WDJ26HXX LOW DROPOUT LINEAR REGULATOR

GENERAL DESCRIPTION

WDJ26HXX series are a set of Low Dropout Linear Regulator ICs implemented in CMOS technology.They can withstand voltage 48V. And they are available with low voltage drop and low quiescent current,widely used in audio, video and communication appliances.

FEATURES

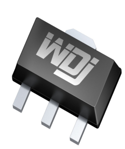
- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 48V
- Quiescent Current 2.0μA
- Output Voltage Accuracy: tolerance ±1%
- Output short circuit protection
- Temperature exceeds 120 ° C output current decreases

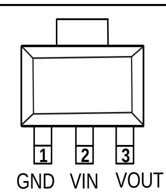
TYPICAL APPLICATIONS

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments
- Smart Battery Packs
- Smoke Detectors
- Power Meter, Water Meter, Smart Meter

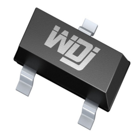
PIN CONFIGURATION

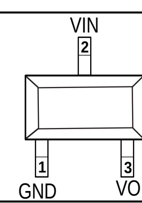
SOT-89



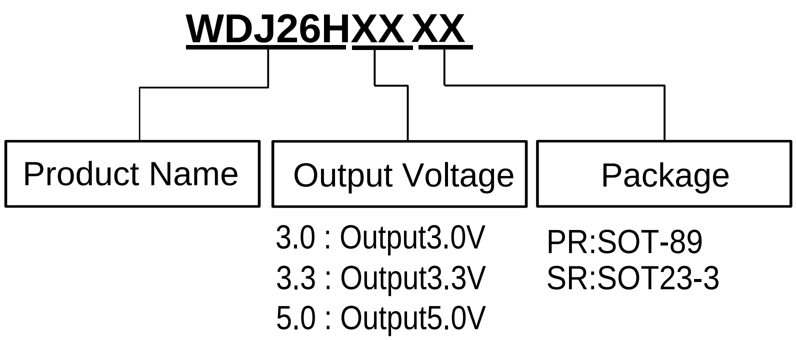


SOT23-3





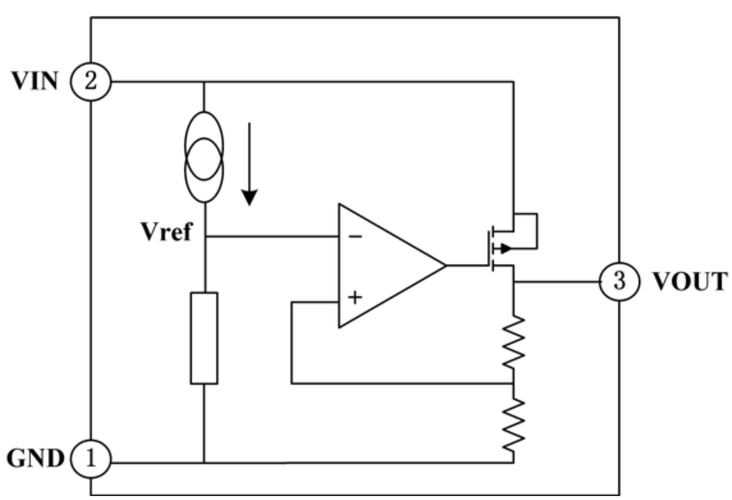
ORDERING INFORMATION



PIN DESCRIPTION

PIN No.		Name	Functions Description
SOT-89	SOT23-3		
1	1	GND	ground
2	2	V_{IN}	input
3	3	V_{OUT}	output

FUNCTIONAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Description	Symbol	Value range	Unit
Limit Power Voltage	V_{IN}	－0.3～+52	V
Storage Temperature Range	T_{STG}	－50～＋125	℃
Operating Free-air Temperature Range	T_A	－40～＋85	℃
Maximum Junction Temperature	TJ	150	℃

Note : Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

When the junction temperature reaches 150℃, the system can work, but the IC has over-temperature protection. the junction temperature exceeds 120℃, the output current decreases.

HEAT DISSIPATION

Description	Symbol	Package	Value range	Unit
Thermal resistance	θ_{JA}	SOT-89	200	℃/W
		SOT23-3	500	℃/W
Power dissipation	P_W	SOT-89	500	mW
		SOT23-3	200	mW

DC CHARACTERISTICS (unless otherwise noted T_A =＋25°C)

WDJ26H30

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$	2.97	3.0	3.03	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	—	250	—	mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 200mA$	—	15	75	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$， $\triangle V_{OUT}=2\%$	—	550	—	mV
Quiescent Current	I_{SS}	No Load	—	2.0	3.0	µA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 48V$，$I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	48	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$，$I_{OUT}=1mA$，$-40℃ \leqslant T_A \leqslant 85℃$	—	65	—	ppm/℃

Note :

When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

The input withstand voltage value of 48V does not mean that the circuit can work normally under a 48V power supply voltage. When the machine is turned on or off, the voltage pulse generated on the 48V power supply may Far greater than 48V, causing permanent damage to the chip.

WDJ26H33

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$	3.267	3.30	3.333	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	—	250	—	mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 200mA$	—	15	75	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$， $\triangle V_{OUT}=2\%$	—	550	—	mV
Quiescent Current	I_{SS}	No Load	—	2.0	3.0	µA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 48V$，$I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	48	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$，$I_{OUT}=1mA$，$-40℃ \leqslant T_A \leqslant 85℃$	—	65	—	ppm/℃

Note :

When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

The input withstand voltage value of 48V does not mean that the circuit can work normally under a 48V power supply voltage. When the machine is turned on or off, the voltage pulse generated on the 48V power supply may Far greater than 48V, causing permanent damage to the chip.

WDJ26H50

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	4.95	5.0	5.05	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	—	250	—	mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA\leqslant I_{OUT}\leqslant 200mA$	—	15	72	mV
Voltage Drop	V_{DIF}	$I_{OUT}=100mA$, $\triangle V_{OUT}=2\%$	—	550	—	mV
Quiescent Current	I_{SS}	No Load	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V\leqslant V_{IN}\leqslant 48V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	48	V
Temperature Coefficient	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=1mA$, $-40℃\leqslant T_A\leqslant 85℃$	—	65	—	ppm/℃

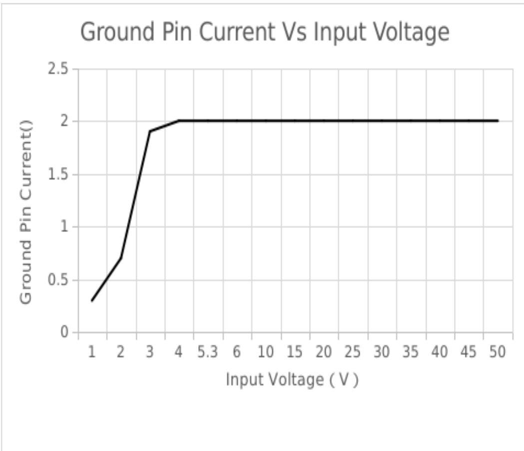
Note :

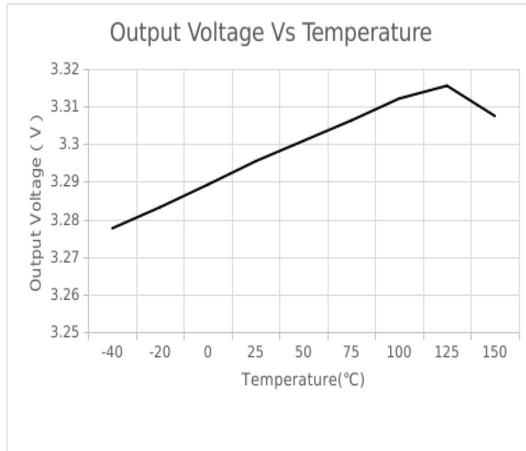
When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

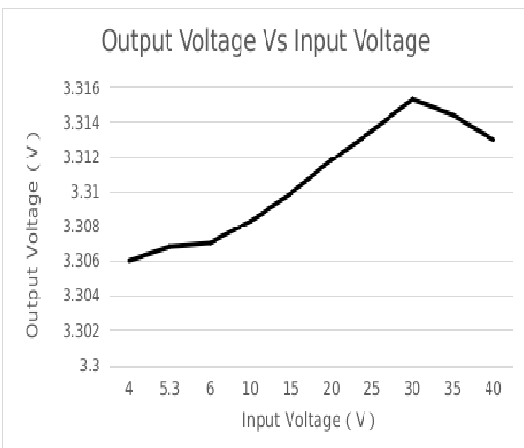
The input withstand voltage value of 48V does not mean that the circuit can work normally under a 48V power supply voltage. When the machine is turned on or off, the voltage pulse generated on the 48V power supply may Far greater than 48V, causing permanent damage to the chip.

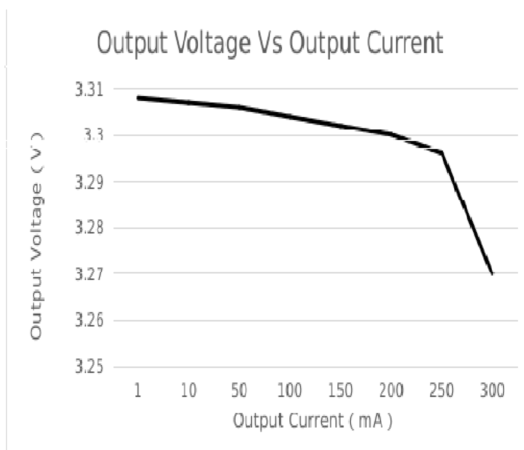
DTYPICAL PERFORMANCE CHARACTERISTIC

V_{IN} =5.3V，V_{OUT} =3.3V，C1=C2=10uF，T_A =25℃



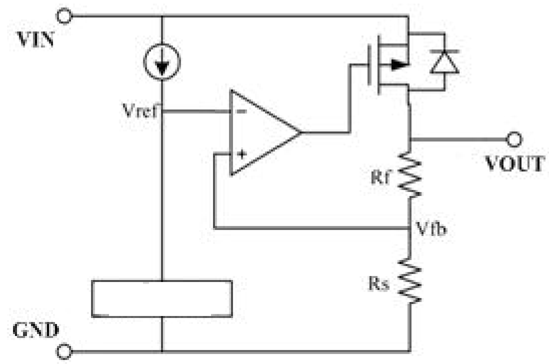






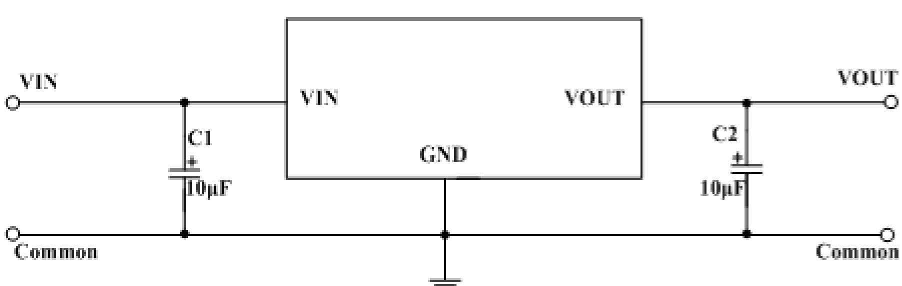
APPLICATION DESCRIPTION

The error amplifier compares the input voltage of the divider resistor composed of feedback resistors Rs and Rf with the reference voltage vref, and provides the necessary gate voltage to the output transistor through this error amplifier, so that the output voltage is not affected by input voltage or temperature changes and remains constant.



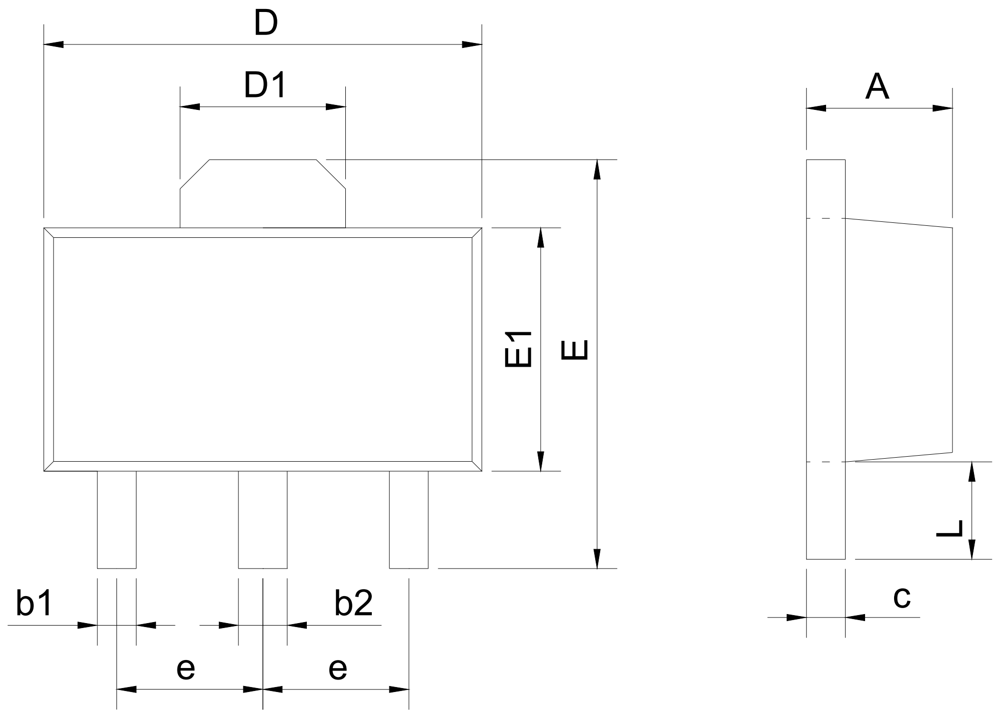
1. When applying, try to connect the capacitors close to the VIN and VOUT pins.
2. The circuit uses a phase compensation circuit and uses the ESR of the output capacitor for compensation. Therefore, a capacitor larger than 2.2μF must be connected to the output ground. Tantalum capacitors are recommended.
3. Pay attention to the input and output voltage and load current conditions to prevent the power consumption inside the IC from exceeding the maximum power consumption allowed by the package.

TYPICAL APPLICATION CIRCUIT



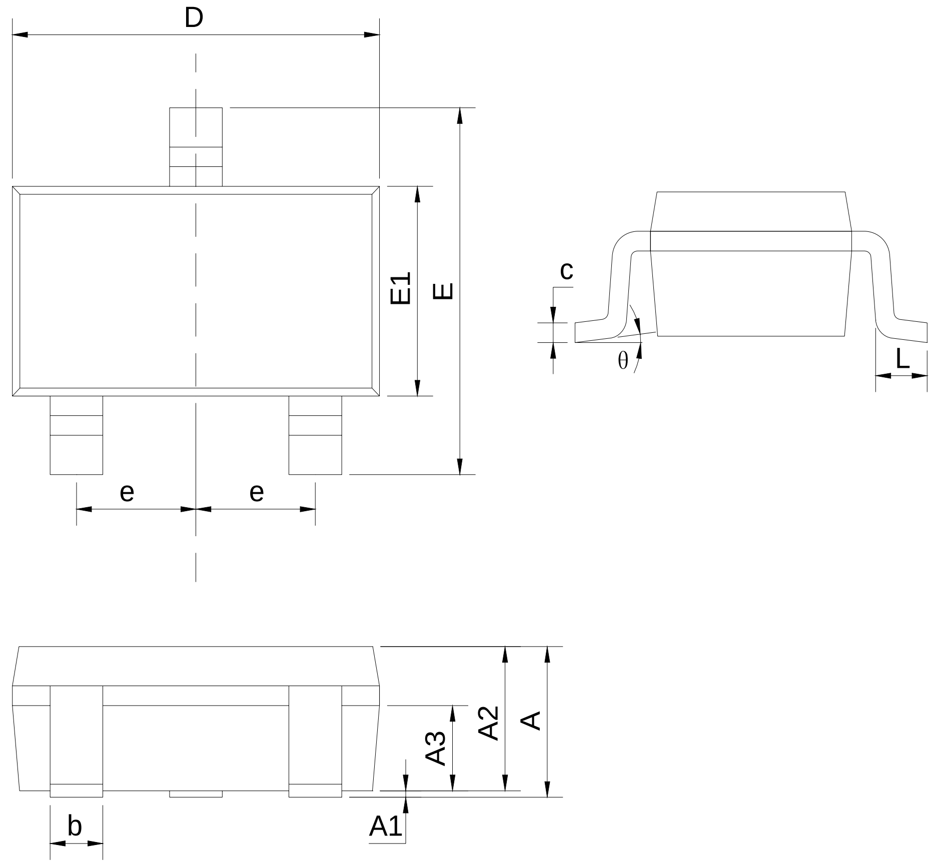
PACKAGE INFORMATION

SOT-89



SYMBOL	mm	
	min	max
A	1.40	1.60
b1	0.35	0.50
b2	0.45	0.60
c	0.36	0.46
D	4.30	4.70
D1	1.40	1.80
E	4.00	4.40
E1	2.30	2.70
e	1.50BSC	
L	0.80	1.20

SOT23-3



SYMBOL	mm	
	min	max
A		1.35
A1	0.04	0.15
A2	1.00	1.20
A3	0.55	0.75
b	0.38	0.48
c	0.10	0.25
D	2.72	3.12
E	2.60	3.00
E1	1.50	1.80
e	0.95BSC	
L	0.30	0.60
θ	0	8°

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