

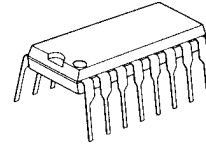
## BRUSH LESS DC MOTOR PRE-DRIVER

### ■GENERAL DESCRIPTION

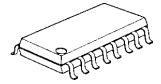
The **NJM2624A** is a 3-phase brushless DC motor pre-driver which requires external power-transistors suited to drive current of the motor.

The Run Enable function is used as PWM control besides of ON/OFF switched function.

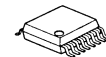
### ■PACKAGE OUTLINE



**NJM2624AD**



**NJM2624AM**

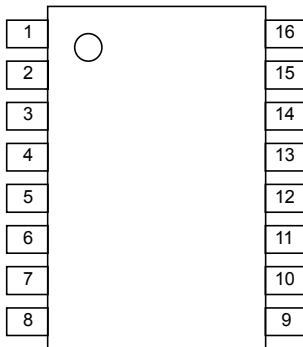


**NJM2624AV**

### ■FEATURES

- Operating Voltage (V<sup>+</sup>=4.5V to 18V)
- Low Operating Current (10mA max.)
- Run Enable
- Forward or Reverse Direction
- Output Switch Current (90mA typ.)
- Bipolar Technology
- Package Outline DIP16, DMP16, SSOP16

### ■PIN CONFIGURATION

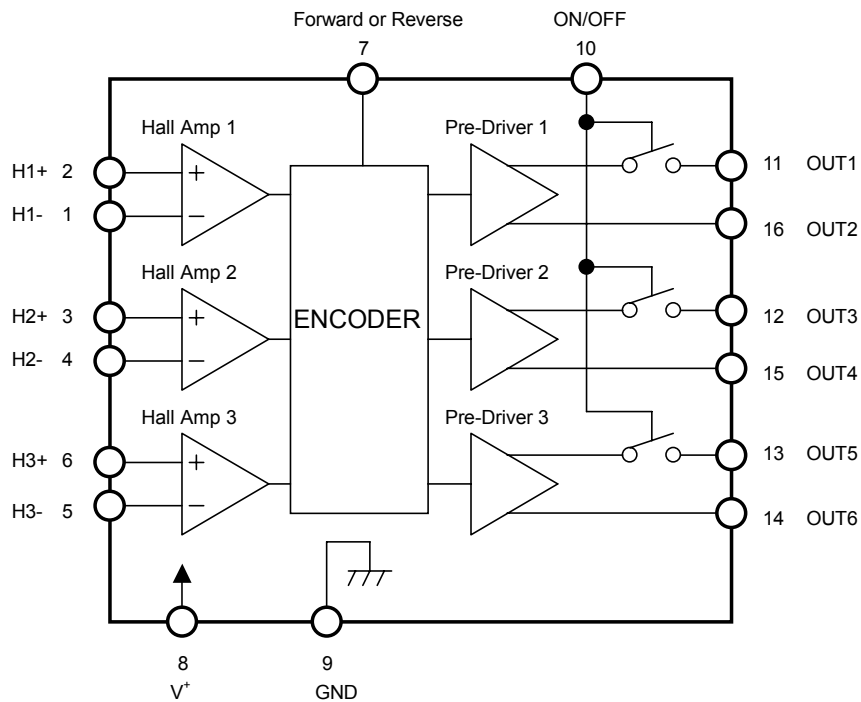


### PIN FUNCTION

1.H1-	9.GND
2.H1+	10.ON/OFF
3.H2+	11.OUT1
4.H2-	12.OUT3
5.H3-	13.OUT5
6.H3+	14.OUT6
7.FR	15.OUT4
8.V <sup>+</sup>	16.OUT2

# NJM2624A

## ■BLOCK DIAGRAM



## ■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	20	V
Output Current	I <sub>o</sub>	100	mA
Power Dissipation	P <sub>D</sub>	(DIP16) 700 (DMP16) 350 (SSOP16) 300	mW
Operating Temperature Range	Topr	-25 ~ +85	°C
Storage Temperature Range	Tstg	-40 ~ +150	°C

■ELECTRICAL CHARACTERISTICS (V<sup>+</sup>=12V, Ta=25°C)

Total Device

PARAMETER	SYMBOL	TEST CONDITONS	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sup>+</sup>		4.5	–	18	V
Supply Current	I <sub>CC</sub>	RL=∞ ON/OFF Terminal=OPEN	–	3.7	10	mA

Hall Sensor Section

Input Offset Voltage	V <sub>IO</sub>	RL=470Ω	-4.2	–	4.2	mV
Input Common mode Voltage range	V <sub>ICM</sub>	RL=470Ω	1.5	–	10.5	V
Input Bias Current	I <sub>B</sub>		–	–	600	nA

Output Section

Output Voltage 1	V <sub>OUT1</sub>	RL=470Ω, V <sup>+</sup> =12V	8.9	9.5	–	V
Output Voltage 2	V <sub>OUT2</sub>	RL=470Ω, V <sup>+</sup> =5V	–	3.5	–	V
Maximum Output Current 1	I <sub>OUT1</sub>	RL=100Ω, V <sup>+</sup> =12V	50	90	–	mA
Maximum Output Current 2	I <sub>OUT2</sub>	RL=100Ω, V <sup>+</sup> =5V	–	30	–	mA
Output Leak Current	I <sub>LEAK</sub>		–	–	5	μA

Run Enable Section

Run Enable Voltage	V <sub>ON</sub>	RL=470Ω	1/2V <sup>+</sup> +0.5	–	–	V
Run Disable Voltage	V <sub>OFF</sub>	RL=470Ω	–	–	1/2V <sup>+</sup> -0.5	V
Output Voltage Undefined Area	V <sub>O-undef</sub>	RL=470Ω	1/2V <sup>+</sup> -0.5	1/2V <sup>+</sup>	1/2V <sup>+</sup> +0.5	V
Source Current 1	I <sub>ON1</sub>	ON/OFF Terminal=GND	–	250	400	μA

Forward or Reverse Direction Section

Forward Direction	V <sub>F</sub>	RL=470Ω	1/2V <sup>+</sup> +0.5	–	–	V
Reverse Direction	V <sub>R</sub>	RL=470Ω	–	–	1/2V <sup>+</sup> -0.5	V
F/R Logic Undefined Area	V <sub>SW-undef</sub>	RL=470Ω	1/2V <sup>+</sup> -0.5	1/2V <sup>+</sup>	1/2V <sup>+</sup> +0.5	V
Source Current 2	I <sub>ON2</sub>	Forward or Reverse Terminal=GND	–	250	400	μA

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## ■ TERMINAL DESCRIPTION

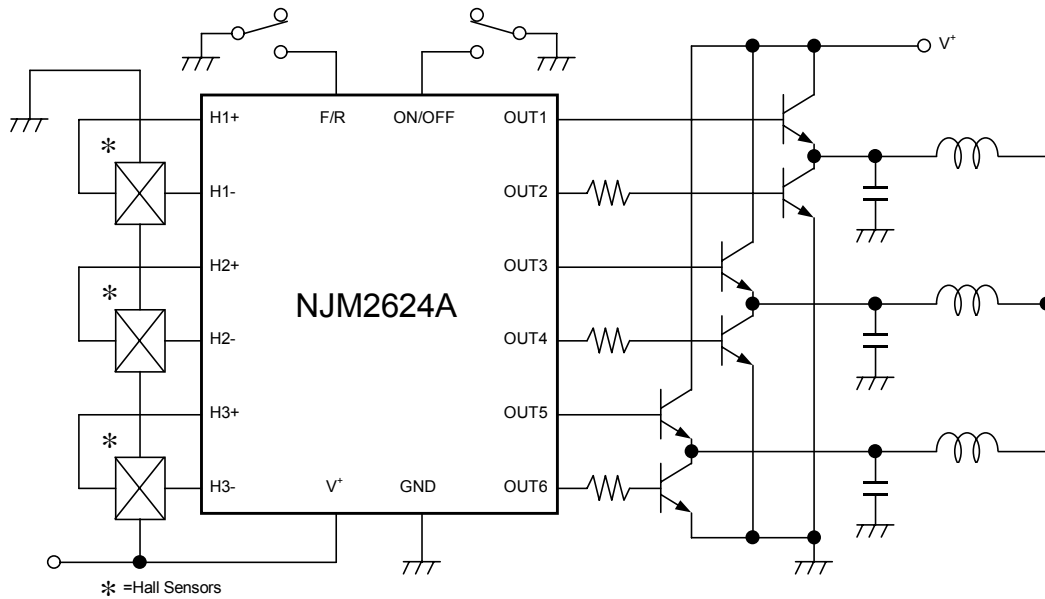
Pin No,	SYMBOL	FUNCTION	INSIDE EQUIVALENT CIRCUIT
2	H1+	Sensor Input 1 Non-Inverting Terminal	
3	H2+	Sensor Input 2 Non-Inverting Terminal	
6	H3+	Sensor Input 3 Non-Inverting Terminal	
1	H1-	Sensor Input 1 Inverting Terminal	
4	H2-	Sensor Input 2 Inverting Terminal	
5	H3-	Sensor Input 3 Inverting Terminal	
7	F/R	Forward or Reverse Direction Terminal	

## ■ TERMINAL DESCRIPTION

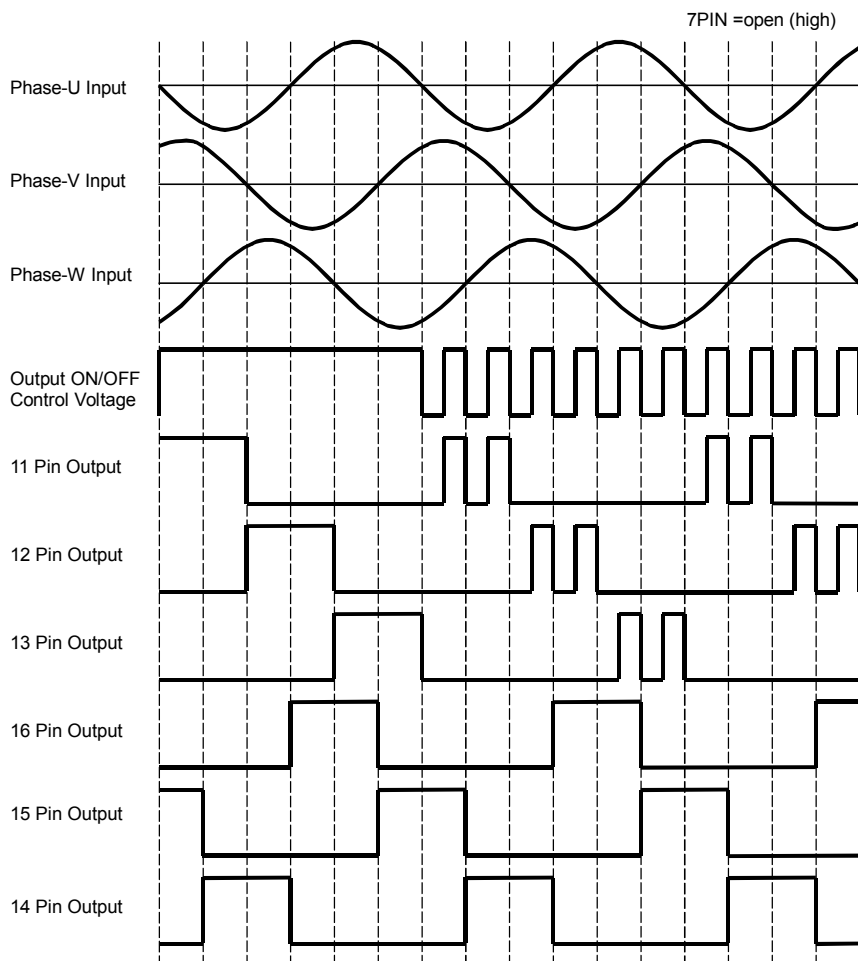
Pin No,	SYMBOL	FUNCTION	INSIDE EQUIVALENT CIRCUIT
8	V <sup>+</sup>	Power Supply	-
9	GND	Ground	-
10	ON/OFF	Output Run Enable Terminal	
11	OUT1	Internal Switching Transistor Emitter Follower	
16	OUT2		
12	OUT3		
15	OUT4		
13	OUT5		
14	OUT6		

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## ■TYPICAL APPLICATION

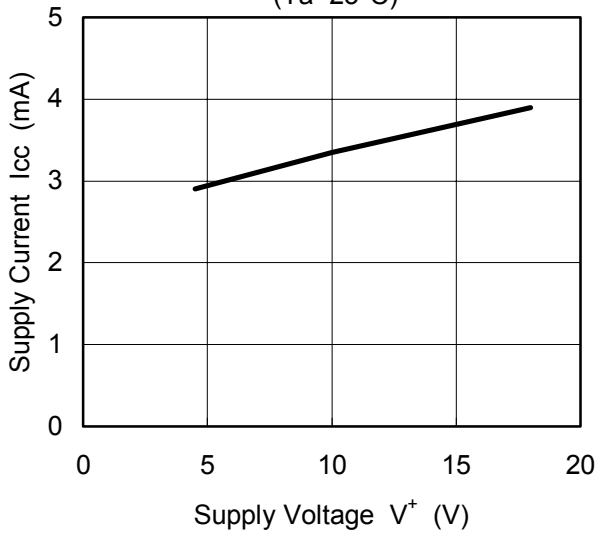


## ■TIMING CHART

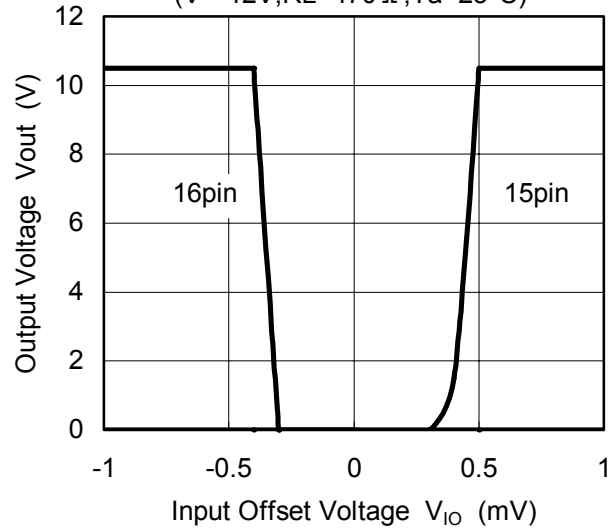


## TYPICAL CHARACTERISTICS

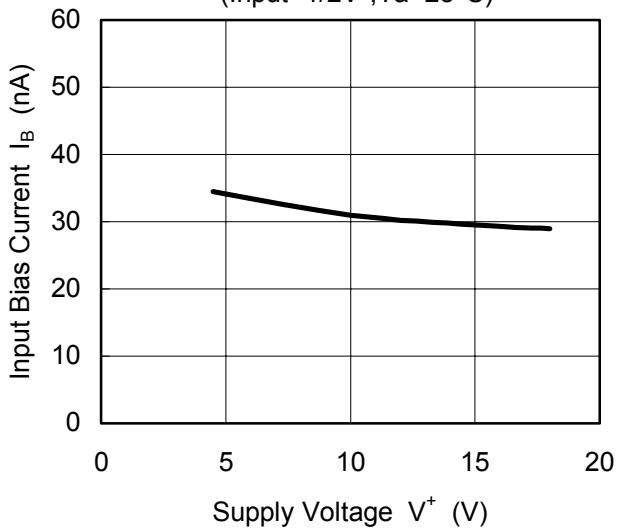
Supply Current vs. Supply Voltage  
( $T_a=25^\circ\text{C}$ )



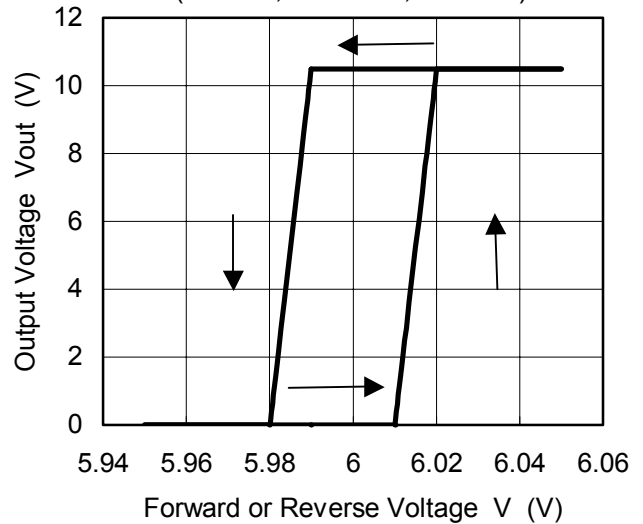
Input vs. Output (Offset)  
( $V^+=12\text{V}, R_L=470\ \Omega, T_a=25^\circ\text{C}$ )



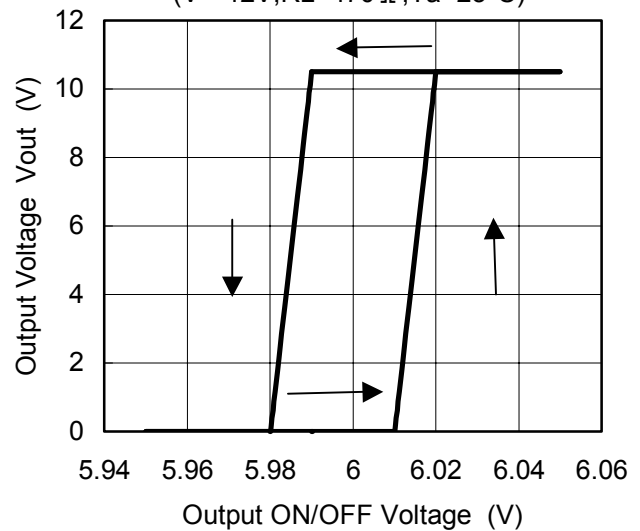
Input Bias Current vs. Supply Voltage  
(Input= $1/2V^+, T_a=25^\circ\text{C}$ )



Output Voltage vs. Forward or Reverse Voltage  
( $V^+=12\text{V}, R_L=470\ \Omega, T_a=25^\circ\text{C}$ )

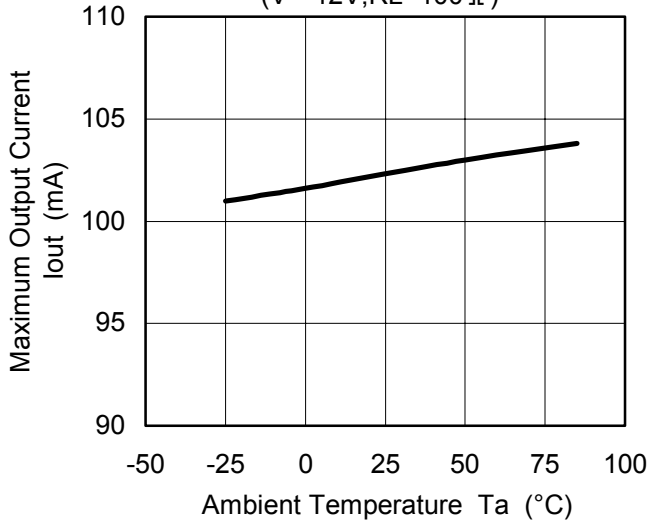


Output Voltage vs. Output ON/OFF Voltage  
( $V^+=12\text{V}, R_L=470\ \Omega, T_a=25^\circ\text{C}$ )

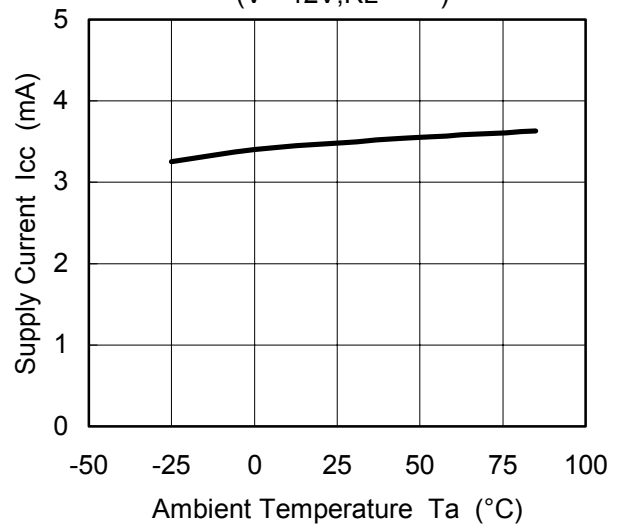


## TYPICAL CHARACTERISTICS

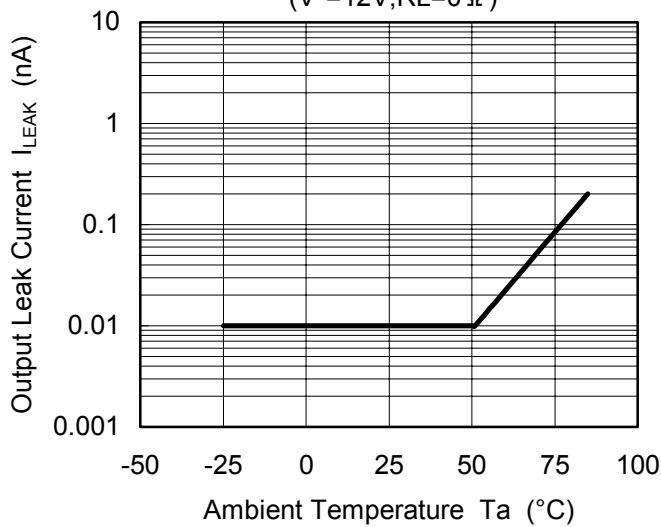
Maximum Output Current vs. Temperature  
( $V^+ = 12V, R_L = 100\Omega$ )



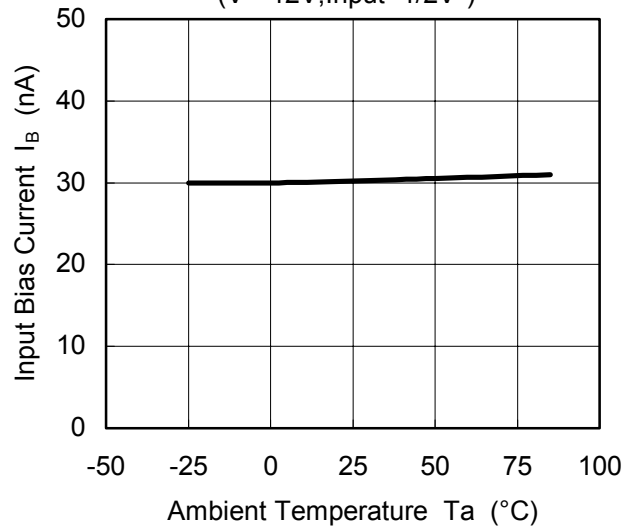
Supply Current vs. Temperature  
( $V^+ = 12V, R_L = \infty$ )



Output Leak Current vs. Temperature  
( $V^+ = 12V, R_L = 0\Omega$ )



Input Bias Current vs. Temperature  
( $V^+ = 12V, Input = 1/2V^+$ )



**[CAUTION]**

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