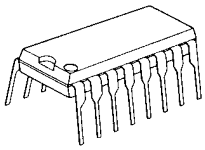
BRUSH LESS DC MOTOR PRE-DRIVER

■GENERAL DESRIPTION

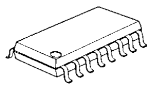
The **NJM2624A** is a 3-phase brushless DC motor pre-driver which requires external power-transistors suited to drive current of the motor.

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

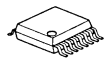
■PACHAGE OUTLINE



NJM2624AD



NJM2624AM

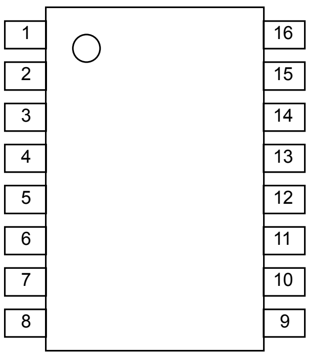


NJM2624AV

■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

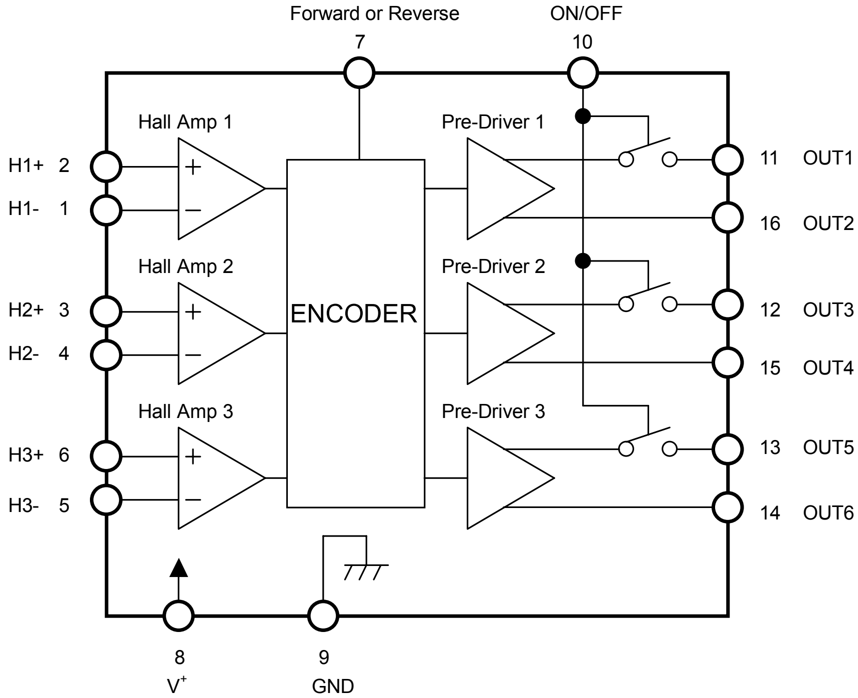


PIN FUNCTION

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 (DMP16) 350 (SSOP16) 300	mW
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

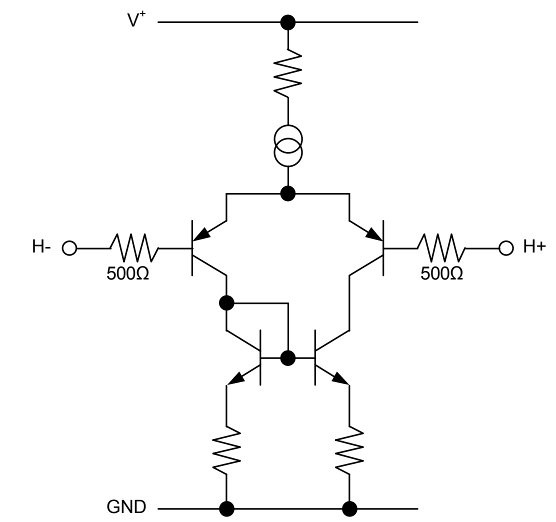
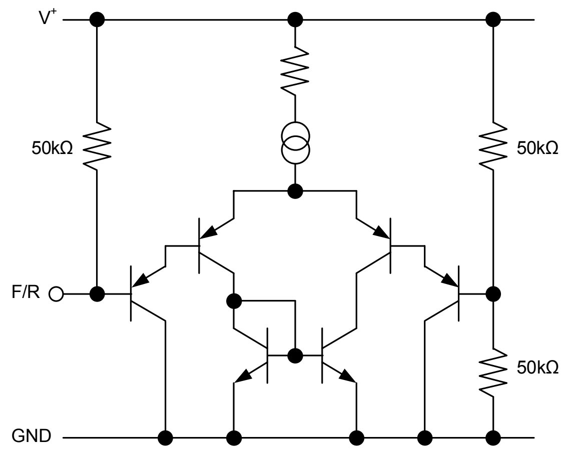
PARAMETER	SYMBOL	TEST CONDTIONS	MIN.	TYP.	MAX.	UNIT
Run Enable Voltage	V_{ON}	RL=470Ω	1/2V$^+$+0.5	–	–	V
Run Disable Voltage	V_{OFF}	RL=470Ω	–	–	1/2V$^+$-0.5	V
Output Voltage Undefined Area	$V_{O\text{-}undef}$	RL=470Ω	1/2V$^+$-0.5	1/2V$^+$	1/2V$^+$+0.5	V
Source Current 1	I_{ON1}	ON/OFF Terminal=GND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

NJM2624A

■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	

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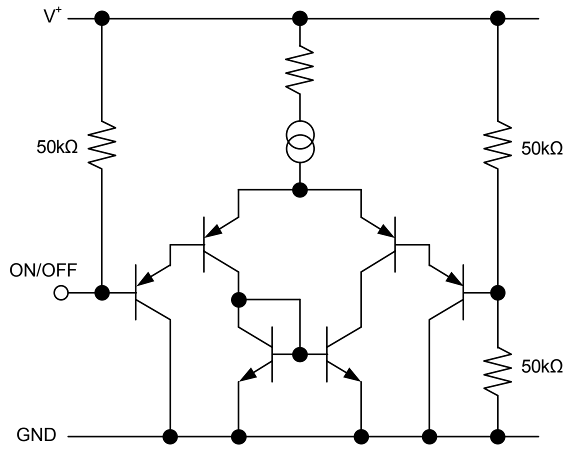
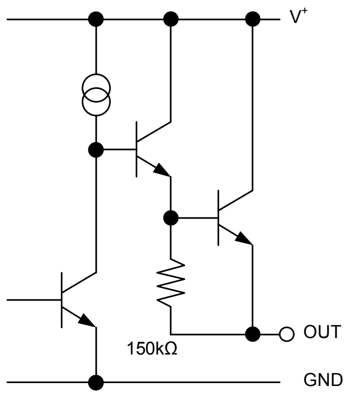
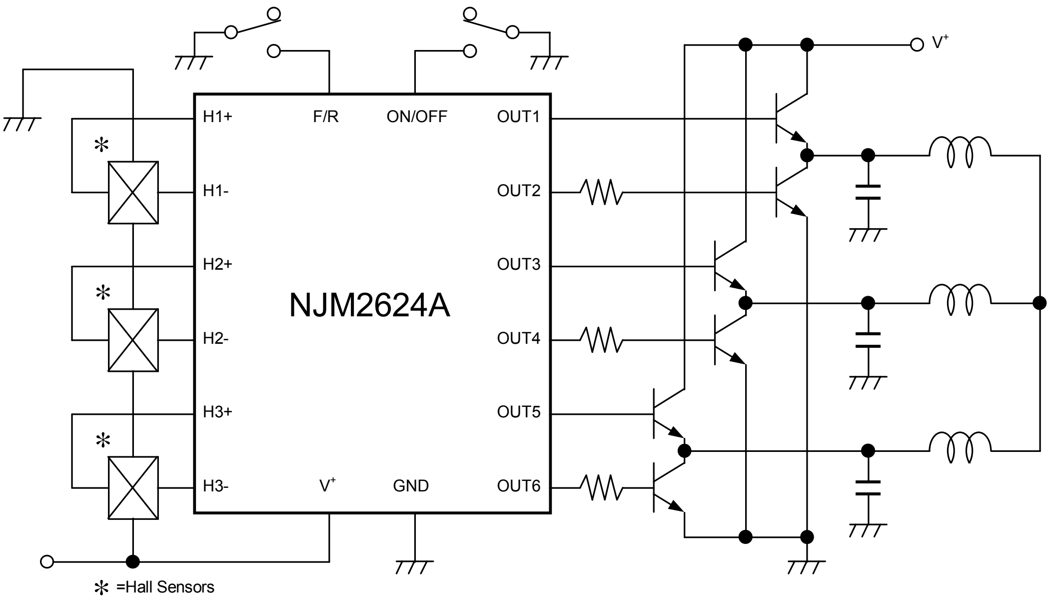
■TERMINAL DESCRIPTION

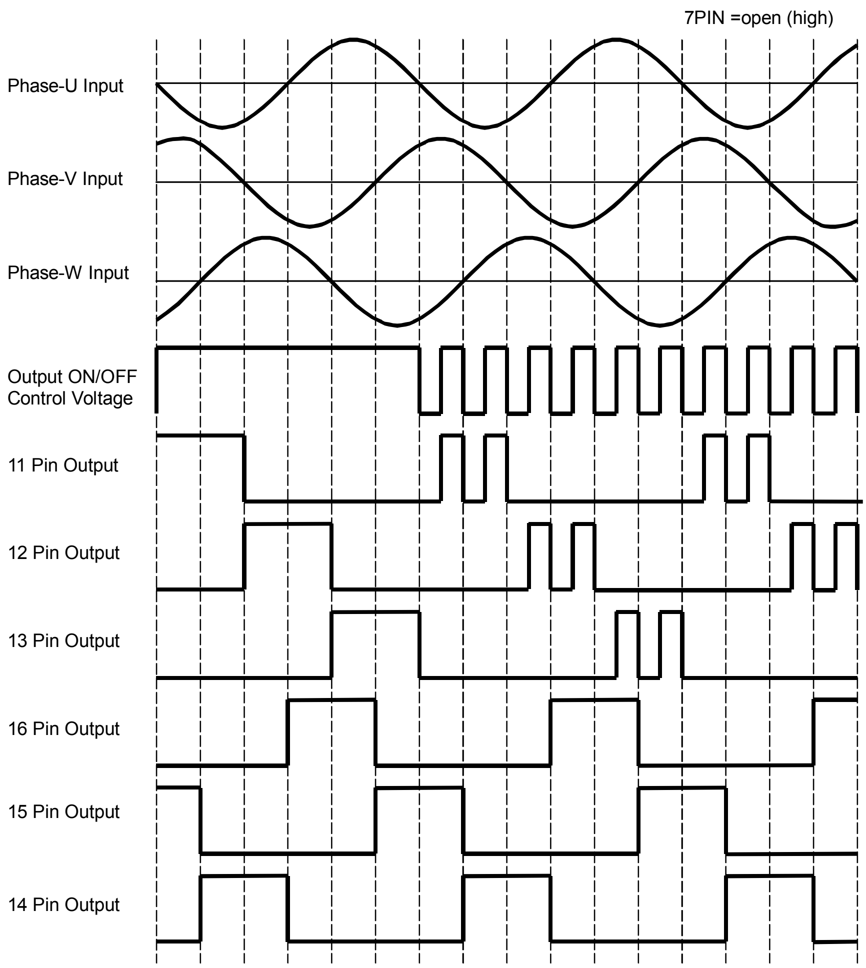
Pin No,	SYMBOL	FUNCTION	INSIDE EQUIVALENT CIRCUIT
8	V^+	Power Supply	–
9	GND	Ground	–
10	ON/OFF	Output Run Enable Terminal	
11	OUT1	Internal Switching Transistor Emitter Follower	
16	OUT2		
12	OUT3		
15	OUT4		
13	OUT5		
14	OUT6		

NJM2624A

■TYPICAL APPLICATION



■TIMING CHART



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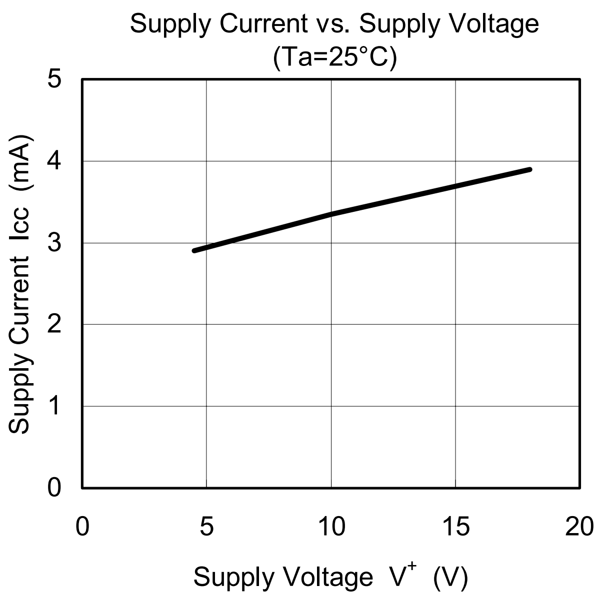
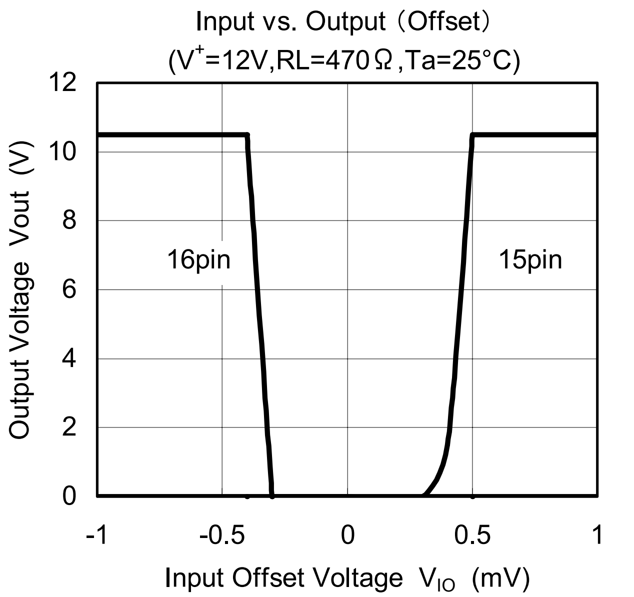
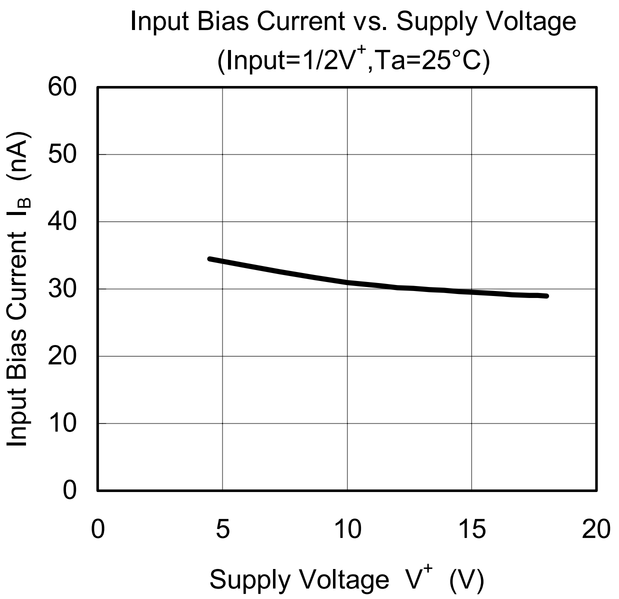
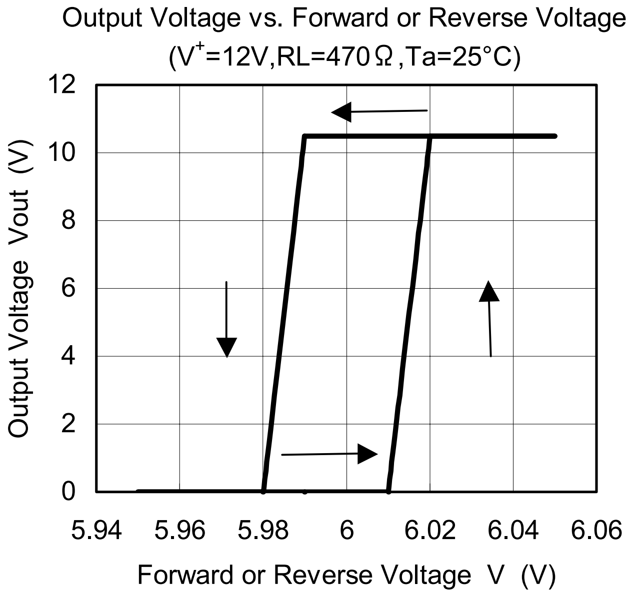
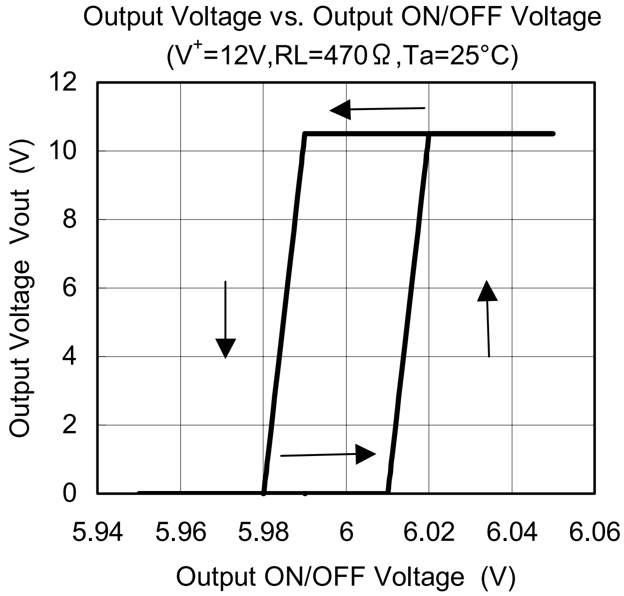
■TIPICAL CHARACTERISTICS











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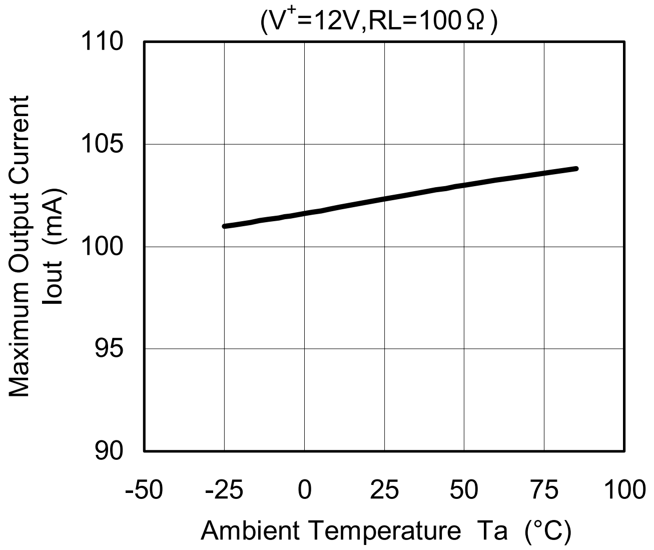
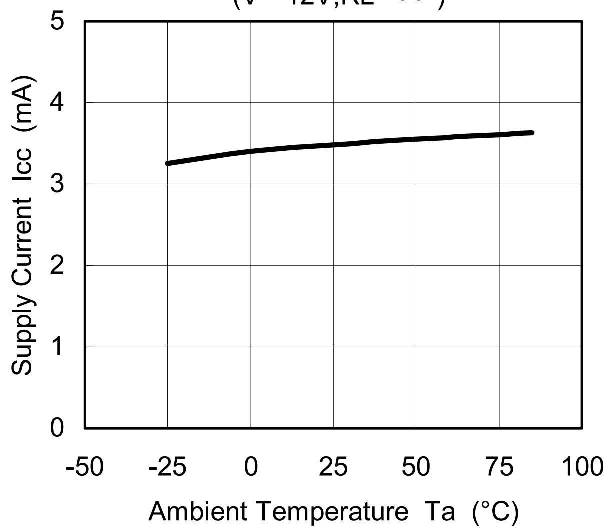
■TIPICAL CHARACTERISTICS

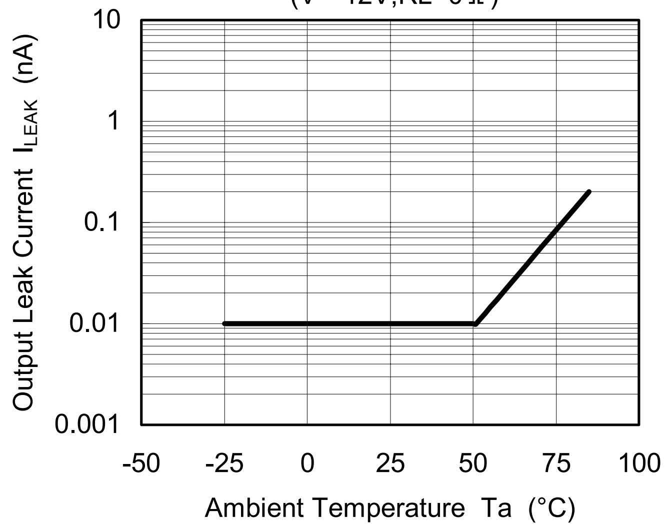
Maximum Output Current vs.Temperature
(V^+=12V,RL=100Ω)



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^+)