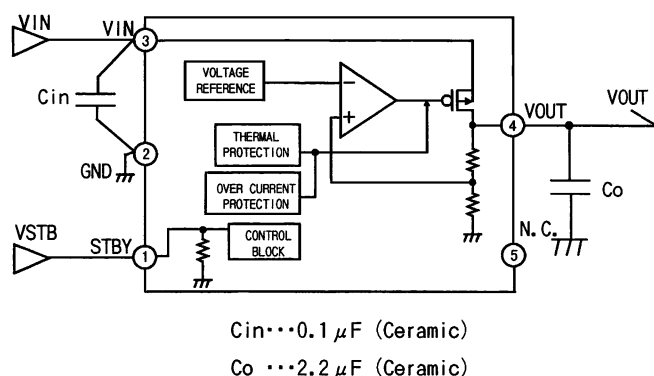


STRUCTURE Silicon Monolithic Integrated Circuit

PRODUCT	CMOS Type series regulator
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TYPE B H   N B 1 W H F V Series

○BLOCK DIAGRAM and APPLICATION CIRCUIT



OPIN DESCRIPTION

PIN No.	PIN NAME	DESCRIPTION
1	STBY	OUTPUT CONTROL (High:ON, Low:OFF)
2	GND	GROUND Pin
3	VIN	INPUT Pin
4	VOUT	OUTPUT Pin
5	NC	NO CONNECT

Fig.1 BLOCK DIAGRAM and APPLICATION CIRCUIT

○ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	Symbol	Limit	Unit
Power Supply Voltage	V _{MAX}	-0.3 ~ +6.5	V
Power Dissipation	P _d	410 (Note.1)	mW
Operating Temperature Range	T _{opr}	-40 ~ +85	°C
Storage Temperature Range	T _{stg}	-55 ~ +125	°C

Note.1 Pd derated at 4.1mW/°C for temperature above Ta=25°C,
mounted on 70mm×70mm×1.6mm glass-epoxy PCB.

Application example

The application circuit is recommended for use. Make sure to confirm the adequacy of the characteristics.

When using the circuit with changes to the external circuit constants, make sure to leave an adequate margin for external components including static and transitional characteristics as well as dispersion of the IC.

Note that ROHM cannot provide adequate confirmation of patents.

The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys).

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○ RECOMMENDED OPERATING RANGE

PARAMETER	Symbol	Limit	Unit
Power Supply Voltage	VIN	2.5~5.5	V
Output Max Current	IMAX	150	mA

○ ELECTRICAL CHARACTERISTICS

(Ta=25°C, VIN=VOUT+1.0V, STBY=1.5V, Cin=0.1 μF, Co=2.2 μF, unless otherwise noted.)

PARAMETER	Symbol	Limit			Unit	Conditions	
		MIN.	TYP.	MAX.			
【Regulator】							
Output Voltage	VOUT	VOUT×0.99	VOUT	VOUT×1.01	V	IOUT=1mA	
Circuit Current	IGND	—	60	100	μA	IOUT=50mA	
Circuit Current (STBY)	ISTBY	—	—	1.0	μA	STBY=0V	
Ripple Rejection Ratio	RR	—	80	—	dB	VRR=−20dBv, fRR=1kHz, IOUT=10mA	
Load Response 1	LTV1	—	25	—	mV	IOUT=1mA to 30mA	
Load Response 2	LTV2	—	25	—	mV	IOUT=30mA to 1mA	
Input output Voltage difference 1	VSAT1	—	80	150	mV	VIN=0.98×VOUT, IOUT=30mA	
Input output Voltage difference 2	VSAT2	—	250	450	mV	VIN=0.98×VOUT, IOUT=100mA	
Line Regulation	VDL1	—	1	20	mV	VIN=VOUT+0.5V to 5.5V, IOUT=50mA	
Load Regulation 1	VDL01	—	6	30	mV	IOUT=1mA to 100mA	
Load Regulation 2	VDL02	—	9	90	mV	IOUT=1mA to 150mA	
【Over Current Protection】							
Limit Current	ILMAX	—	250	—	mA	Vo=VOUT×0.98	
Short Current	ISHORT	—	50	—	mA	Vo=0V	
【Stand-by block】							
STBY Pull-down Resistor		RSTB	275	550	1100	kΩ	
STBY Control Voltage	ON	VSTBH	1.5	—	VCC	V	
	OFF	VSTBL	−0.3	—	0.3	V	

● This product is not designed for protection against radio active rays.

○ RECOMMENDED OPERATING CONDITION

PARAMETER	Symbol	MIN.	TYP.	MAX.	Unit	CONDITION
Input Capacitor	Cin	0.1	—	—	μF	Ceramic capacitor recommended
Output Capacitor	Co	2.2	—	—	μF	Ceramic capacitor recommended

○ TEST CIRCUIT

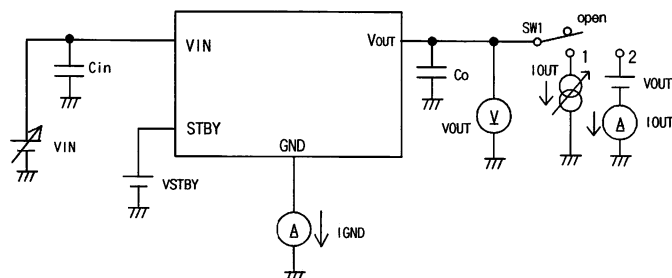


Fig.2 TEST CIRCUIT

☐ Device Name and Marking





Symbol	Description		Device Mark
a	 	Output Voltage	
	25	2.5V typ.	CV
	28	2.8V typ.	CW
	2J	2.85Vtyp.	C2
	29	2.9V typ.	CX
	30	3.0V typ.	CY
	31	3.1V typ.	CZ
	33	3.3V typ.	C0

Fig.3 Pd reduction (example)

Technical drawing of a micro-component, showing three views: top, side, and detail views.

Top View:

- Overall dimensions: 1.6 ± 0.05 (width) and 1.2 ± 0.05 (height).
- Internal dimensions: 1.0 ± 0.05 (width of central area) and 0.91 (height of central area).
- Pin dimensions: 0.05 (width of pins 1, 2, 3) and 0.3 (width of pins 4, 5).
- Pin positions: 1, 2, 3 (bottom); 4, 5 (top).
- Labels: "Device Mark" (pointing to the central area) and "Lot No." (pointing to the bottom edge).

Side View:

- Overall height: 0.6 MAX .
- Pin height: 0.13 ± 0.05 .
- Pin width: 0.2 MAX .

Detail View:

- Dimension: 0.02 ± 0.02 .
- Dimension: 0.5 .
- Dimension: 0.22 ± 0.05 .
- Dimension: 0.08 (M) .
- Dimension: 0.1 (S) .

Fig.4 Package dimensions (UNIT:mm)

○Operation Notes

1.) Absolute maximum ratings

May be destroyed if it is operated beyond its absolute maximum ratings. If the device is destroyed in exceeding the recommended maximum ratings, the failure mode will be difficult to determine. (E.g. short mode, open mode) Therefore, physical protection counter-measures (like fuse) should be implemented when operating conditions are beyond the absolute maximum ratings specified.

2.) GND potential

GND potential must be the lowest potential no matter what may happen. Actually, including transitional states, all pins except GND must not be the voltage below GND.

3.) Setting of heat

Consider Pd of actually using states, carry out the heat design that have adequate margin.

4.) Pin short and mistake fitting

When mounting the IC on the PCB, pay attention to the orientation of the IC. If there is a placement mistake, the IC may be burned up.

5.) Actions in strong magnetic field

Using the IC within a strong magnetic field may cause a malfunction.

6.) Mutual impedance

Use short and wide wiring tracks for the power supply and ground to keep the mutual impedance as small as possible. Use a capacitor to keep ripple to a minimum.

7.) Voltage of STB pin

For standby mode, set STB voltage below 0.3V. For normal operation, set the pin voltage beyond 1.2V. It is not recommended to set STB voltage between 0.3V and 1.5V, and it may cause improper operation.

8.) Over current protection circuit

Over current and short circuit protection is built-in at the output, and IC destruction is prevented at the time of load short circuit. These protection circuits is effective in the destructive prevention by the sudden accident, please avoid use to which a protection circuit operates continuously.

9.) Thermal shutdown

In cases of operation at high temperature, thermal shut-down will be activated and output will be turned off. Once IC is returned on normal operating temperature, the output will be turned back on.

10.) Output capacitor

To prevent oscillation at output, it is recommended that the IC be operated at the stable region show as Fig.5. It is recommended that the IC operated at the capacitor of more than 2.2 μ F, and also ESR=500m Ω below.

As capacitance is larger, stability becomes more stable and characteristic of output load fluctuation is also improved.

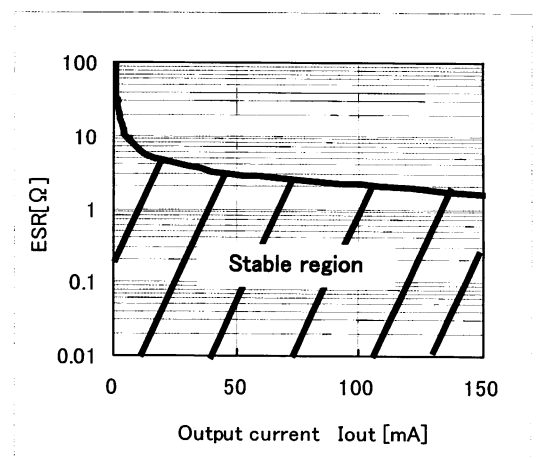


Fig.5 Stable region (Example)

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