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

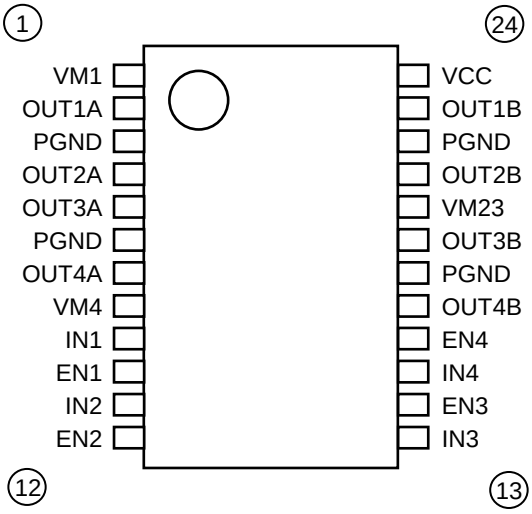
Motor driver for digital cameras, digital video camera, etc.

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

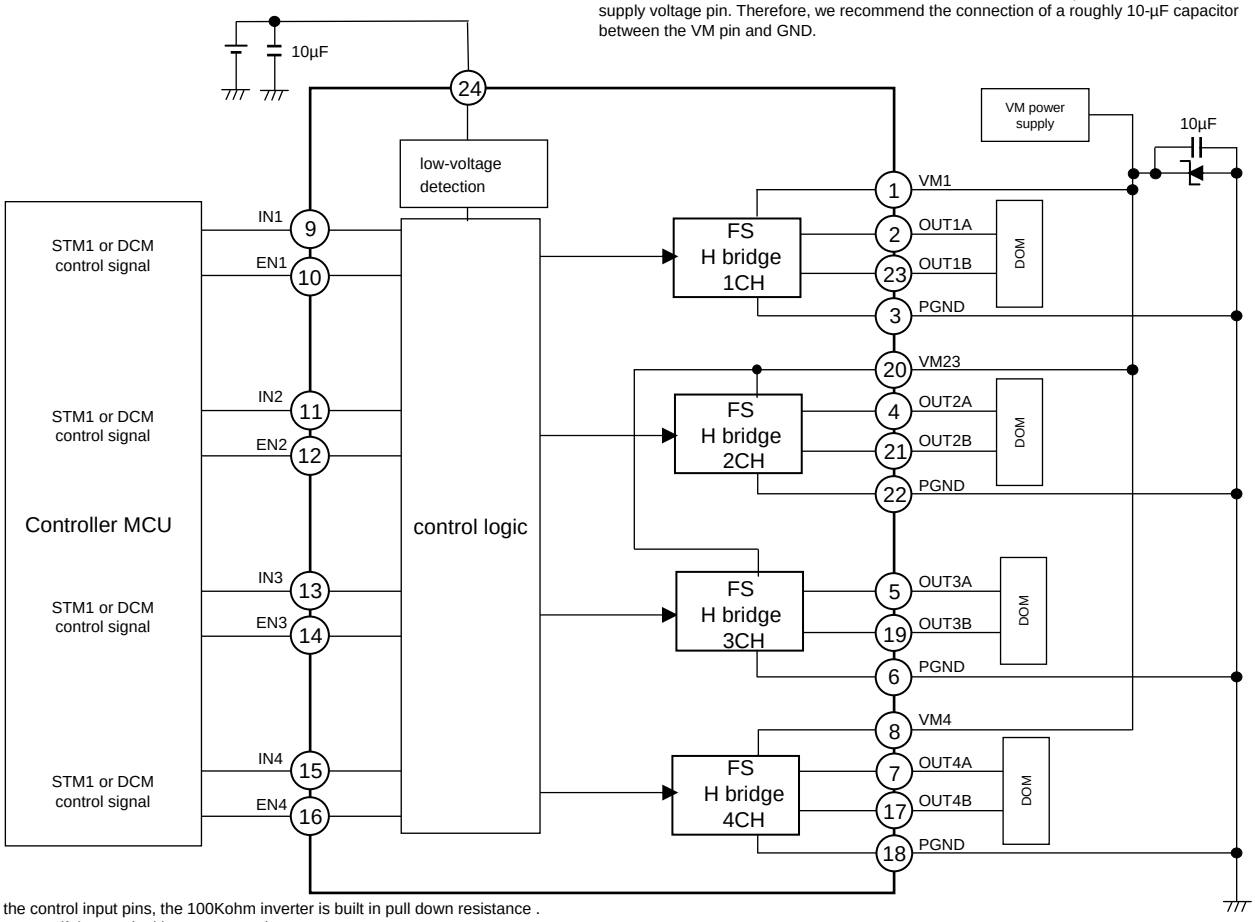
Pin assignment

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.



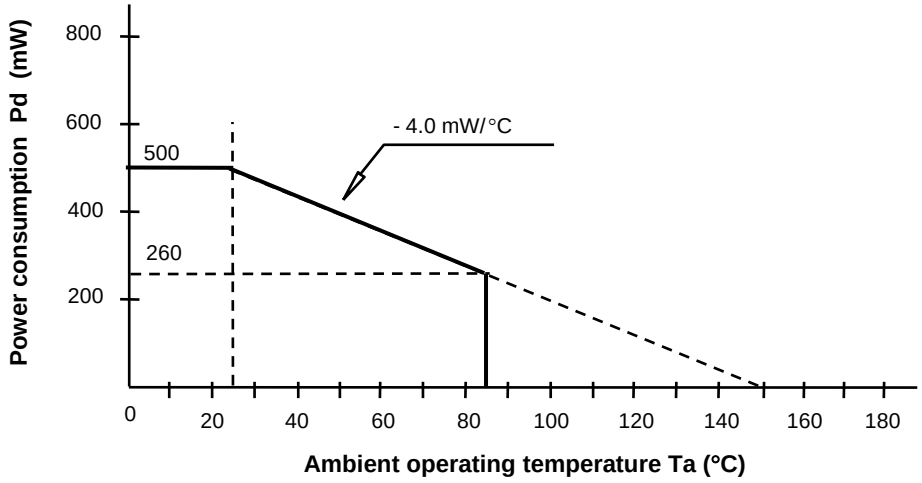
As for the control input pins, the 100Kohm inverter is built in pull down resistance .
It will operate, if the terminal is set as H-Active.
When the control input pins use is not carried out, ensure that the control input pins are either grounded or open-circuit (disconnected) while power is being supplied.

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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