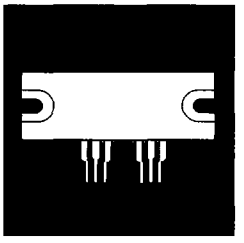
HIGH VOLTAGE, 1/2 H BRIDGE IN A PLASTIC PACKAGE



TTL Controlled High Voltage 1 2 H Bridge Motor Driver

FEATURES

- Operation to 100V
- TTL Input Control
- Thermal Protection
- Low Profile Package
- Heat Sinkable
- Cross Current Protection
- Isolated Construction

DESCRIPTION

The OM9301SP1 and OM9302SP1 are high voltage TTL controlled 1/2 H bridge motor drivers. These devices include logic and level shift circuitry to enable the user to control the high voltage outputs with TTL compatible input signals. Also included are protection circuits for thermal shutdown and cross current conduction. Multiple 1/2 H bridge devices can be used for driving single coil D.C. motors, 3 phase brushless D.C. and dual coil stepper motors.

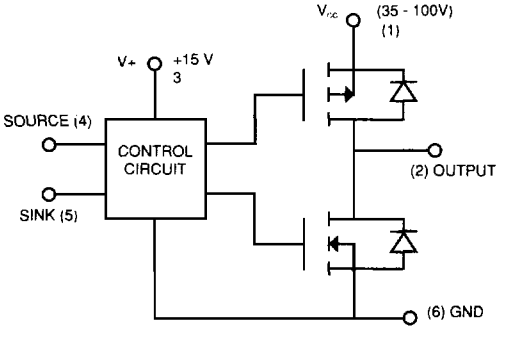
2.1

TRUTH TABLE

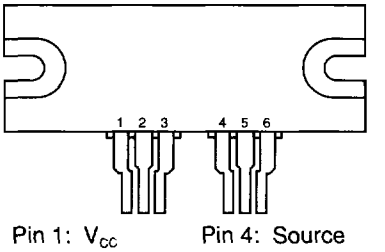
SOURCE	SINK	OUTPUT OM9301SP1	OUTPUT OM9302SP1
0	0	high	low
0	1	high	high Z
1	0	low	high
1	1	high Z	high

Note: High Z is source and sink off

SCHEMATIC



PIN CONNECTION



Pin 1: V_{CC}
Pin 2: Output
Pin 3: V+
Pin 4: Source
Pin 5: Sink
Pin 6: Ground

ABSOLUTE MAXIMUM RATINGS

Logic Input Voltage Range ..... -0.3V to +7.0V
Logic Supply Voltage Range ..... 12V to 35V
Output Supply Voltage ..... 35V to 100V
Peak Output Current (100ms, 10% d-c) 10A
Continuous Output Current 5A
Operating Temperature Range ..... -25°C to +85°C
Storage Temperature Range ..... -55°C to +125°C

CHARACTERISTIC	SOURCE DRIVER INPUT, PIN 4		SINK DRIVER INPUT PIN 5	OUTPUT PIN 2	LIMITS MIN.	LIMITS MAX.	UNITS
Output Leakage Current	2.4V	0.8V	2.4V	0V	-	-500	μA
	2.4V	0.8V	2.4V	100V	-	500	μA
Output $R_{DS(ON)}$	0.8V	2.4V	2.4V	-	-	0.25	Ω
	2.4V	0.8V	0.8V	-	-	0.25	Ω
Output Source Current	0.8V	2.4V	2.4V	-	5	-	A
Output Sink Current	2.4V	0.8V	0.8V	-	5	-	A
Input Open-Circuit Voltage	-250μA	-250μA	-250μA	-	-	7.5	V
Input Current	-	2.4V	2.4V	NC	-	-700	μA
	2.4V	-	2.4V	NC	-	10	μA
	0.8V	0.8V	0.8V	NC	-	-1.6	mA
Propagation Delay	2.4V	0.8V	0.8 to 2.4V	-	-	1	μs
	0.8 to 2.4V	2.4 to 0.8V	2.4V	-	-	2.2	μs
Supply Current	0.8V	2.4V	NC	NC	-	100	mA

Note: Positive (negative) current is defined as going into (coming out of) the specified device pin.

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ELECTRICAL CHARACTERISTICS T_A = 25°C, V_L = +15V, V_{CC} = +100V (UOS)

APPLICATION NOTES

It should be noted that an additional power dissipation component may arise from crossover currents flowing from supply to ground when current direction is reversed. This is due to differences in switching speeds in the internal driver IC. Although the internal logic lockout protects these devices from catastrophic failure, the crossover power component can cause device operation at substantially higher junction temperatures.

If timing conditions are ignored, the magnitude of this power can be approximated as:

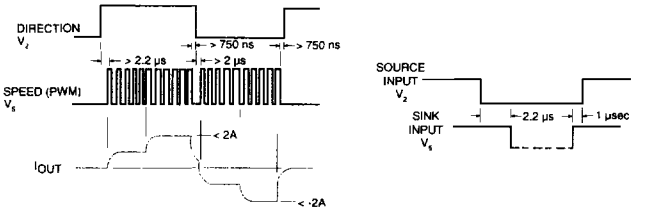
$$P_D = V_S \times I_C \times t \times f$$

where

V_S = *supply voltage*
I_C = *crossover current (≈ 3.5 A max.)*
t = *crossover current duration (≈ 1 μs)*
f = *frequency of direction change*

In some applications (high switching speeds or high package power dissipation), it is recommended that the inputs be driven separately, and that the sink driver not be turned ON for at least 2.2 μs (maximum source t_{po}), after the source driver input is turned OFF. The sink driver should be turned OFF at least 1 μs (maximum sink t_{pc}) before the source driver is turned ON.

RECOMMENDED TIMING CONDITIONS



MECHANICAL OUTLINE