# R2A30406SP

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## 4-Channel Motor Driver IC for DSC, DVC and Surveillance Cameras

### Overview

The R2A30406SP is a semiconductor integrated circuit that incorporates driver circuits suitable for the motors of digital cameras.
By adopting an ultra-fine CMOS process, H bridge 4-ch of a full-swing drive was built in one chip.
It is considering as the high composition flexibility to realize low power consumption and miniaturization.

### Features

- All bridges can be controlled independently.
  An ultra-fine CMOS process has been adopted for low power consumption in a design with no charge-pump.
- Built-in H bridge of a full-swing drive 4 circuit
- Built-in low-voltage malfunction prevention circuit
- Power supply systems are all internally isolated and include a function to prevent reverse current between power supplies.
- It is housed in a small package (24SSOP 6.5x6.4 mm t=1.0mm)

### Applications

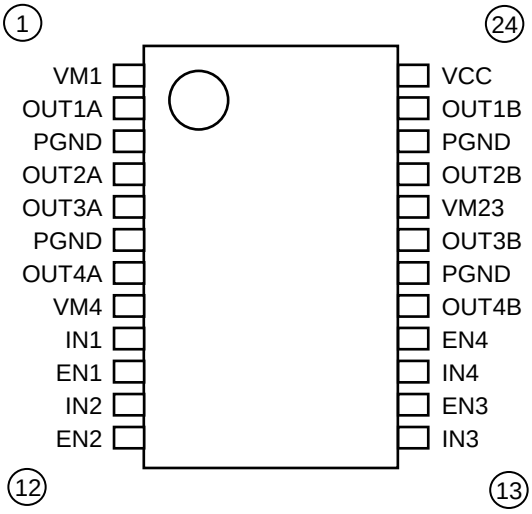
Motor driver for digital cameras, digital video camera, etc.

### Recommended operating conditions

Power-supply voltage range — VCC:2.5~5.5V VM :2.5~5.5V
Rated power-supply voltage — VCC:3.0V VM :5.0V

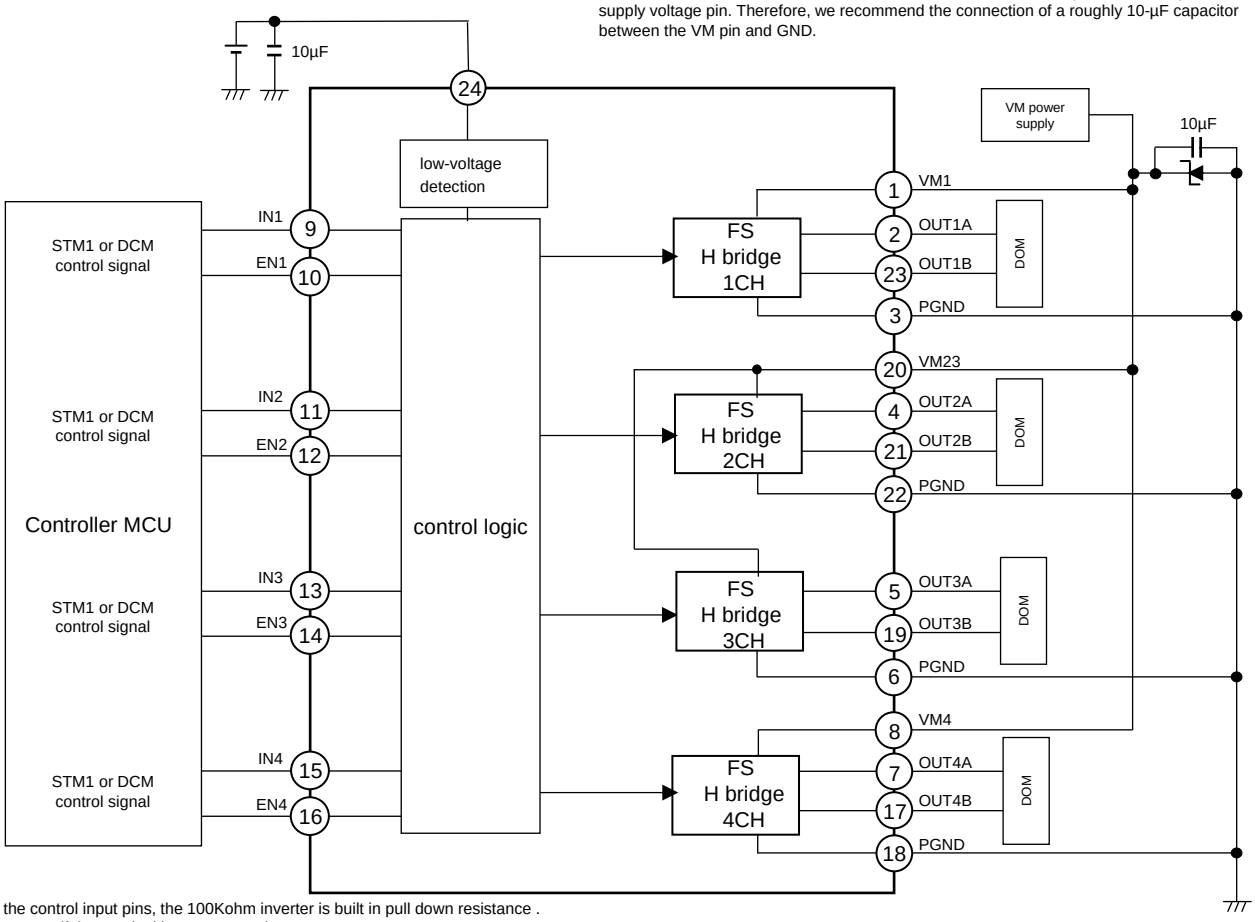
### Pin assignment

Package 24SSOP




### Block diagram and application circuit example

Since loads such as motors and coils are inductive, overshoots may occur on the power-supply voltage pin. Therefore, we recommend the connection of a roughly 10-µF capacitor between the VM pin and GND.



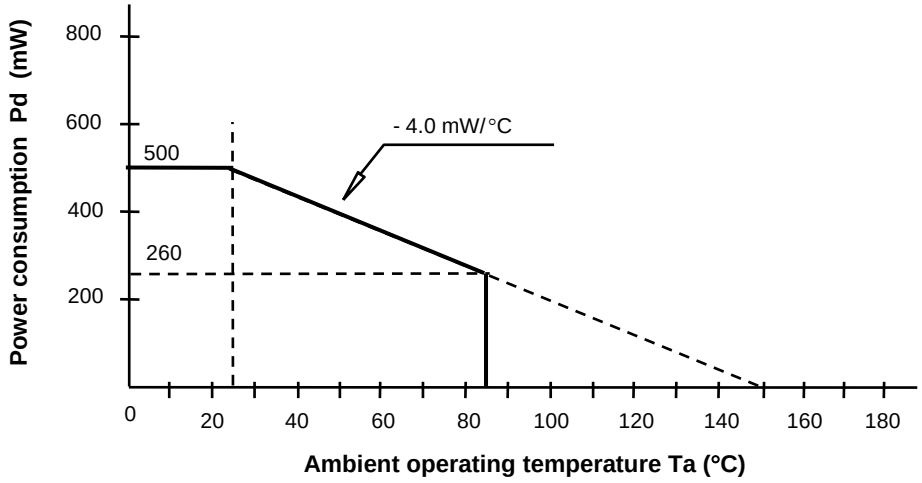

As for the control input pins, the 100Kohm inverter is built in pull down resistance .
It will operate, if the terminal is set as H-Active.
When the control input pins use is not carried out, ensure that the control input pins are either grounded or open-circuit (disconnected) while power is being supplied.

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

| Item | Symbol | Rated Value | Unit | Remarks |
|---|---|---|---|---|
| Power-supply voltage 1 | VCC | 6.5 | V | See note 1 below. |
| Power-supply voltage 2 | VM | 6.5 | V | See note 1 below. |
| Direct current (1ch~4ch) | Iod | ±400 | mA/ch | See note 4 below. DC |
| Instantaneous output current (1ch~4ch) | Iop | ±600 | mA/ch | See note 4 below. Pulse width < 10 ms, duty cycle ≤ 20% |
| Allowable power consumption | Pd | 500 | mW | See note 2 below. Ta = 25°C |
| Thermal derating ratio | Kθ | -4.0 | mW/°C | See note 2 below. Ta ≥ 25°C |
| Max. junction temperature | Tj | 150 | °C | |
| Applied input voltages | Vin | -0.5~VCC+0.5 | V | See note 3 below. |
| Ambient operating temperature | Topr | -25~85 | °C | |
| Storage temperature | Tstg | -40~150 | °C | |

Notes: 1. As a rule, do not apply reverse power-supply voltages.
2. Glass epoxy board: 95 mm x 60 mm x 0.7 mm, copper-occupancy ratio in a 4-layer board: 15% in layers 1 and 4, 20% in layers 2 and 3.
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.

### Thermal Derating Curve




Remark: The main component of power consumption by this IC is the power consumed by the output transistors on channels 1 to 4.
Expression for calculating power consumption by the output transistors
$Pd_{(F/S)}$ = (output current)² x ON resistance E.g. $Pd_{(FS)}$ = (300mA)² x 1.5ohm=135mW

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

## Pin Functions

| Pin No. | Pin Name | Pin Function |
|---|---|---|
| 1 | VM1 | Motor power supply for channel 1 |
| 2 | OUT1A | Channel 1 A output |
| 3 | PGND | Channel 1 power GND |
| 4 | OUT2A | Channel 2 A output |
| 5 | OUT3A | Channel 3 A output |
| 6 | PGND | Channel 3 power GND |
| 7 | OUT4A | Channel 4 A output |
| 8 | VM4 | Motor power supply for channels 4 |
| 9 | IN1 | Channels 1 Control input |
| 10 | EN1 | Channels 1 Enable terminal |
| 11 | IN2 | Channels 2 Control input |
| 12 | EN2 | Channels 2 Enable terminal |
| 13 | IN3 | Channels 3 Control input |
| 14 | EN3 | Channels 3 Enable terminal |
| 15 | IN4 | Channels 4 Control input |
| 16 | EN4 | Channels 4 Enable terminal |
| 17 | OUT4B | Channel 4 B output |
| 18 | PGND | Channel 4 power GND |
| 19 | OUT3B | Channel 3 B output |
| 20 | VM23 | Motor power supply for channels 2 and 3 |
| 21 | OUT2B | Channel 2 B output |
| 22 | PGND | Channel 2 power GND |
| 23 | OUT1B | Channel 1 B output |
| 24 | VCC | Control power supply |

## Ordering Information

| Orderable Part No. | Package Code | Quantity |
|---|---|---|
| R2A30406SP#W0 | PLSP0024KA-A | 2000 pcs |

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