rightarrow 0V$	0.6	-	-	V
Oscillation signal duty cycle	DC_{OSC}	-	-	-	78	%
Efficiency	η	-	-	90	94	%
Limit current	I_{LIMIT}	-	600	800	1000	mA
Input current (No load)	I_{INO}	$V_{IN}=1.8V, V_{OUT}=3.0V$	-	15	-	μA

Typical Performance Characteristics

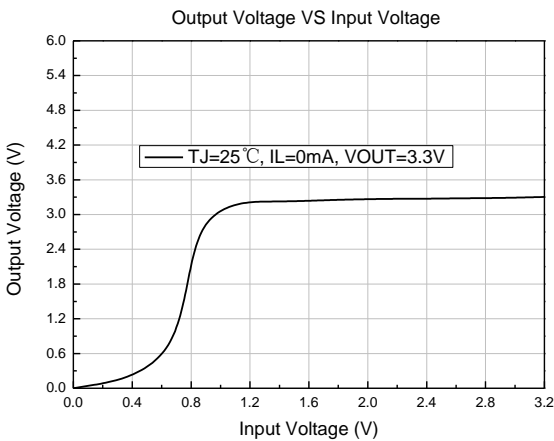
1. Active Current VS Input Voltage



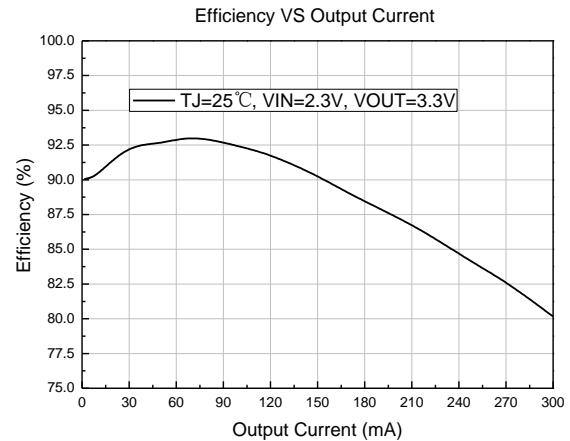
2. Output Current Limit VS Vin



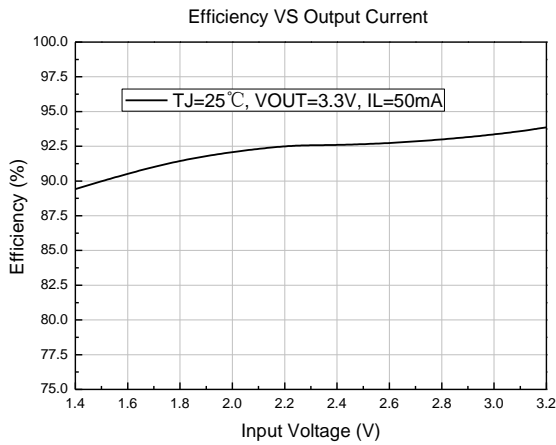
3. Output Voltage VS Input Voltage



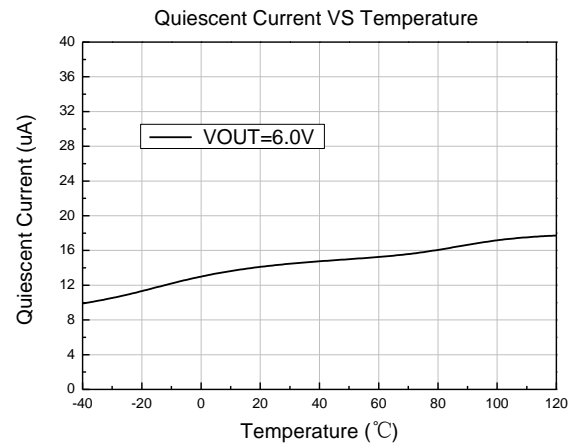
4. Efficiency VS Output Current



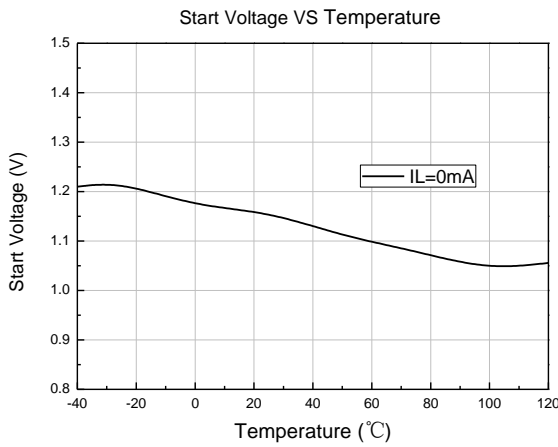
5. Efficiency VS Output Current



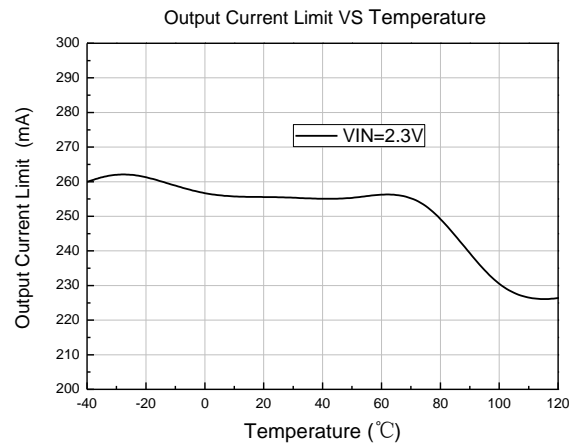
6. Quiescent Current VS Temperature



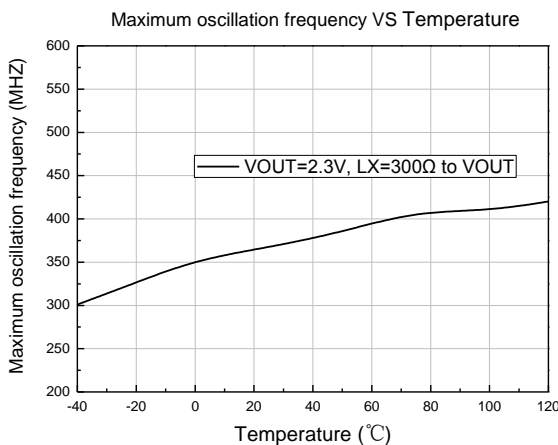
7. Start Voltage VS Temperature



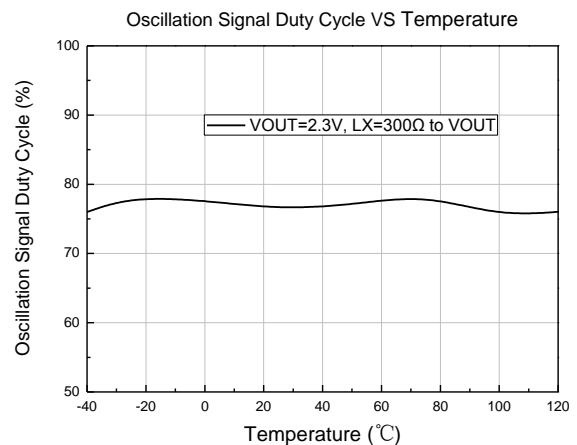
8. Output Current Limit VS Temperature



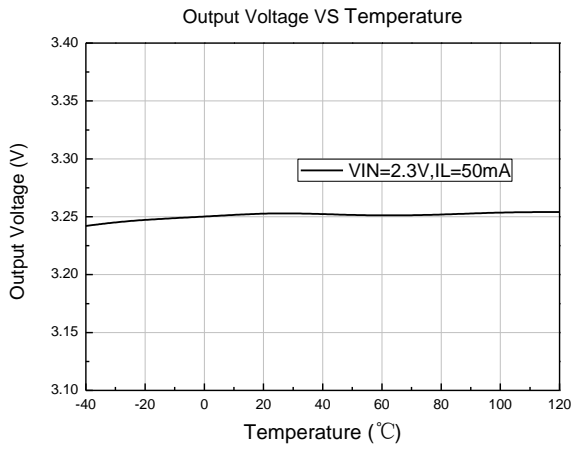
9. Maximum oscillation frequency VS Temperature



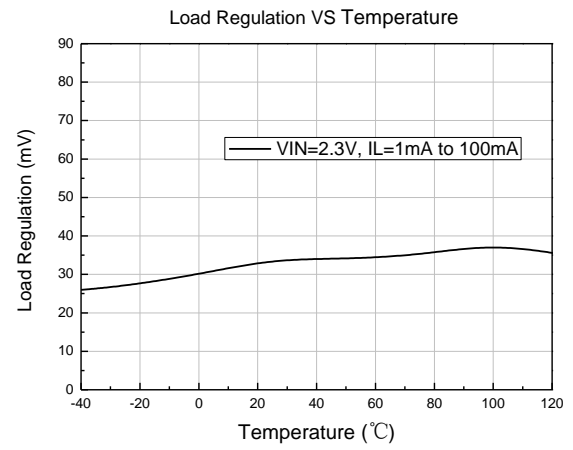
10. Oscillation Signal Duty Cycle VS Temperature



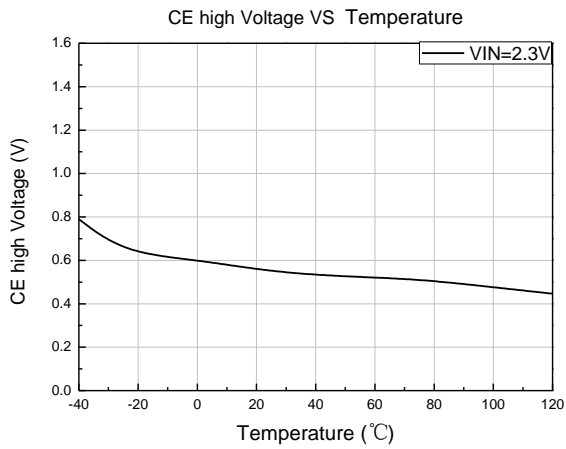
11. Output Voltage VS Temperature



12. Load Regulation VS Temperature

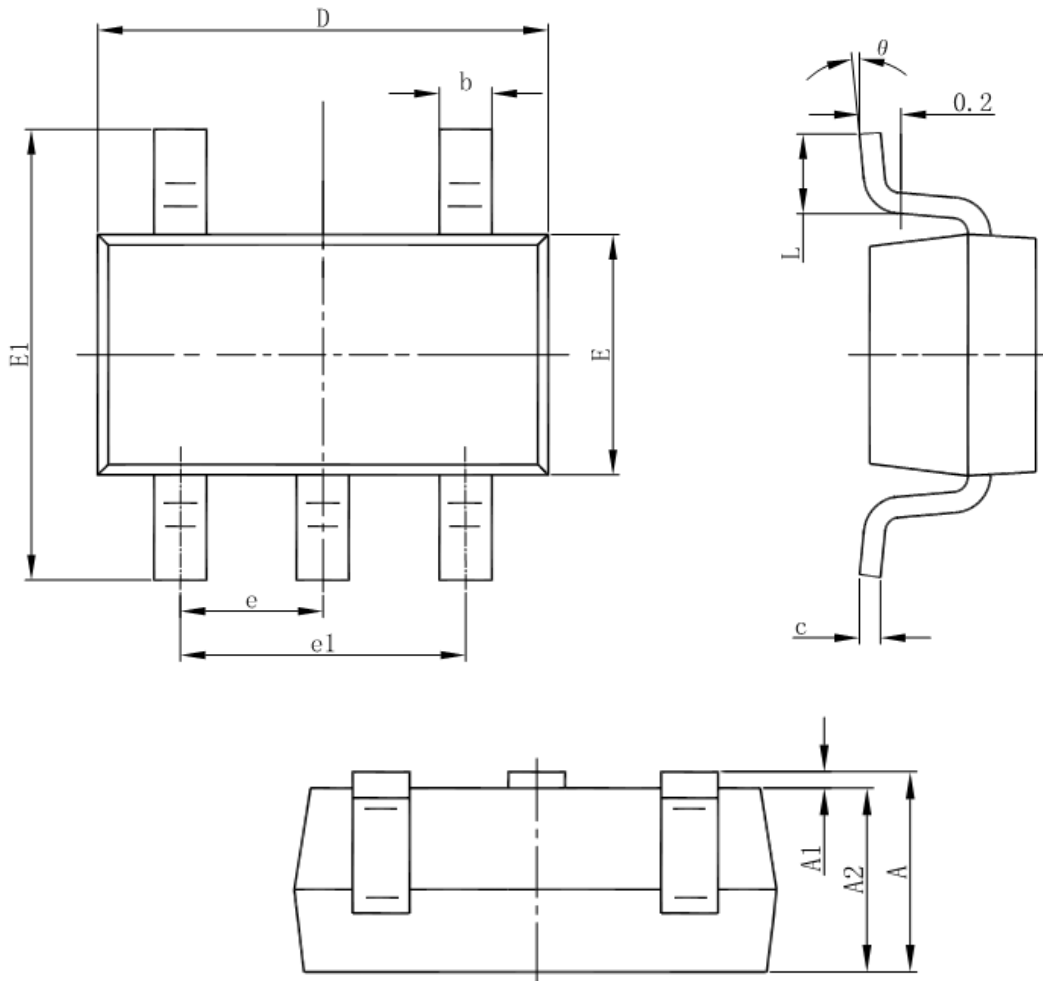


13. CE high Voltage VS Temperature



Package Information

- SOT23-5L



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°