WL2851K

Http://www.sh-willsemi.com

High Input Voltage, Low Quiescent Current LDO

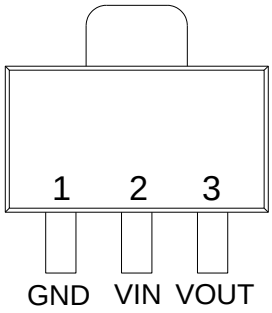
SOT-89

Descriptions

The WL2851K series is a high accuracy, high input voltage low quiescent current, high speed, and low dropout Liner regulator with high ripple rejection. The device is manufactured with Bi-CMOS process.

The WL2851K offers over-current limit and over temperature protection to ensure the device working in well conditions.

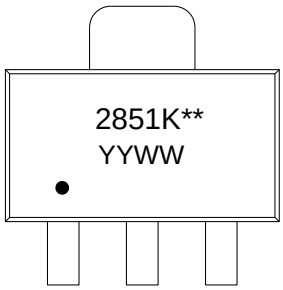
The WL2851K regulators are available in standard SOT-89-3L packages. Standard products are Pb-free and Halogen-free.



Pin Configuration (Top View)

Features

- Supply Voltage : 4.75V~40V
- Output Range : 1.8V~5.0V
- Output Accuracy : <+/-2%
- Output Current : 30mA (Up to 50mA Typ.)
- PSRR : 60dB @ 100Hz
- Dropout Voltage : 240mV @ I_{OUT}=30mA
- Quiescent Current : 10μA@V_{IN}=7V(Typ.)
- Recommend Capacitor : 10uF



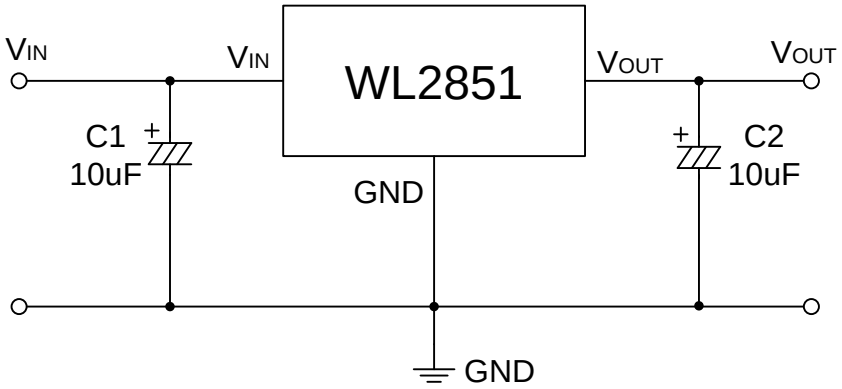
For detail marking information, please see page 8.

Marking

Order Information

For detail order information, please see page 8.

Typical Application

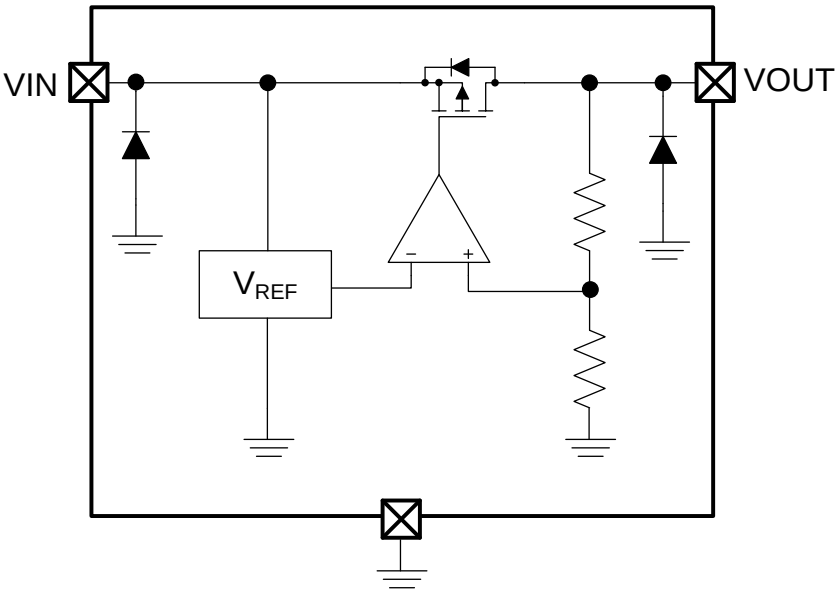


（Locate Cin and Cout as close to the Vin pin and Vout pin as possible.）

Pin Description

PIN	Symbol	Description
1	GND	Ground
2	VIN	Voltage Input
3	VOUT	Voltage Output

Block Diagram



Absolute Maximum Ratings

Parameter	Value	Unit
Power Dissipation	Internal limited	mW
V_{IN} Range	-0.3～45	V
V_{OUT} Range	-0.3～6.5	V
Lead Temperature Range	260	°C
Storage Temperature Range	-55 ~ 150	°C
Operating Junction Temperature Range	150	°C
ESD MM	400	V
ESD HBM	4K	V

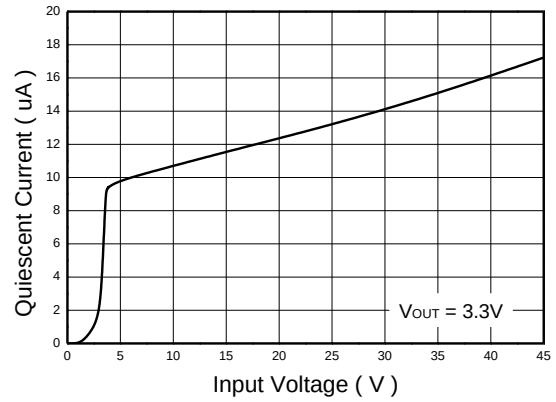
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	4.75～40	V
Operating Temperature Range	-40～85	°C
Thermal Resistance, $R_{\theta JA}$	150	°C/W

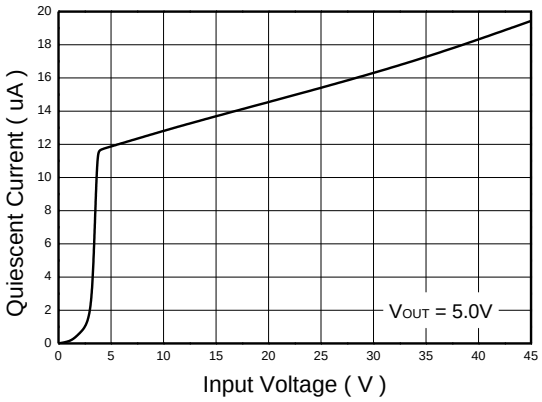
Electronics Characteristics ($Ta=25^oC$, $V_{IN}=12V$, $C_{IN}=C_{OUT}=10uF$, unless otherwise noted)

Symbol	Parameter	Test Condition		WL2851K SPEC			Unit
				Min.	Typ.	Max.	
V_{IN}	Input Range	I_{OUT}=10mA		4.75		40	V
V_{OUT}	Output Range	I_{OUT}=10mA		V_{OUT}*0.98	V_{OUT}	V_{OUT}*1.02	V
ΔV_{OUT}	Output Voltage	V_{IN}=12V,I_{OUT}=10mA		4.9	5.0	5.1	V
				3.234	3.3	3.366	V
I_{OUT_PK}	Maximum Output Current	V_{IN}=12V, R_L=1Ω		180	280	460	mA
I_Q	Quiescent Current	V_{IN}=7V, No load			10	15	μA
		V_{IN}=24V, No load			11	16	
		V_{IN}=40V, No load			13	20	
V_{DROP}	Dropout Voltage	I_{OUT}=1mA			8	12	mV
		I_{OUT}=30mA			240	400	
Δ V_{Line}	Line Regulation	V_{IN}=7--24V,V_{OUT}=5V I_{OUT}=1mA			0.02		%/V
		V_{IN}=7--45V,V_{OUT}=5V I_{OUT}=1mA			0.1		
Δ V_{Load}	Load Regulation	V_{IN}=12V, I_{OUT}=1--100mA			0.6		%
e_{NO}	Output Noise	I_{OUT}=10mA		-100		+100	μV
PSRR	Ripple Rejection	V_{IN}=10V	f=100Hz		60		dB
		V_{PP}=0.5V	f=1KHz		45		
		I_{OUT}=1mA	f=10KHz		35		
T_{SD}	Thermal Protection	V_{IN}=12V, I_{OUT}=1mA			165		℃
T_{SD_HYS}	Thermal Protection Hys	V_{IN}=12V, I_{OUT}=1mA			30		℃
ΔVo/ΔT	Temperature Cofficient	V_{IN}=12V, I_{OUT}=1mA			±0.5		mv/℃

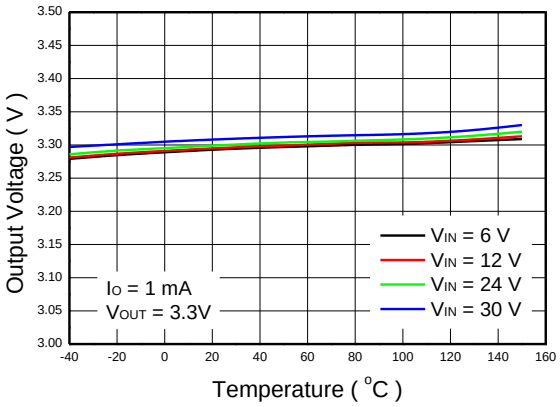
Typical characteristics (Ta=25oC, CIN=COUT=10uF, unless otherwise noted)



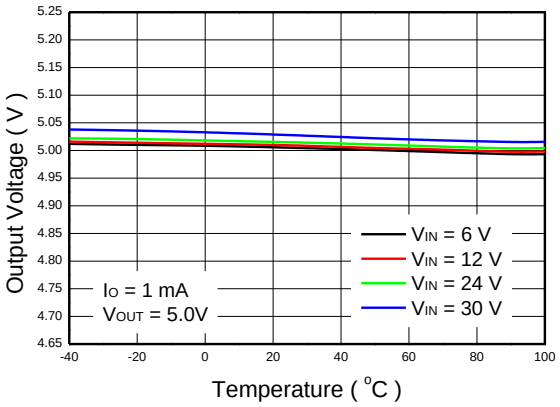
Quiescent Current vs. Input Voltage



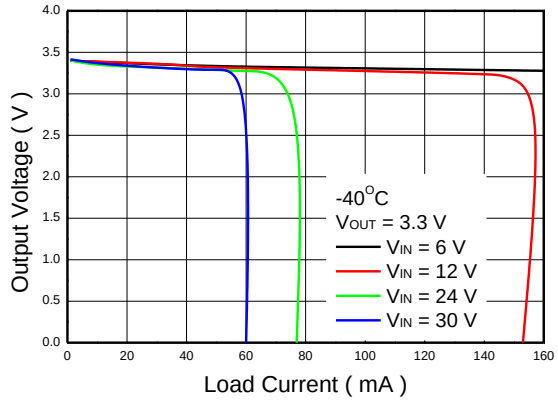
Quiescent Current vs. Input Voltage



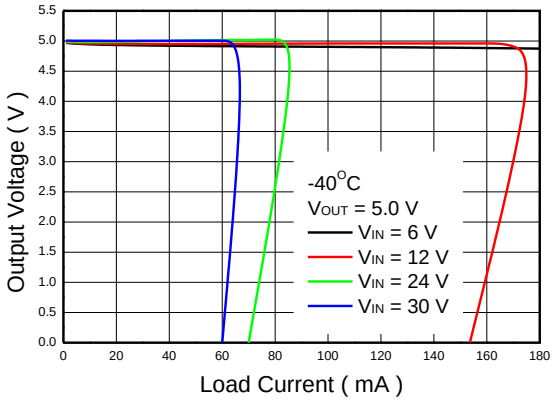
Output Voltage vs. Temperature



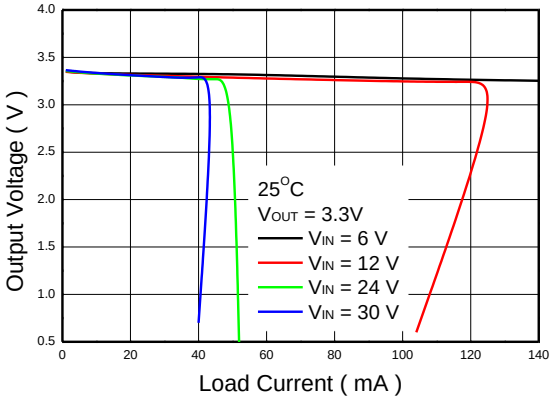
Output Voltage vs. Temperature



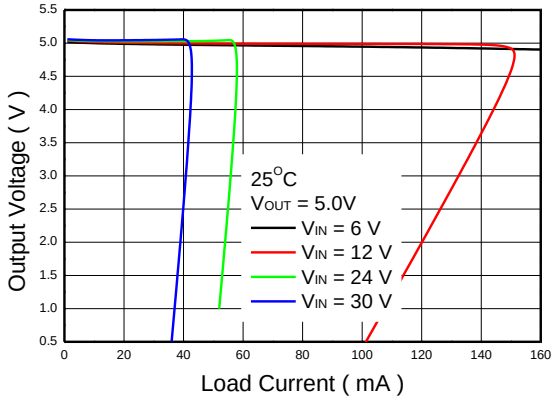
Output Voltage vs. Load Current



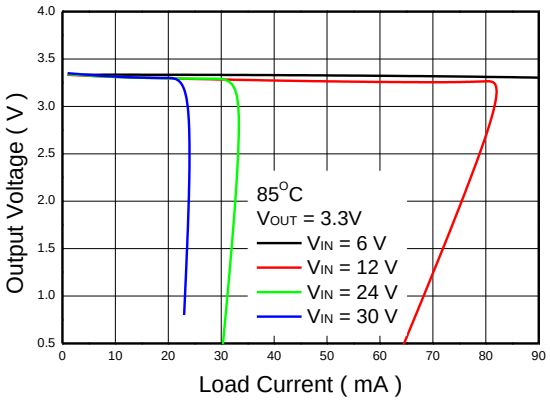
Output Voltage vs. Load Current



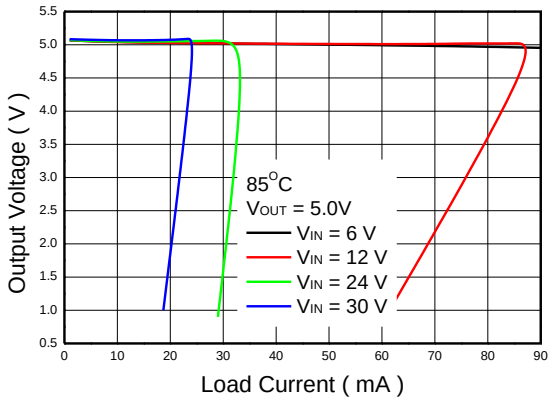
Output Voltage vs. Load Current



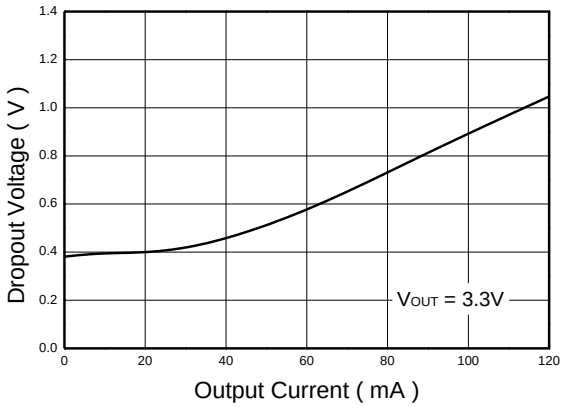
Output Voltage vs. Load Current



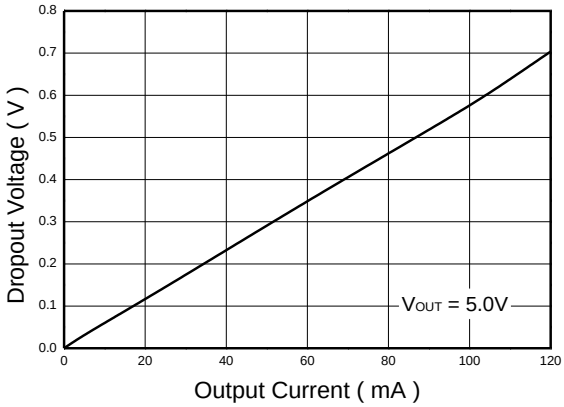
Output Voltage vs. Load Current



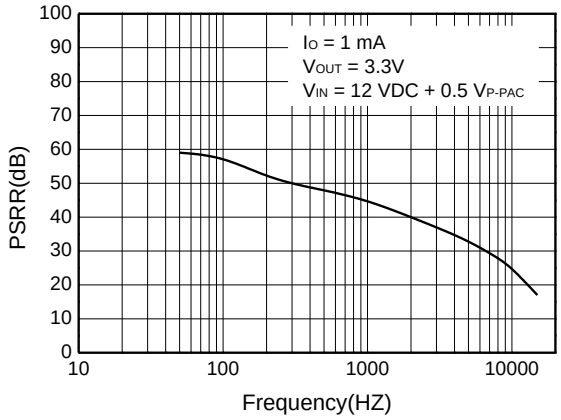
Output Voltage vs. Load Current



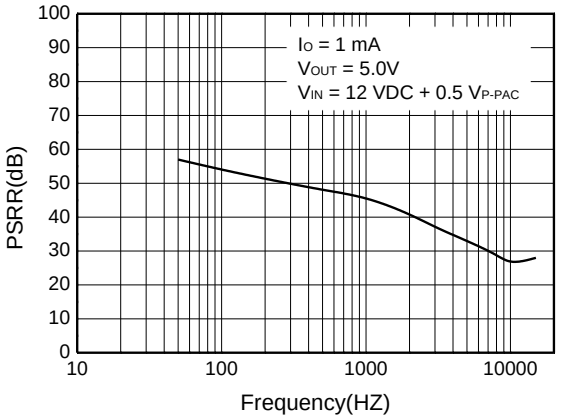
Dropout Voltage vs. Output Current



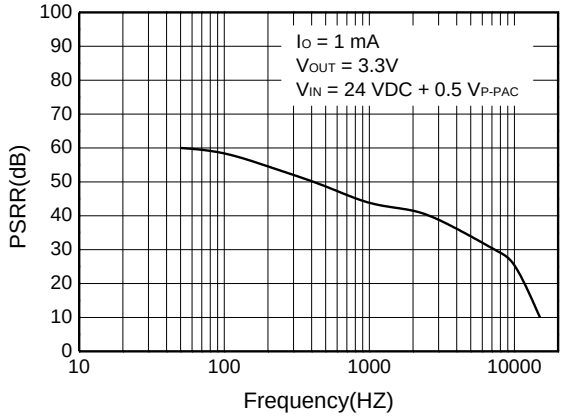
Dropout Voltage vs. Output Current



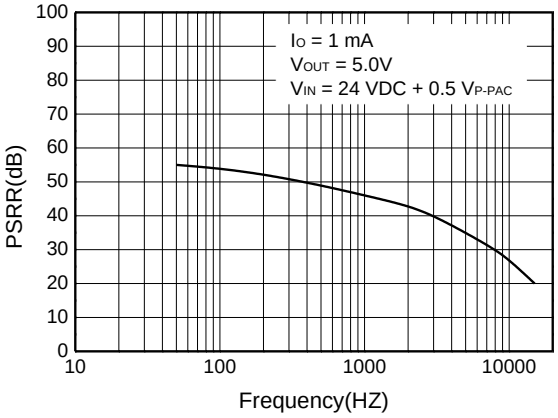
PSRR vs. Frequency



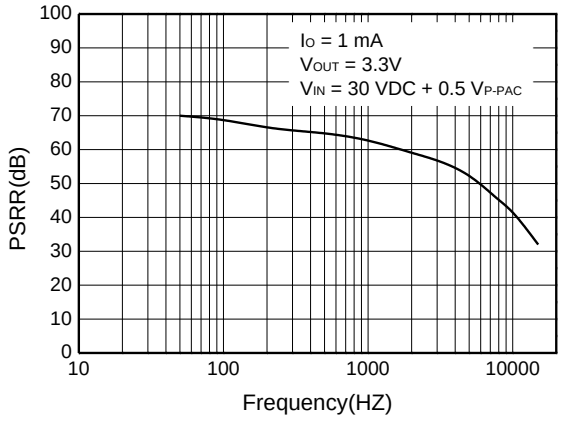
PSRR vs. Frequency



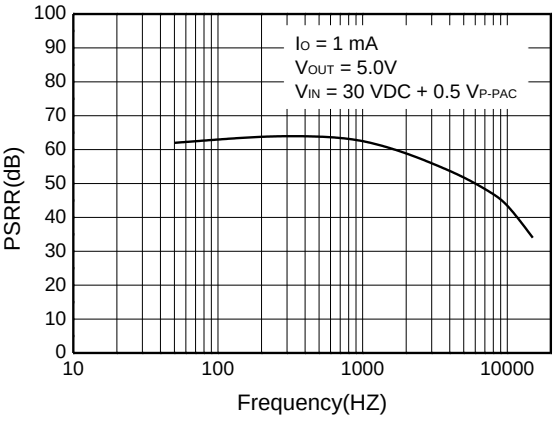
PSRR vs. Frequency



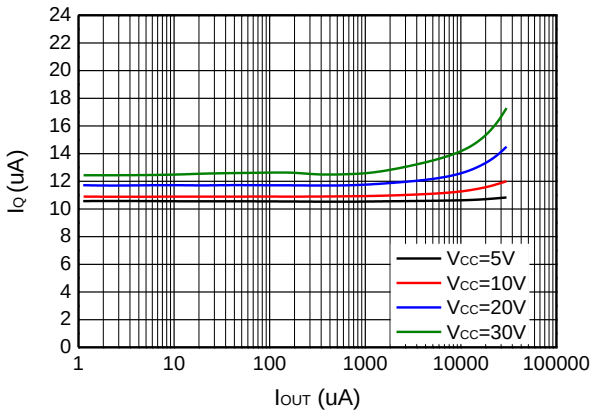
PSRR vs. Frequency



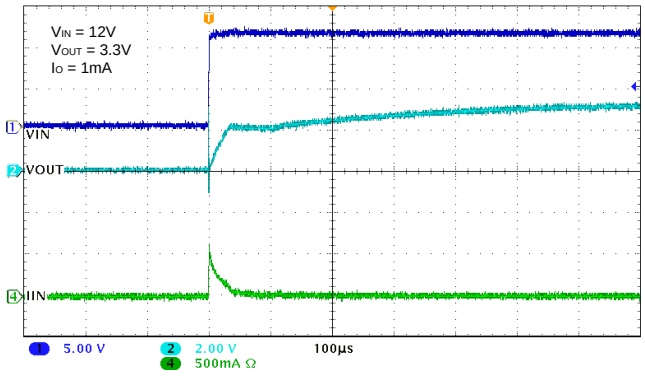
PSRR vs. Frequency



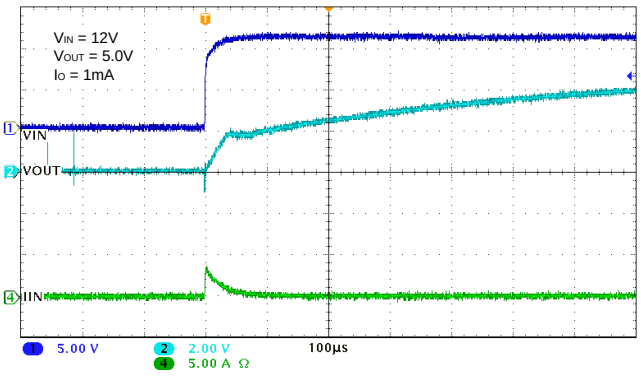
PSRR vs. Frequency



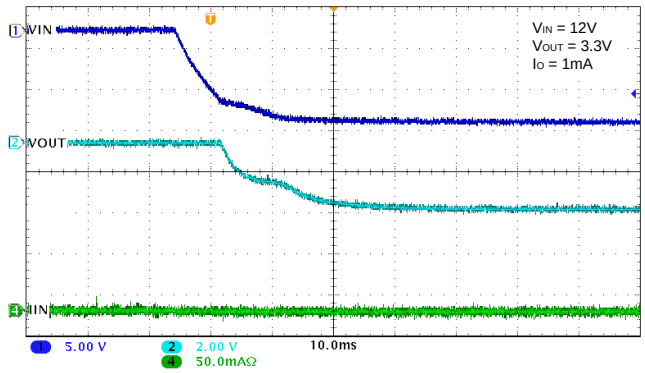
Quiescent Current vs. Output Current



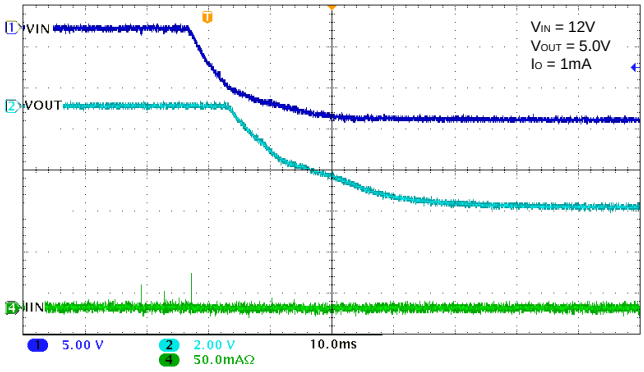
Startup from Power ON



Startup from Power ON



Shutdown from Power OFF



Shutdown from Power OFF

ORDER INFORMATION

Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2851K33-3/TR	3.3	SOT-89	-40~+85°C	2851K33 YYWW	Tape and Reel, 1000
WL2851K50-3/TR	5.0	SOT-89	-40~+85°C	2851K50 YYWW	Tape and Reel, 1000

Marking:

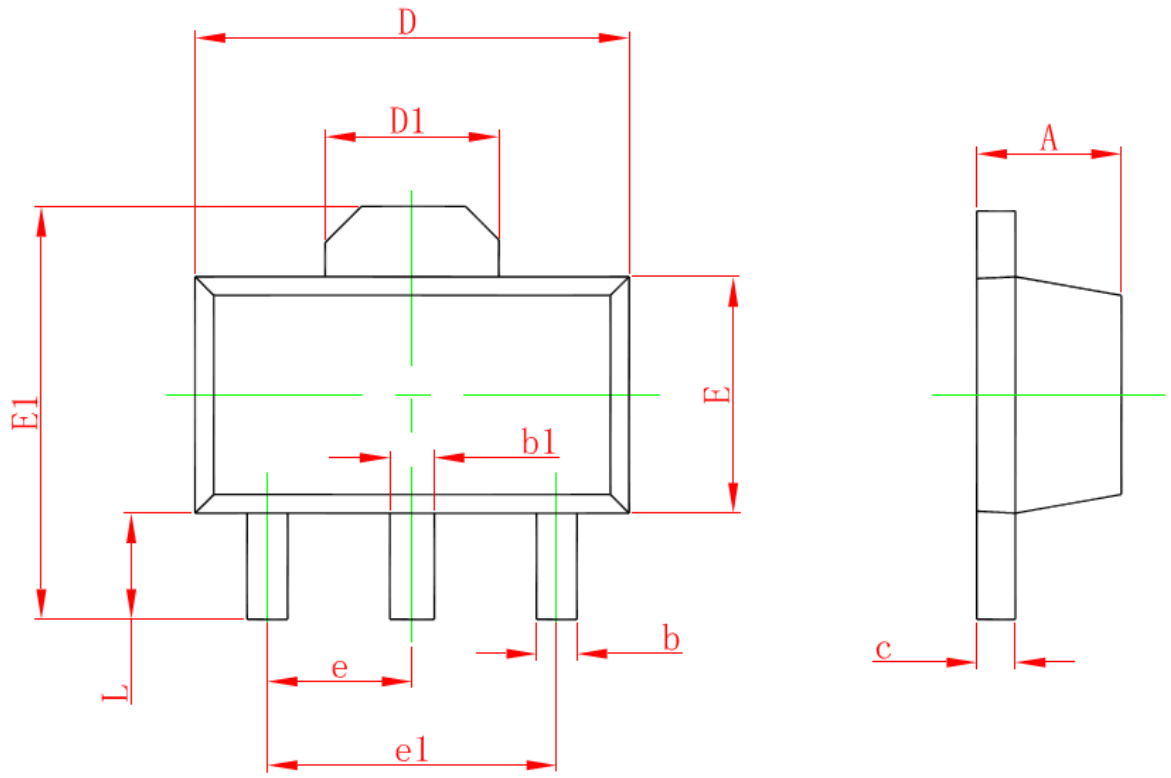
2851K = Device Code**

YY = Year

WW = Week

Package outline dimensions

SOT-89-3L



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	1.40	1.50	1.60
b	0.38	0.42	0.47
b1	0.46	0.49	0.55
c	0.40	-	0.44
D	4.40	4.50	4.60
D1	1.60	1.70	1.80
E	2.40	2.50	2.60
E1	4.05	-	4.25
e	1.50 Typ.		
e1	3.00 Typ.		
L	0.89	-	1.20