2 CHANNEL LOW-DROPOUT VOLTAGE REGULATOR

FEATURES

*Dual Output: 3.3V/1A, 2.5V/1A.
*Output Voltage Precision of ±2%.
*Output consists of PNP power transistor with low-dropout voltage.
*Built-in over current protection circuit (OCP).
*Built-in Thermal Shut Down Circuit (TSD).
*Ideal for Hard Disk Drives applications.

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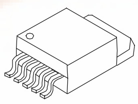


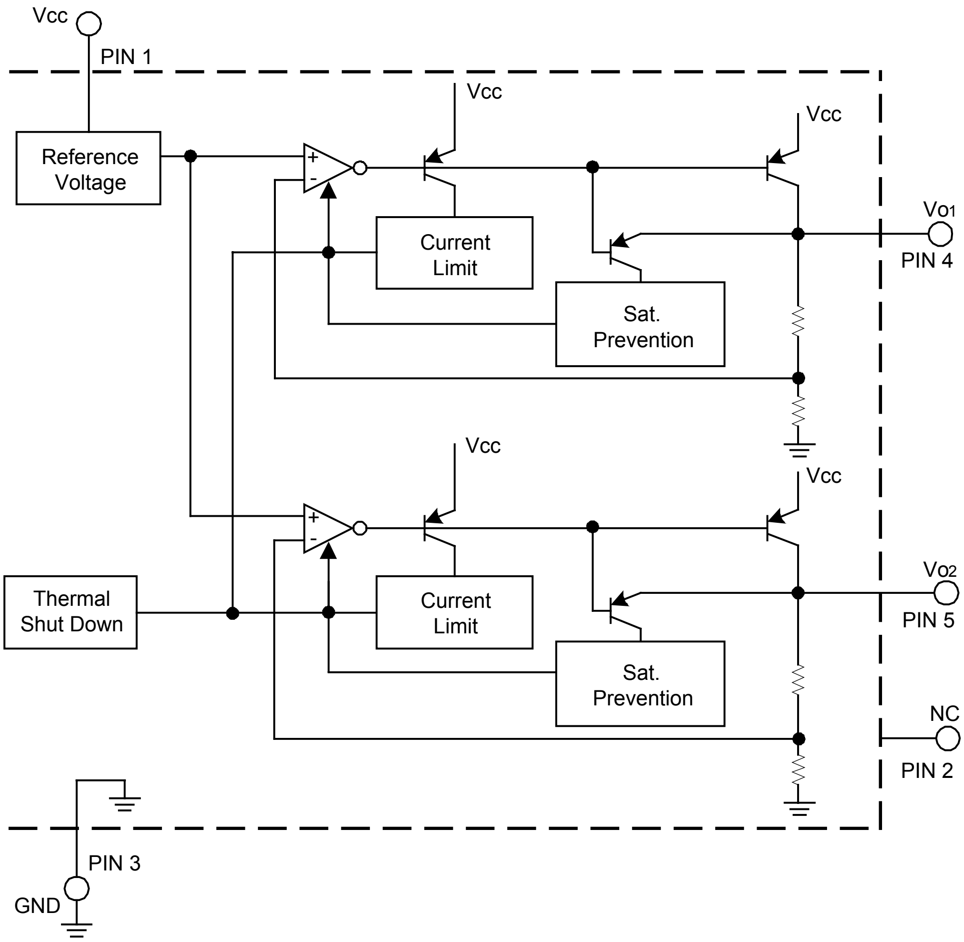
TO-252-5

1: Vcc 2: NC 3: GND 4: V_{O1} 5: V_{O2}

PIN DISCRIPTION

PIN NO.	PIN NAME	FUNCTION
1	Vcc	Power Supply
2	N.C.	Not internally connected
3	GND	Ground
4	V_{O1}	3.3V Output
5	V_{O2}	2.5V Output

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_a=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	Vcc	18	V
Power dissipation	P_D	1000*	mW
Operating temperature range	T_{opr}	-40 ~ +85	℃
Storage temperature range	T_{stg}	-55 ~ +150	℃
Junction temperature	T_j	150	℃

* P_D derated at 8mW/℃ for temperatures above T_a=25℃

OPERATING RATINGS(T_a=25℃)

PARAMETER	SYMBOL	MIN	MAX	UNIT
Input Voltage	Vcc	3.0	16.0	V
3.3V Output current	I_{O1}		1	A
2.5V Output current	I_{O2}		1	A

ELECTRICAL CHARACTERISTICS

(Refer to the test circuit, T_a=25℃, V_{CC}=5V unless otherwise specified.)

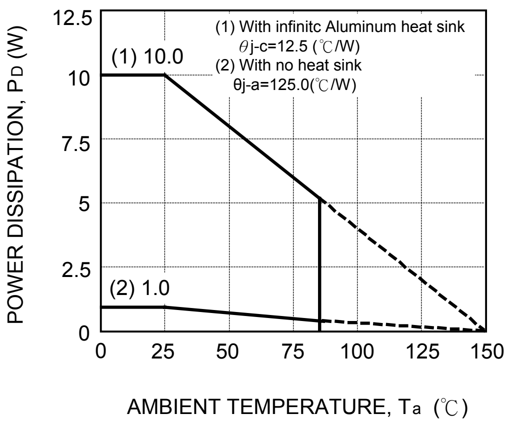
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Bias Current	I_B	I_{O1}=0mA, I_{O2}=0mA		0.8	1.5	mA
3.3V Output						
Output Voltage 1	V_{O1}	I_{O1}=500mA	3.234	3.30	3.366	V
Dropout Voltage 1	$\triangle V_{D1}$	I_{O1}=500mA, Vcc=3.135V		0.25	0.5	V
Peak Output Current 1	I_{O1}		1.0	1.7		A
Ripple Rejection 1	R.R.1	f=120Hz, ein=1Vrms I_{O1}=200mA	50	58		dB
Line Regulation 1	$\triangle V_{LINE1}$	Vcc=4V ~ 16V, I_{O1}=500mA		5	30	mV
Load Regulation 1	$\triangle V_{LOAD1}$	I_{O1}=0mA ~ 1A		30	75	mV
Temperature Coefficient of Output Voltage 1*	T_{CVO1}	I_{O1}=5mA, T_J=0 ~ 125℃		±0.01		%/℃
Short circuit Output Current 1	I_{OS1}	Vcc=16V		270		mA
2.5V Output						
Output Voltage 2	V_{O2}	I_{O2}=500mA	2.450	2.50	2.550	V
Peak Output Current 2	I_{O2}		1.0	1.7		A
Ripple Rejection 2	R.R.2	f=120Hz, ein=1Vrms I_{O2}=200mA	50	58		dB
Line Regulation 2	$\triangle V_{LINE2}$	Vcc=4V ~ 16V, I_{O2}=500mA		5	30	mV
Load Regulation 2	$\triangle V_{LOAD2}$	I_{O2}=0mA ~ 1A		30	75	mV
Temperature Coefficient of Output Voltage 2*	T_{CVO2}	I_{O2}=5mA, T_J=0 ~ 125℃		±0.01		%/℃
Short circuit Output Current 2	I_{OS2}	Vcc=16V		270		mA

* Design Guarantee. (Outgoing inspection is not done on all products.)

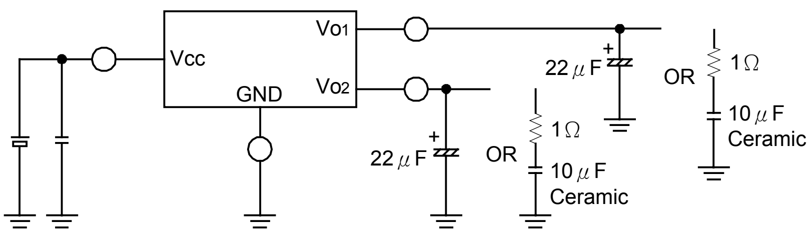
○ This product is not designed for protection against radioactive rays.

Note: All characteristic are measured with a capacity across the input (0.33μF) and the output (22μF).
Measurement is done at $T_A \fallingdotseq T_J$, and variations in the parameter of all measurement (except for Temperature Coefficient of Output Voltage)caused by temperature change are not considered.

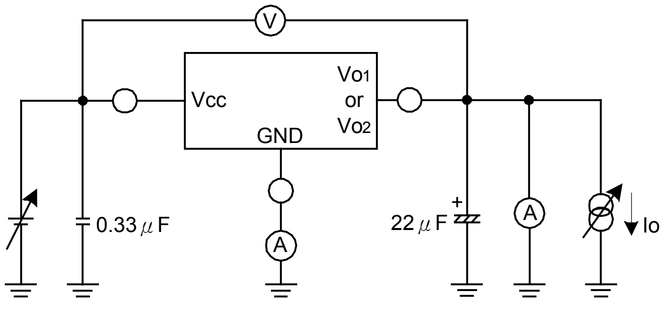
POWER DISSIPATION



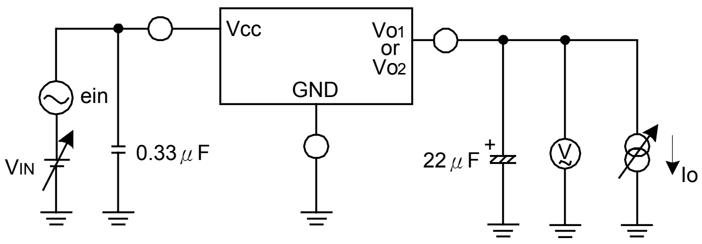
STANDARD APPLICATION CIRCUIT



TEST CIRCUIT FOR EACH CONDITION



TEST CIRCUIT FOR RIPPLE REJECTION RATIO

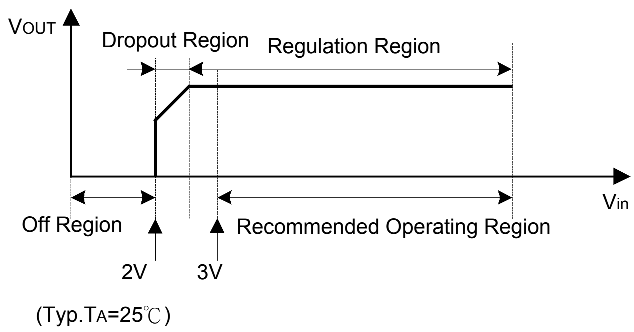


APPLICATION INFORMATION

Operation Supply Voltage Range

The circuit functionality is guaranteed within operation of ambient temperature range, as long as it is within operation supply voltage range. The standard electrical characteristic values are guaranteed at the test circuit voltage of Vcc=5V. The cannot be guaranteed at other voltages in the operating range of 3.0V~16.0V, homever, the variation will be small.

- Input /Output characteristic



For proper regulation, this device must be operated in the Recommended Operating Region shown above.

Power Dissipation

Refer to the thermal duration characteristics shown in Fig.3. Also, be sure to use this IC within a power dissipation rage allowing enough margins.

Output and Bypass Capacitor

To prevent oscillations, place the output capacitor between the output pin and GND for both channel. There is a possibility for oscillation if capacitor' s value changes due to temperature, voltage, etc. More than 22μF electrolytic capacitor is recommended. If an extremely large value of (over 1000μF) is used, it may cause oscillations at low frequency. In case of using ceramic capacitor (it is recommended more than 10μF) connect with 1Ω resistance serially as ESR. For the bypass capacitor, a 0.33μF capacitor placed as close to Vcc pin and GND pin as possible is recommended.

Over- current Protection Circuit

The over-current protection circuits are built in at the outputs. They protect the IC from being damaged when the load is short-circuited or subjected to an over current condition. This protection circuits perform holdback current limiting.

Thermal Protection Circuit

A thermal shut down circuit (T.S.D.) is built into the IC to prevent damage due to overheating, Therefore, all the outputs are turned off when the T.S.D. circuit is activated and are turned on when the temperature recedes to the specified level. However, the T.S.D. circuit is only for extreme conditions and the regulator circuit should still be designed for the IC not to exceed T_J(max)=150℃.

Grounding

It is recommended that every capacitor (bypass and output capacitors) is grounded to PIN3 using single-point connections.

Electromagnetic Fields

The IC is susceptible to strong electromagnetic fields and may cause malfunction. Therefore, caution should be used when placing it on the PCB.

Protection Diodes

It is recommended that protection diodes be used when the output is connected to an inductive load.