

NCV7702B

1 A Dual H-Bridge Driver

This dual full-bridge driver IC is intended for 14 V automotive stepper and DC motor applications. Its four half-bridge outputs are configured as two channels and are programmed by six TTL compatible inputs, allowing flexible control of bridge operation. The device operates in standby mode, run mode, or brake mode and typically consumes less than 1 μA while in standby. In run mode, each half-bridge output can deliver load current in either direction. Brake mode activates the low side transistors or high side transistors at the selected outputs. On-chip recirculation diodes are provided, and the IC has multiple fault protection modes. Overcurrent detection protects against shorted loads between outputs and shorts to supply or ground at each output. An overcurrent fault condition activates an internal timer, which modulates faulted outputs at low duty cycle. An overcurrent condition in one channel does not affect operation in the other. Overvoltage and overtemperature detection are also provided, and turn off all bridge outputs during these fault conditions. Recovery from all fault conditions is automatic; the IC will resume normal operation in its previously selected mode upon fault resolution. Diagnostic ability is provided by two open-collector STATUS outputs which report the fault status of each channel independently during overcurrent faults, and together during overvoltage or overtemperature faults.

Features

Single 7 V-16 V Supply

Low Standby Current:

- ◆ < 1.0 μA Typically

3.3 V / 5 V Compatible Inputs

Independent Channel Enable

Channels Configurable as:

- ◆ Full-Bridge Drive
- ◆ Half-Bridge, High Side or Low Side Drive

On-Chip Recirculation Diodes

Fault Protection with Automatic Recovery for:

- ◆ Overcurrent
- ◆ Overvoltage
- ◆ Overtemperature

Fault Diagnostic STATUS Outputs

Internally Fused Leads in SO-24L Package

AEC Qualified

PPAP Capable

These are Pb-Free Devices*

Applications

Automotive and Industrial Driver for:

- ◆ DC or Stepper Motors
- ◆ Relays or Solenoids
- ◆ Unipolar or Bipolar Loads

Device	Package	Shipping†

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ELECTRICAL CHARACTERISTICS ($V_{CC} = 5V$, $V_{EE} = 0V$, $T_c = 25^\circ C$, $I_{DD} = 10\mu A$)

Characteristic	Test Conditions	Min	Typ	Max	Unit
General Characteristics					
					μ
Logic Inputs					
					μ
					μ
					μ
D	%				U

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PACKAGE PIN DESCRIPTION

PACKAGE PIN #	PIN SYMBOL	FUNCTION
	V	d
	U	d d
	U	d d
	U	D # d
	D	
	D	
	D	
	D	
	D	d
		U d U
		U d U

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INPUT LOGIC TABLE

EN1 = EN2 = 0 = Standby Mode											
Channel #1						Channel #2					
EN1	IN1A	IN1B	OUT1A	OUT1B	Mode	EN2	IN2A	IN2B	OUT2A	OUT2B	Mode

D

STATUS OUTPUT TABLE

STATUS1	STATUS2	Fault Diagnostic

D
D

U
U

d d d d

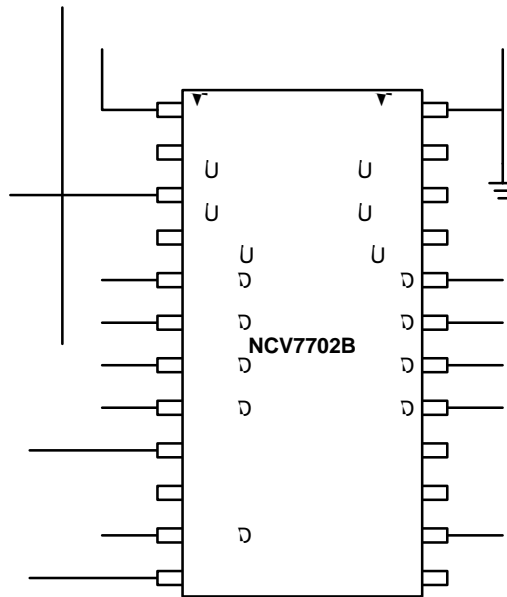


Figure 2. Propagation Delay and Dead Band Timing Test Circuit

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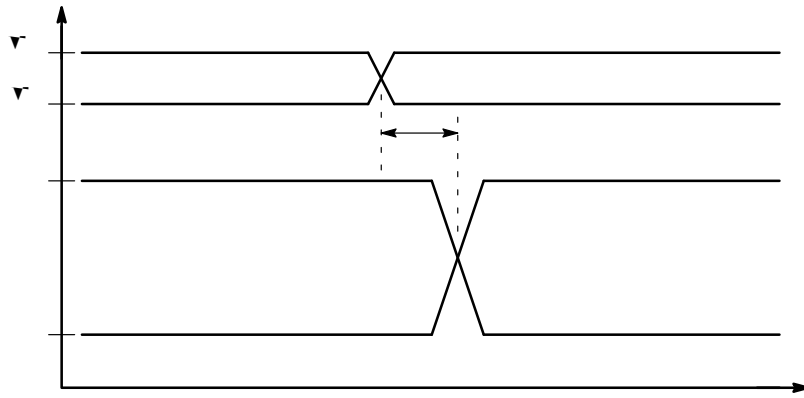


Figure 3. EN_x Propagation Delay

Functional Description

The NCV7702B is arranged as four half-bridge drivers in two independent channels. Each channel can be operated as a full-bridge or half-bridge to drive multiple load configurations. Separate ENable inputs are used to control

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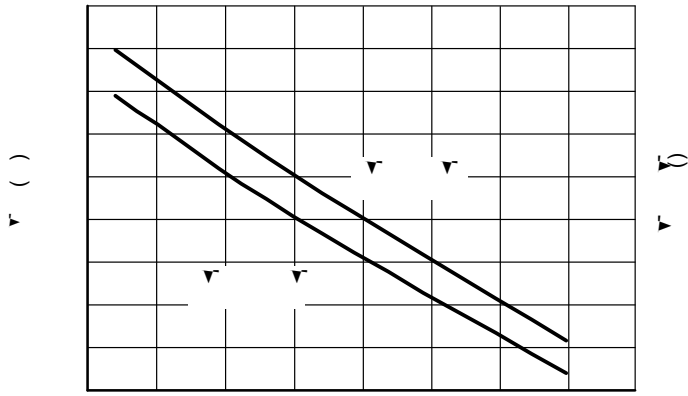


Figure 6. Run Mode Bias Current vs. Temperature

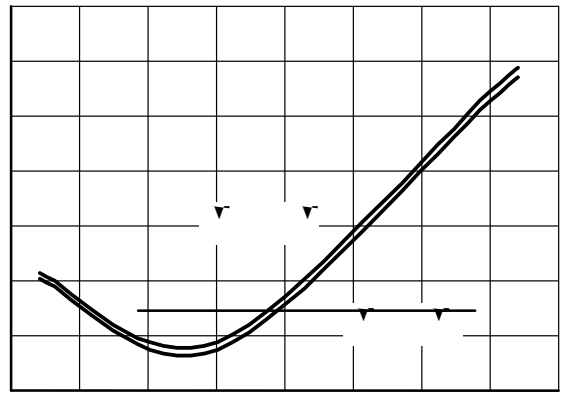


Figure 7. Total V_{SAT} vs. Temperature

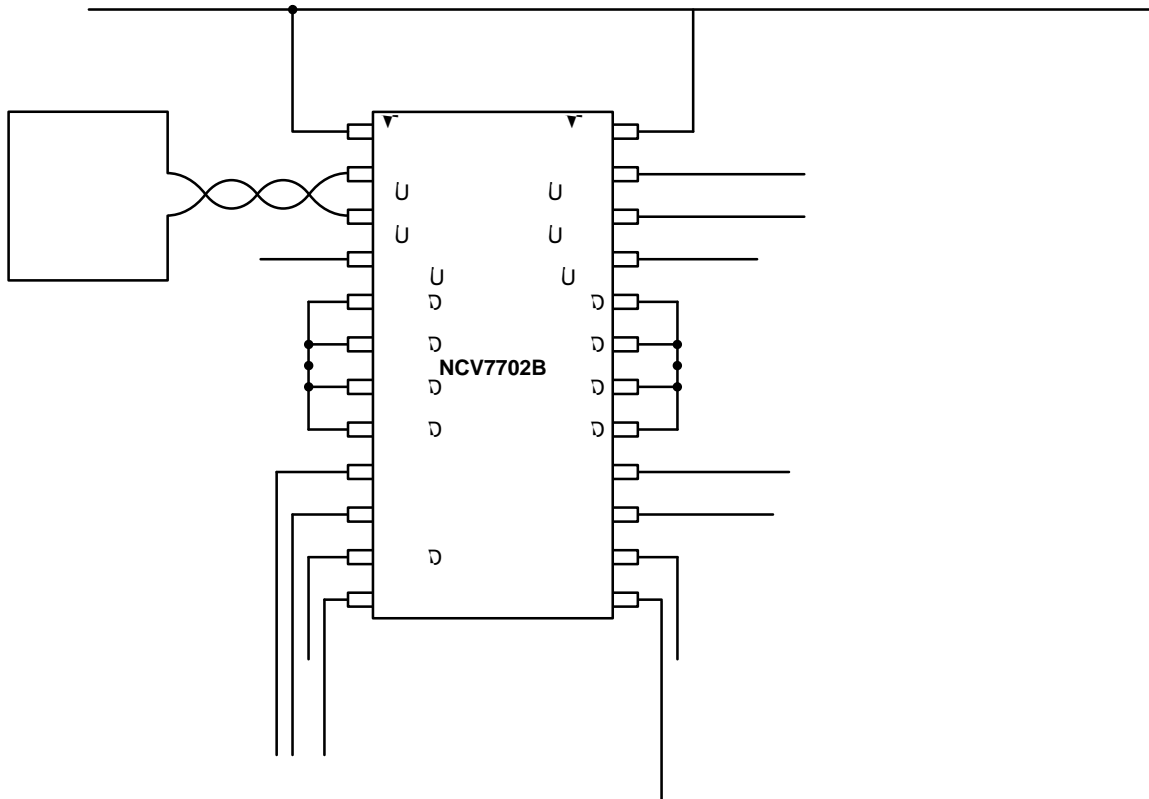


Figure 8. Application Diagram

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