BRUSH LESS DC MOTOR PRE-DRIVER

■GENERAL DESRIPTION

   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.

■PACHAGE OUTLINE
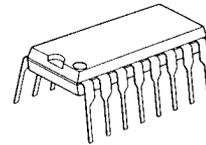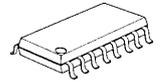

NJM2624AD   **NJM2624AM**
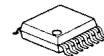
NJM2624AV

■FEATURES

  ●Operating Voltage   (V^+=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 CONFIGRATION
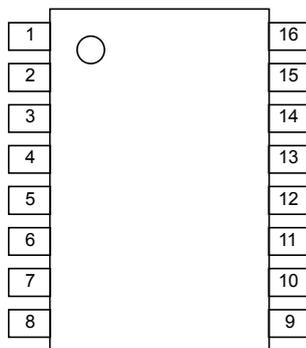
PIN FUNCTION

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^+ 16.OUT2

NJM2624A

■BLOCK DIAGRAM
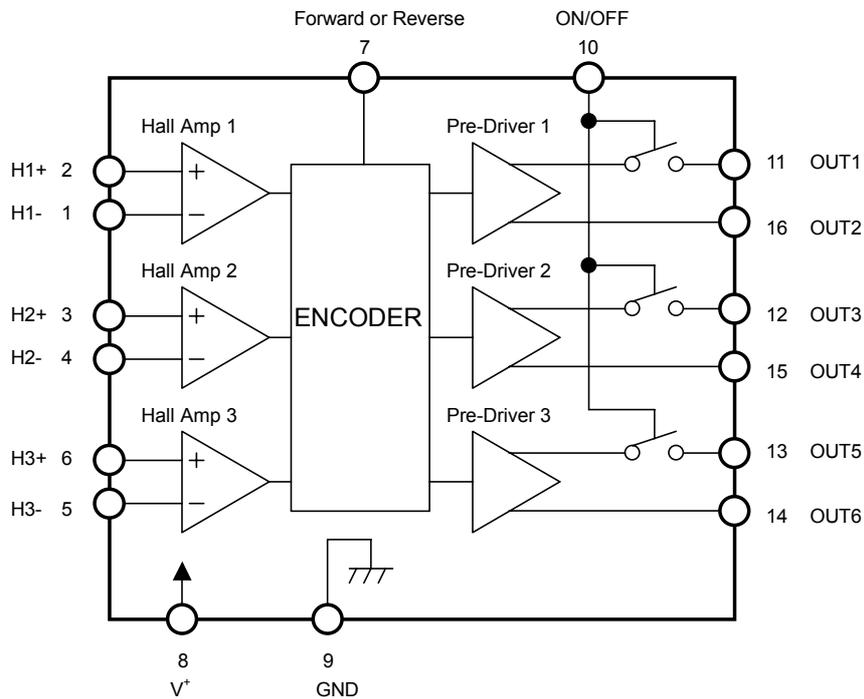
■ABSOLUTE MAXIMUM RATINGS   (Ta=25°C)

PARAMETER	SYMBOL	RATINGS		UNIT
Supply Voltage	V^+	20		V
Output Current	I_O	100		mA
Power Dissipation	P_D	(DIP16)	700	mW
		(DMP16)	350	
		(SSOP16)	300	
Operating Temperature Range	Topr	-25 ~ +85		°C
Storage Temperature Range	Tstg	-40 ~ +150		°C

■ELECTRICAL CHARACTERISTICS   (V$^+$=12V, Ta=25°C)

Total Device

PARAMETER	SYMBOL	TEST CONDTIONS	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V$^+$		4.5	–	18	V
Supply Current	I$_{CC}$	RL=∞ ON/OFF Terminal=OPEN	–	3.7	10	mA

Hall Sensor Section

PARAMETER	SYMBOL	TEST CONDTIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V$_{IO}$	RL=470Ω	-4.2	–	4.2	mV
Input Common mode Voltage range	V$_{ICM}$	RL=470Ω	1.5	–	10.5	V
Input Bias Current	I$_B$		–	–	600	nA

Output Section

PARAMETER	SYMBOL	TEST CONDTIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage 1	V$_{OUT1}$	RL=470Ω, V$^+$=12V	8.9	9.5	–	V
Output Voltage 2	V$_{OUT2}$	RL=470Ω, V$^+$=5V	–	3.5	–	V
Maximum Output Current 1	I$_{OUT1}$	RL=100Ω, V$^+$=12V	50	90	–	mA
Maximum Output Current 2	I$_{OUT2}$	RL=100Ω, V$^+$=5V	–	30	–	mA
Output Leak Current	I$_{LEAK}$		–	–	5	µA

Run Enable Section

PARAMETER	SYMBOL	TEST CONDTIONS	MIN.	TYP.	MAX.	UNIT
Run Enable Voltage	V$_{ON}$	RL=470Ω	1/2V$^+$+0.5	–	–	V
Run Disable Voltage	V$_{OFF}$	RL=470Ω	–	–	1/2V$^+$-0.5	V
Output Voltage Undefined Area	V$_{O-undef}$	RL=470Ω	1/2V$^+$-0.5	1/2V$^+$	1/2V$^+$+0.5	V
Source Current 1	I$_{ON1}$	ON/OFF Terminal=GND	–	250	400	µA

Forward or Reverse Direction Section

PARAMETER	SYMBOL	TEST CONDTIONS	MIN.	TYP.	MAX.	UNIT
Forward Direction	V$_F$	RL=470Ω	1/2V$^+$+0.5	–	–	V
Reverse Direction	V$_R$	RL=470Ω	–	–	1/2V$^+$-0.5	V
F/R Logic Undefined Area	V$_{SW-undef}$	RL=470Ω	1/2V$^+$-0.5	1/2V$^+$	1/2V$^+$+0.5	V
Source Current 2	I$_{ON2}$	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$^+$	Power Supply	–
9	GND	Ground	–
10	ON/OFF	Output Run Enable Terminal	
11	OUT1	Internal Switching Transistor	
16	OUT2	Emitter Follower	
12	OUT3		
15	OUT4		
13	OUT5		
14	OUT6		

NJM2624A

■TYPICAL APPLICATION

∗ =Hall Sensors

■TIMING CHART

7PIN =open (high)

Phase-U Input

Phase-V Input

Phase-W Input

Output ON/OFF Control Voltage

11 Pin Output

12 Pin Output

13 Pin Output

16 Pin Output

15 Pin Output

14 Pin Output

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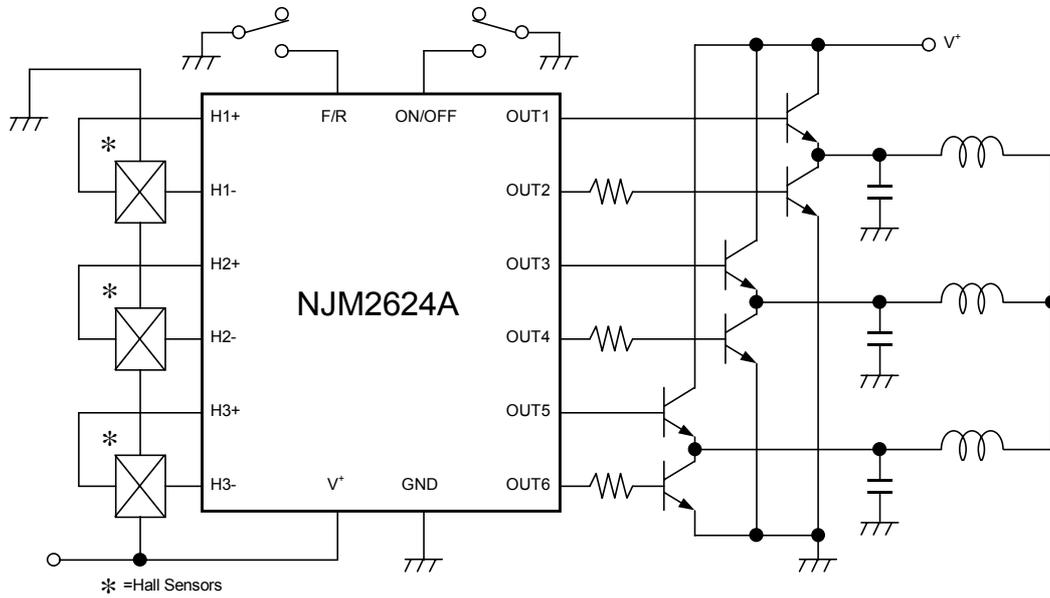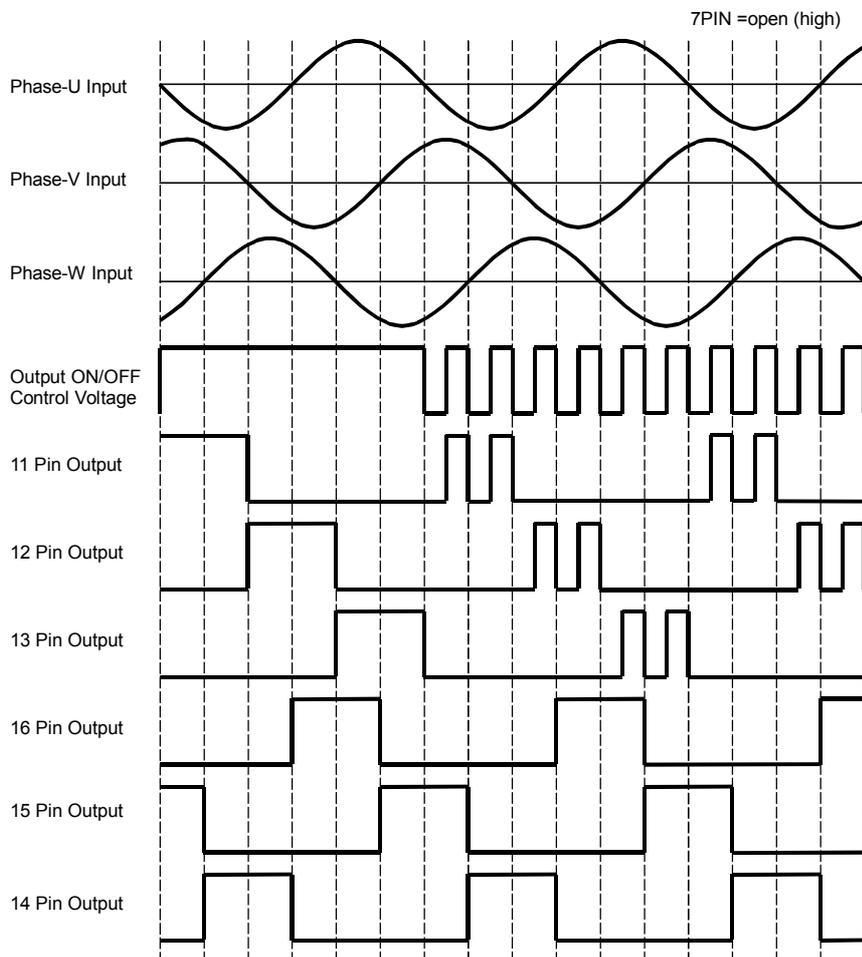
■TIPICAL CHARACTERISTICS

Supply Current vs. Supply Voltage
(Ta=25°C)
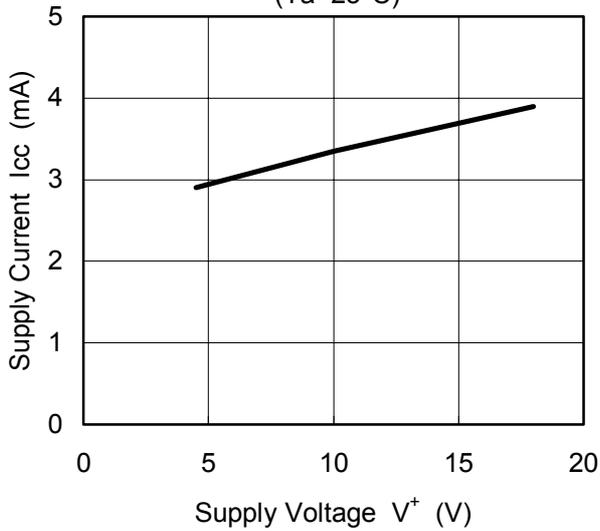
Input vs. Output （Offset）
(V^+=12V,RL=470Ω,Ta=25°C)

16pin   15pin
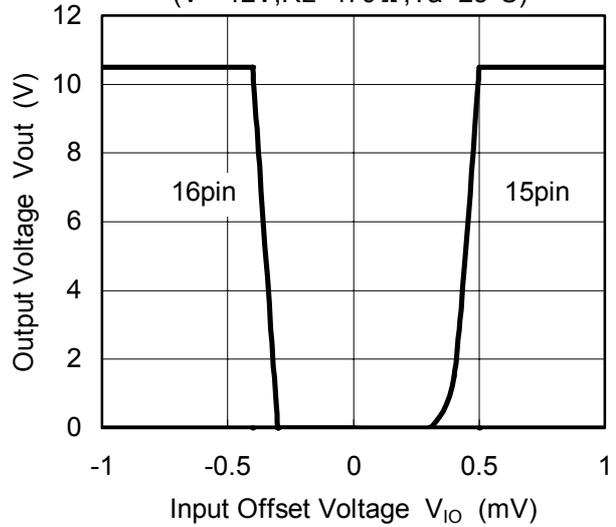
Input Bias Current vs. Supply Voltage
(Input=1/2V^+,Ta=25°C)
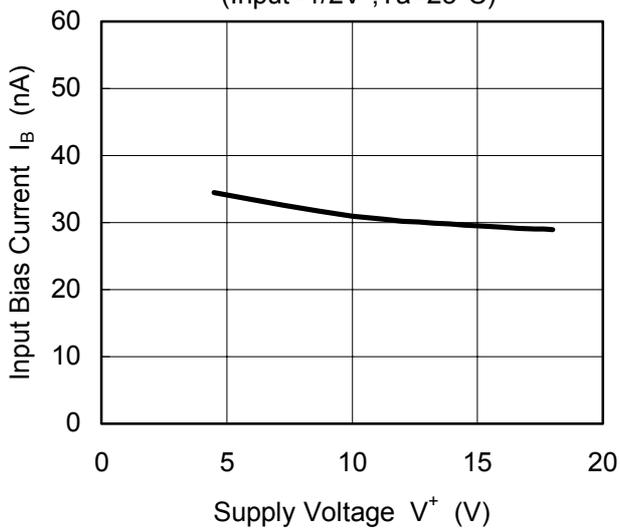
Output Voltage vs. Forward or Reverse Voltage
(V^+=12V,RL=470Ω,Ta=25°C)
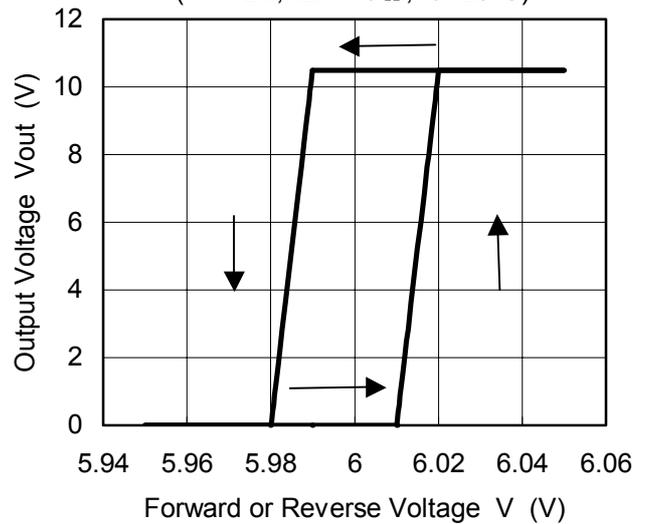
Output Voltage vs. Output ON/OFF Voltage
(V^+=12V,RL=470Ω,Ta=25°C)
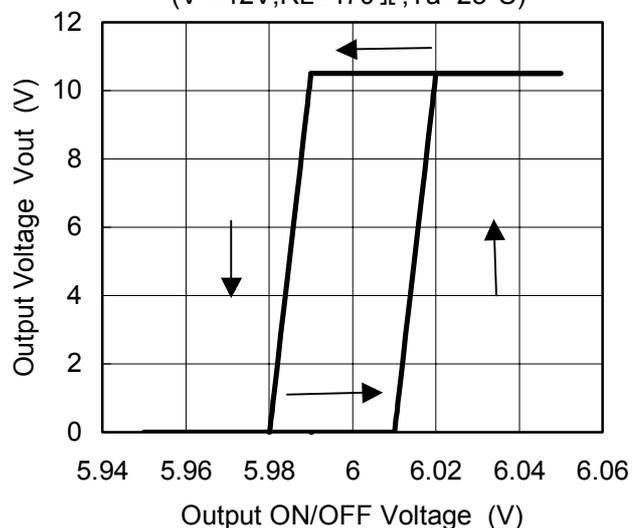
NJM2624A

■TIPICAL CHARACTERISTICS

Maximum Output Current vs.Temperature
(V^+=12V,RL=100Ω)
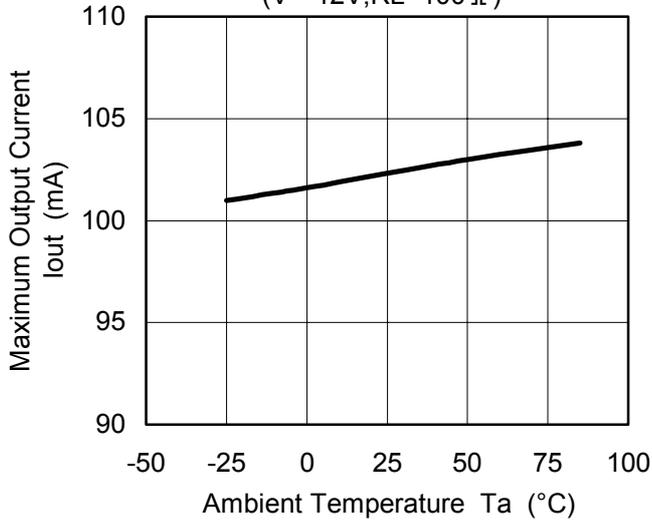
### Supply Current vs.Temperature
(V^+=12V,RL=∞)
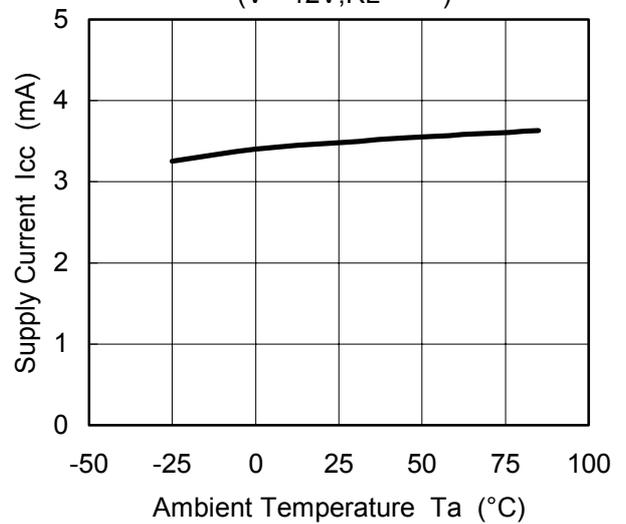
Output Leak Current vs.Temperature
(V^+=12V,RL=0Ω)
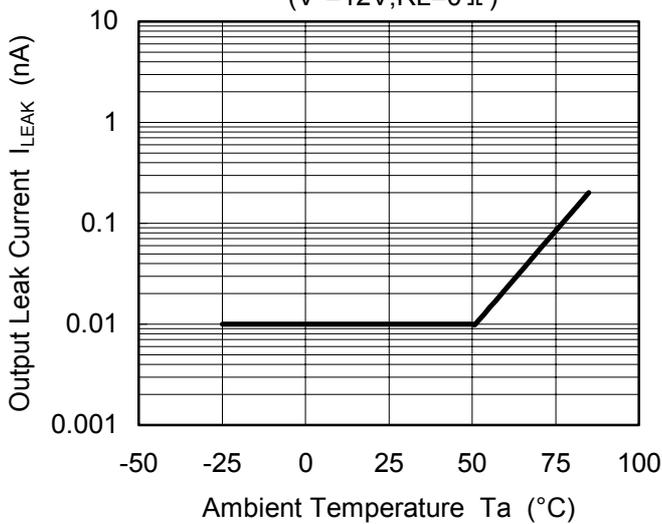
Input Bias Current vs.Temperature
(V^+=12V,Input=1/2V^+)