

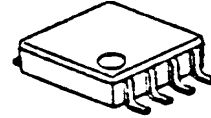
Single-phase DC Brushless Motor Driver IC

■ GENERAL DESCRIPTION

The NJU7365 is a single phase motor driver IC. It features a MOS FET motor driver, direct PWM input, FG output and thermal shutdown circuit.

The driver is capable of 1000mA maximum output current and continuous current of 350mA.

■ PACKAGE OUTLINE

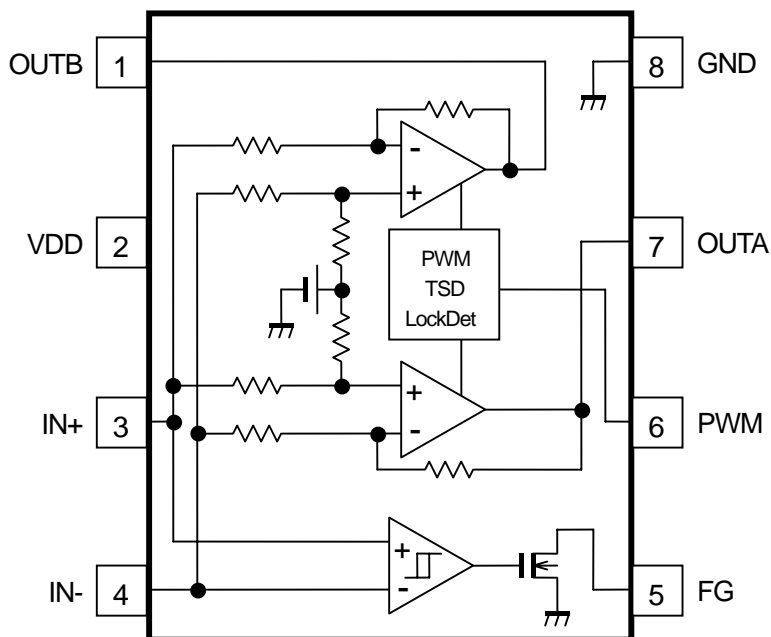


NJU7365RB1

■ FEATURES

- Supply Voltage $V_{DD}=2.0$ to $5.5V$
- Low Quiescent Current $I_{DD}=1mA$ typ.
- Maximum Output Voltage $V_{OH}=4.7V$ typ. @ $I_o=+350mA$, $V_{OL}=0.2V$ typ. @ $I_o=-350mA$
- Direct PWM Input
- Lock Detect
- FG Output
- Thermal Shutdown Circuit
- CMOS Technology
- Package Outline TVSP8

■ BLOCK DIAGRAM



■ PIN FUNCTION

PIN No.	PIN NAME
1	OUTB
2	VDD
3	IN+
4	IN-
5	FG
6	PWM
7	OUTA
8	GND

NJU7365

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT	
Supply Voltage	V _{DD}	+7	V	
Input Voltage	V _{ID}	-0.3 to V _{DD}	V	
PWM Input Voltage	V _{PWM}	-0.3 to V _{DD}	V	
Output Current (Peak)	I _{OPEAK}	1000	mA	
FG Output Current	I _{FG}	10	mA	
FG Output Voltage	V _{FG}	+7.0	V	
Power Dissipation	P _D	Device itself	400	mW
		(*1) Mounted on 2Layer Board	510	
Operating Temperature	Topr	-40 to +85	°C	
Junction Temperature	Tjmax	150	°C	
Storage Temperature	Tstg	-50 to +150	°C	

(*1): Mounted on glass epoxy board based on EIA/JEDEC. (76.2 × 114.3 × 1.6mm: 2-Layers FR-4)

■ RECOMMENDED OPERATING CONDITIONS

(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{DD}	-	2.0	5.0	5.5	V

■ ELECTRICAL CHARACTERISTICS

($V_{DD}=5V, T_a=25^{\circ}C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
■ GENERAL						
Quiescent Current	I_{DD}	$I_{N+}=3.9V, I_{N-}=0.4V$	-	1.1	1.8	mA
Thermal Shutdown Operating Temperature	T_{TSD}	-	-	170	-	$^{\circ}C$
Thermal Shutdown Hysteresis	T_{HYS}	-	-	20	-	$^{\circ}C$
■ HALL AMP BLOCK						
Input Offset Voltage	V_{IO}	-	-10	-	10	mV
Common Mode Input Voltage Range	V_{ICM}	-	0.4	-	3.9	V
Close-loop Gain	A_V	-	-	46.4	-	dB
■ OUTPUT BLOCK						
Output Voltage	V_{OH}	$I_O=+350mA$	4.6	4.7	-	V
	V_{OL}	$I_O=-350mA$	-	0.2	0.3	V
FGL Output Voltage	V_{FG}	$I_{FG}=5mA$	-	-	0.2	V
FGH Leak Current	$I_{FG-LEAK}$	$V_{FG}=5V$	-	-	1.0	μA
■ PWM INPUT BLOCK						
PWM Input Frequency	f_{PWM}	-	2	-	50	kHz
Pullup resistance	R_{PWM}	-	-	200	-	$k\Omega$
Input H Level Voltage1	V_{IHP1}	-	3.0	-	-	V
Input H Level Voltage2	V_{IHP2}	$V_{DD}=2V$	1.4	-	-	V
Input L Level Voltage1	V_{ILP1}	-	0	-	1.5	V
Input L Level Voltage2	V_{ILP2}	$V_{DD}=2V$	0	-	0.5	V
■ LOCK DETECT BLOCK						
Lock Detect ON Time	t_{ON}	-	-	0.66	-	s
Lock Detect OFF Time	t_{OFF}	-	-	6.6	-	s
Lock Detect Ratio	t_{RATIO}	-	-	1:10	-	-

NJU7365

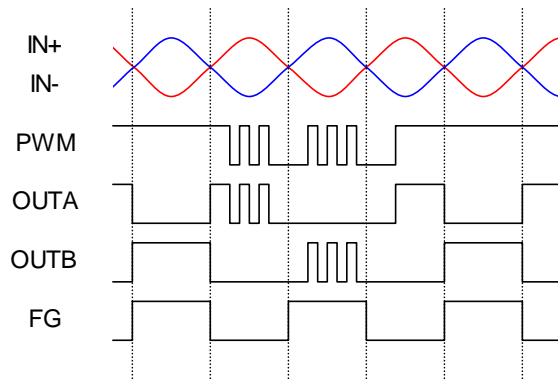
TRUTH TABLE

No.	IN+	IN -	PWM	TSD	LD	OUTA	OUTB	FG
1	H	L	H	OFF	OFF	H	L	L
2	L	H	H	OFF	OFF	L	H	Z
3	H	L	L	OFF	OFF	L	L	L
4	L	H	L	OFF	OFF	L	L	Z
5	H	L	H	ON	OFF	L	L	L
6	L	H	H	ON	OFF	L	L	Z
7	H	L	L	ON	OFF	L	L	L
8	L	H	L	ON	OFF	L	L	Z
9	H	L	H	OFF	ON	L	L	Z
10	L	H	H	OFF	ON	L	L	Z
11	H	L	L	OFF	ON	L	L	Z
12	L	H	L	OFF	ON	L	L	Z
13	H	L	H	ON	ON	L	L	Z
14	L	H	H	ON	ON	L	L	Z
15	H	L	L	ON	ON	L	L	Z
16	L	H	L	ON	ON	L	L	Z

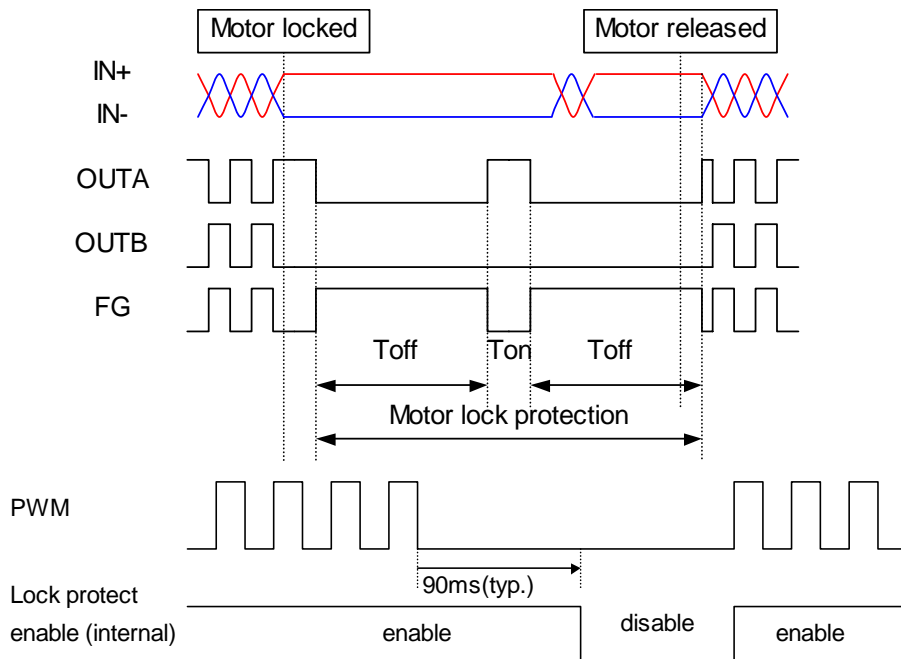
Z : High Impedance

*FG output turns to "L" when PWM "L" state is within fixed time(90ms typ.).

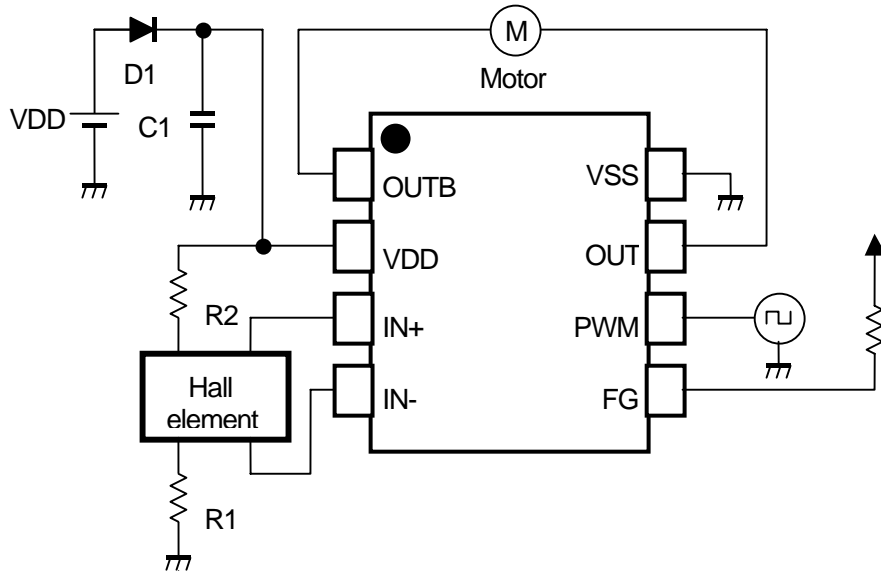
TIMING CHART at PWM



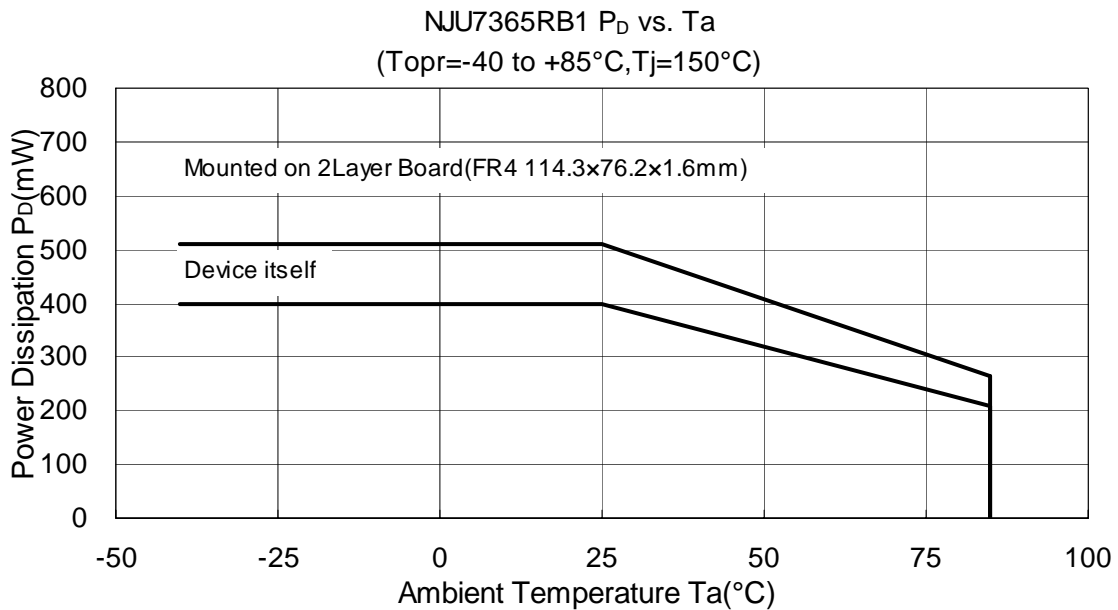
TIMING CHART at LOCK DETECT



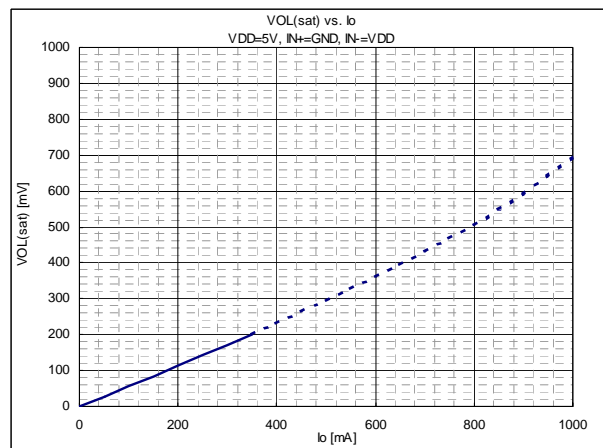
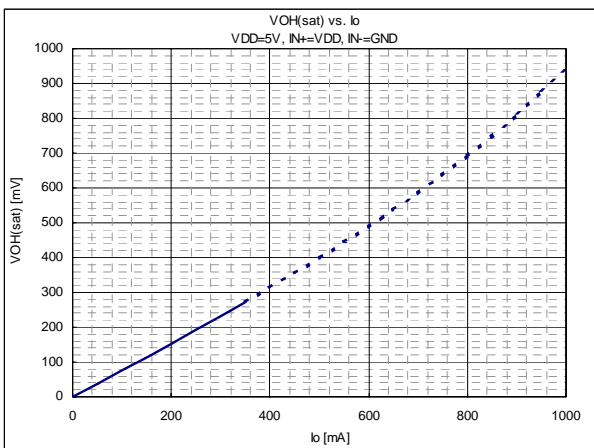
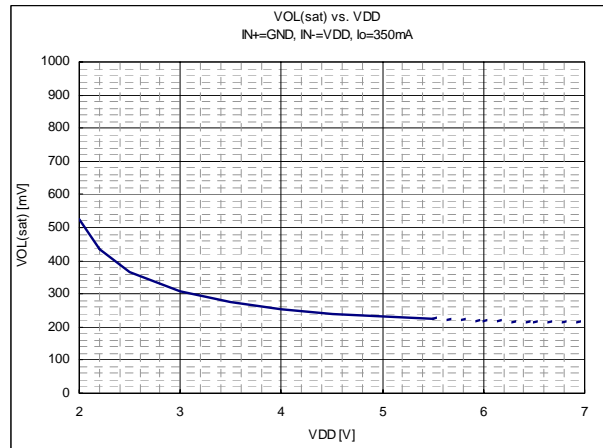
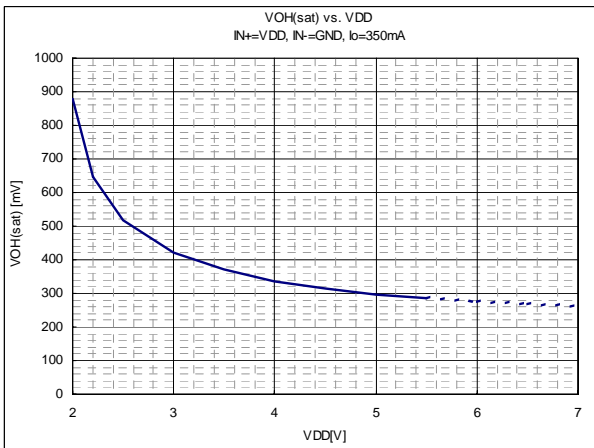
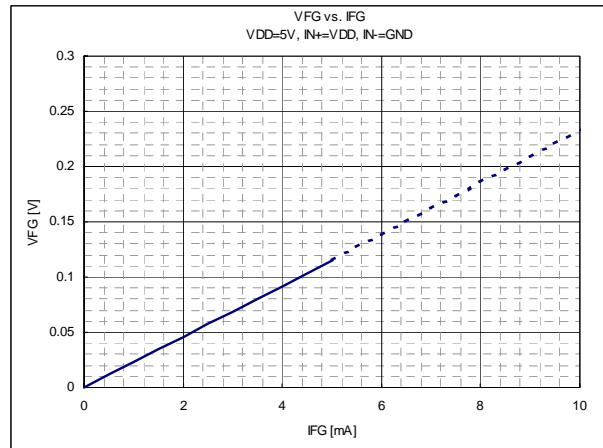
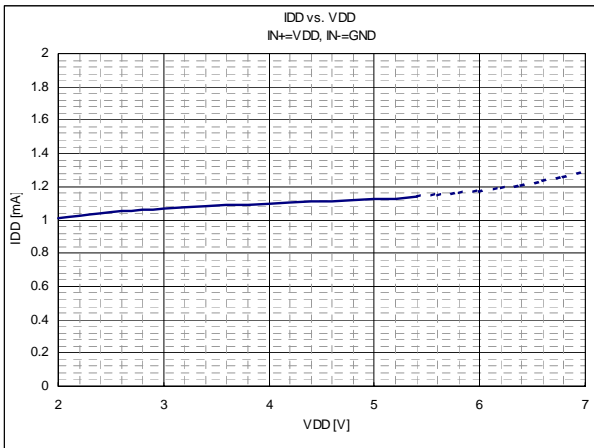
■ TYPICAL APPLICATION CIRCUIT



■ POWER DISSIPATION vs. AMBIENT TEMPERATURE



TYPICAL CHARACTERISTICS



[CAUTION]
The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.