R2A30445NP

R19DS0066EJ0090
Rev.0.90
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2-Channel Motor Driver IC for DSC, DVC and Surveillance Cameras

Overview

The R2A30445NP is a semiconductor integrated circuit that incorporates driver circuits suitable for motor of digital cameras.

Features

- An ultra-fine CMOS process has been adopted for low power consumption in a design.
- 5.0mmx5.0mm QFN (0.5mm pitch)
- Built-in of 2CH H-bridge (with a FS/BTL selectable function).
- BTL has a selectable built-in DAC control capable of 10bit accuracy.
- Hall device drive, built-in Hall output computation circuit.
- 8bitDAC built-in for various offset adjustments.
- Selection of 2 line serial communication (I2C) and 3 line serial communication (SPI) is possible.
- For I2C, the input interface control voltage is compatible with 1.8V system.
- Built-in power-on reset circuit, reference voltage, prevention from low-voltage malfunction and thermal shutdown circuit.

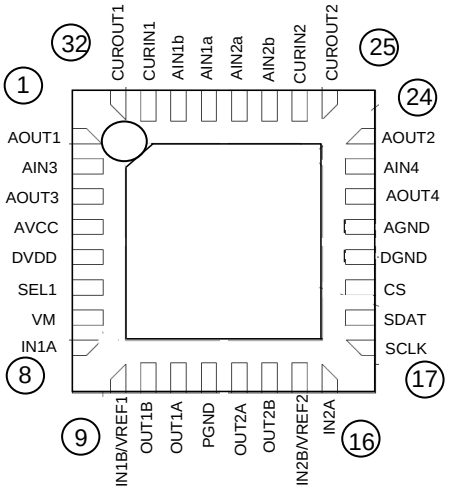
Application

Motor driver for digital still cameras

Recommended operating conditions

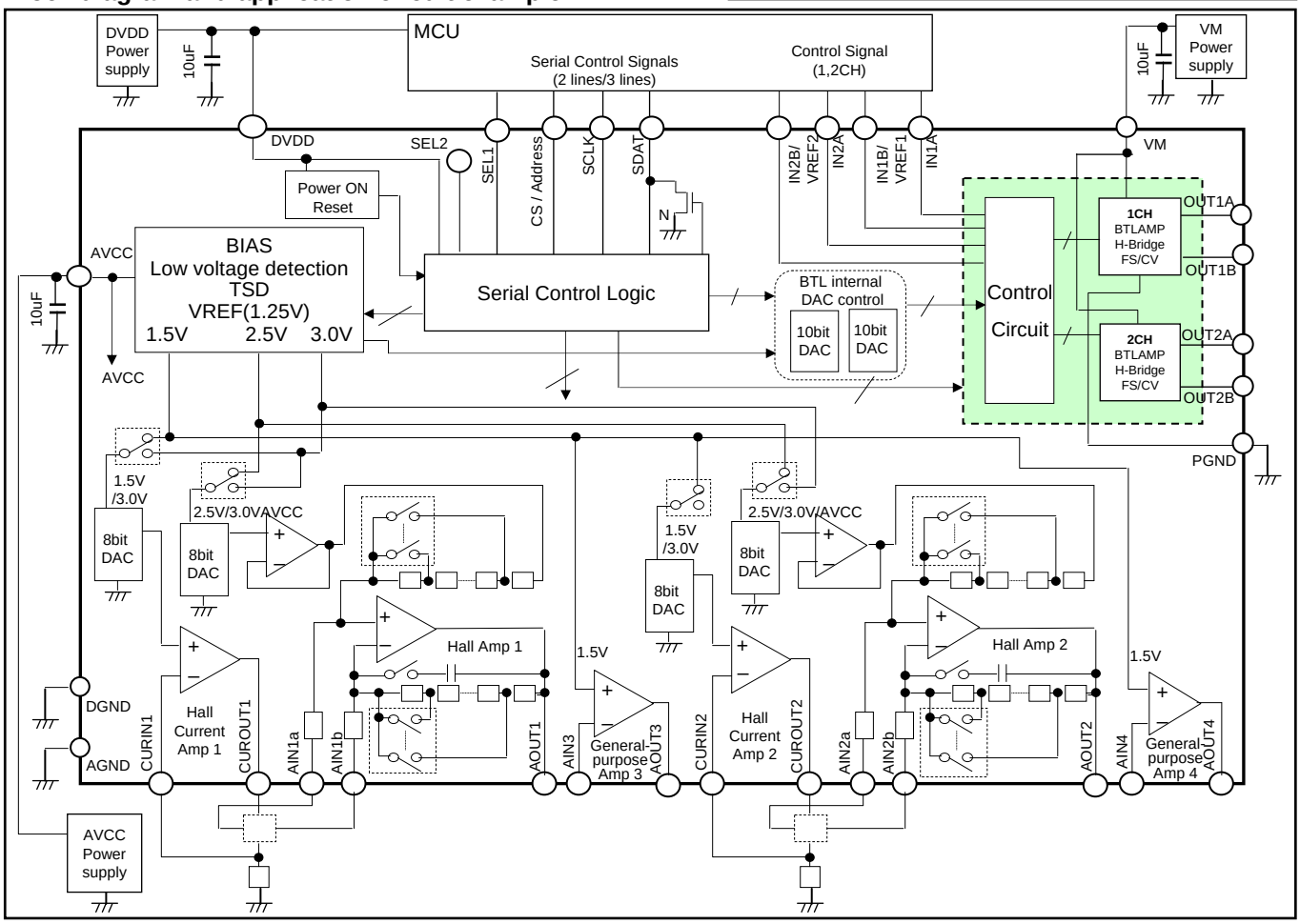
Power-supply voltage range · · · · · · · · · · · · · VM/AVCC: 2.7V~5.5V
DVDD: 2.7V~3.6V
Rated power-supply voltage · · · · · · · · · · · · · VM: 5.0V
AVCC/DVDD: 3.25V

Pin Configuration (top view)
Outline: 32QFN (5.0x5.0mm t=1.0mm(Max))



Note)
- The terminals (lead) is located on the package underside.
- There is heat dissipation PAD at the center underside of the package.
- SEL2 terminal is connected with DGND with a wire.

Block diagram and application circuit example

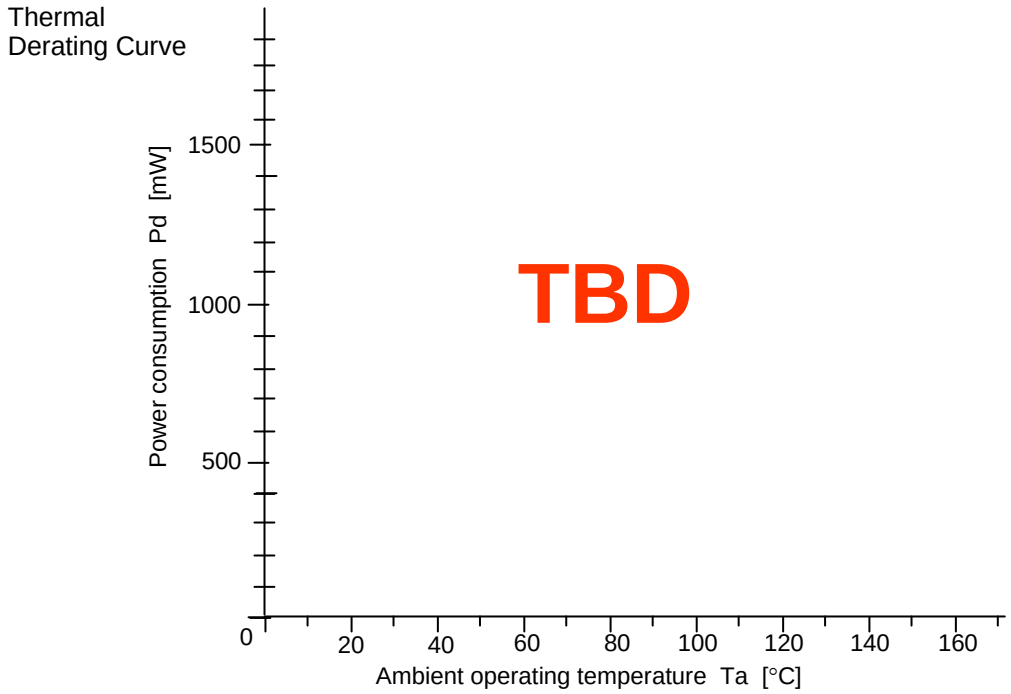


The specifications are subject to change without notice.
When it is examined for use, please confirm that this is the latest version.

Absolute Maximum Ratings (Unless specified, the ambient temperature is 25°C)

Item	Symbol	Rated Value	Unit	Remarks
Power-supply voltage 1	VM	6.5	V	Note1
Power-supply voltage 2	AVCC	6.5	V	Note1
Power-supply voltage 3	DVDD	6.5	V	Note1
Direct current (1ch~2ch)	Iod	±400	mA/ch	Note4 Note5 DC
Instant output current (1ch~2ch)	Iop	±1000	mA/ch	Note4 PW < 10ms, Duty ≤ 20%
Allowable power consumption	Pd	TBD	mW	Note2 (Ta = 25°C)
Thermal derating ratio	Kθ	TBD	mW/°C	Note2 (Ta ≥ 25°C)
Max. junction temperature	Tj	150	°C	
Applied input voltages	Vin	–0.3~DVDD+0.3 –0.3~VM+0.3	V	Note3 /DVDD system input
Ambient operating temperature	Topr	–30~85	°C	
Storage temperature	Tstg	–40~125	°C	

Notes: 1. As a rule, do not apply reverse power-supply voltages.
2. Glass epoxy board: 76.2mm x 114.5mm x 1.6mm,
copper-occupancy ratio in a 4-layer board: 20% in layers 1 and 4, 100% in layers 2 and 3.
Note that the allowable power consumption changes according to the conditions imposed on the board.
3. As a rule, do not apply voltages above the power-supply voltage or below the GND voltage.
4. The total output current does not exceed the rated value in usage with multiple channels simultaneously turned on.



[Remarks]

The electric power which the power consumption of this IC with the output transistor of 1ch - 2ch becomes dominant.

Output transistor power consumption formula

<Full Swing>: (output current)^2 x ON resistance E.g. (500mA)^2 x 2.0ohm=500mW

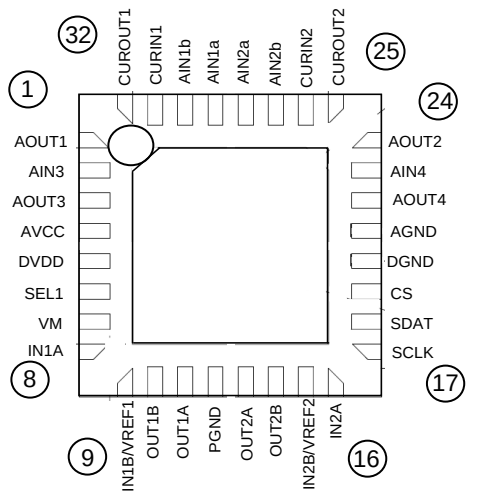
<Constant Voltage>: (VM-Voltage between terminals) x Voltage between terminals /RL

Note: In constant voltage control, the on resistance is not included in the calculation

When the ambient temperature is 25°C or more, refer to the above figure in selecting the required heat sink.

Terminal Function Explanation

Pin Configuration (top view)
Outline: 32QFN (5.0x5.0mm t=1.0mm(Max))



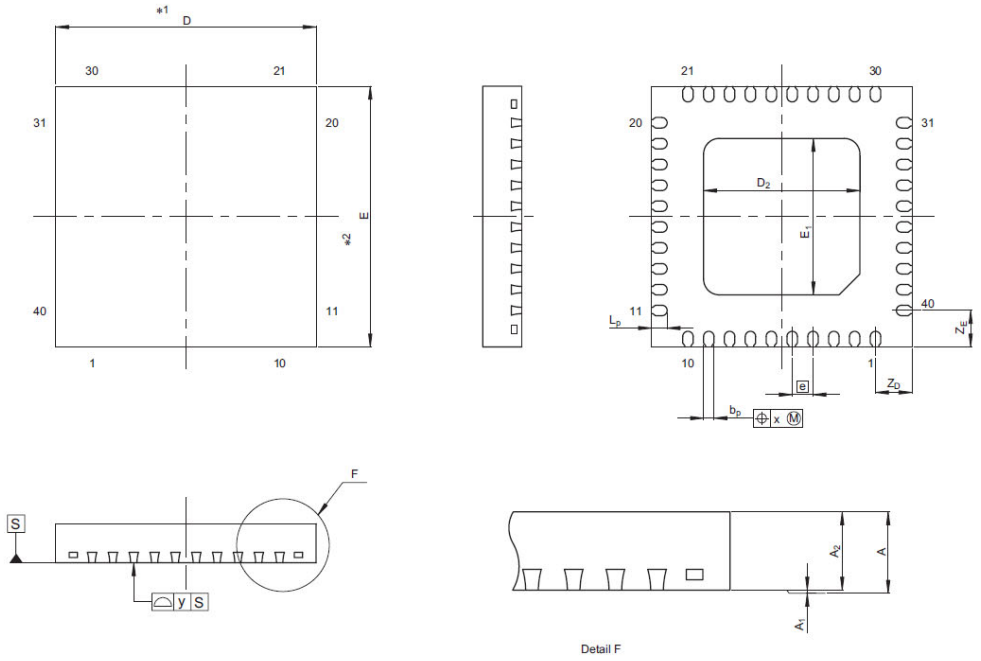
Note)
- The terminals (lead) is located on the package underside.
- There is heat dissipation PAD at the center underside of the package.
- SEL2 terminal is connected with DGND with a wire.

Pin No	Pin Name	I/O	Pin Function
1	AOUT1	O	Hall amplifier 1 output
2	AIN3	I	General-purpose Amplifier 3 input
3	AOUT3	O	General-purpose Amplifier 3 output
4	AVCC	Supply	Analog circuitry power supply
5	DVDD	Supply	Digital circuit power supply
6	SEL1	I	Communication mode selection
7	VM	Supply	1/2CH motor power supply
8	IN1A	I	1CH control signal
9	IN1B /VREF1	I	1CH control signal
10	OUT1B	O	1CH B output
11	OUT1A	O	1CH A output
12	PGND	GND	12CH power GND
13	OUT2A	O	2CH A output
14	OUT2B	O	2CH B output
15	IN2B /VREF2	I	2CH control signal
16	IN2A	I	2CH control signal

Pin No	Pin Name	I/O	Pin Function
17	SCLK	I	Serial control signal
18	SDAT	I/O	Serial control signal
19	Address /CS	I	I2C address setup /serial control signal
20	DGND	GND	Digital GND
21	AGND	GND	Analog GND
22	AOUT4	O	General-purpose Amplifier 4 output
23	AIN4	I	General-purpose Amplifier 4 input
24	AOUT2	O	Hall amplifier 2 output
25	CUROUT2	O	Hall current amplifier 2 output
26	CURIN2	I	Hall current amplifier 2 input
27	AIN2b	I	Hall amplifier 2 input
28	AIN2a	I	Hall amplifier 2 input
29	AIN1a	I	Hall amplifier 1 input
30	AIN1b	I	Hall amplifier 1 input
31	CURIN1	I	Hall current amplifier 1 input
32	CUROUT1	O	Hall current amplifier 1 output

Package Dimensions

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-HWQFN40-5x5-0.40	PWQN0040LD-A	40PJR-A	0.05g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	4.9	5.0	5.1
E	4.9	5.0	5.1
A_2	—	0.75	—
A	—	—	0.8
A_1	0	0	0.05
b_p	0.15	0.2	0.25
e	—	0.4	—
L_p	0.2	0.3	0.4
x	—	—	0.05
y	—	—	0.05
Z_D	—	0.7	—
Z_E	—	0.7	—
D_2	—	3.0	—
E_1	—	3.0	—

Ordering Information

Orderable Part No.	Package Code	Quantity
R2A30445NP#W0	PWQN0040LD-A	5000 pcs

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