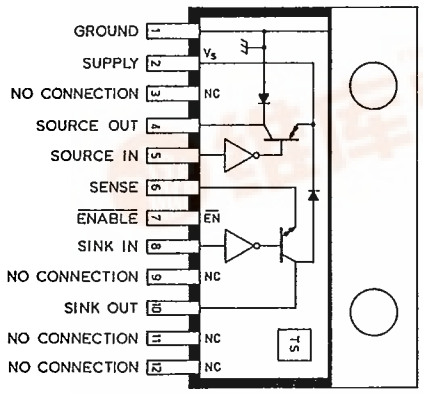
2955-2

T-52-17

HIGH-CURRENT HALF-BRIDGE POWER DRIVER



Dwg. PP-023

The UDN2955W–2 half-bridge power driver combines a high-current, half-bridge power driver with low-level control and protection circuitry. For PWM applications there are provisions for output current sensing and an ENABLE (active low) input. The output can source or sink up to 6 A continuously. This device features a minimum break-down and sustaining voltage of 40 V. It can be used in pairs for full-bridge operation or in triplets for 3-phase brushless dc motors.

Protection is included which shuts down the device during over-temperature conditions caused by loss of cooling; internal flyback and clamp diodes are included for switching inductive loads. Internal logic lockout and delays prevent potentially destructive crossover currents. The logic inputs are compatible with TTL and 5 V CMOS logic systems.

A similar device, excluding the ENABLE and output current sensing provision, in a 5-lead TO-220 style package, is the UDN2951Z-2.

The UDN2955W–2 is supplied in a 12-lead power-tab single in-line plastic package. The tab is at ground potential, allowing multiple devices to share a common heat sink.

FEATURES

- ± 6 A Continuous Output Current
- Output Voltage to 40 V
- Internal Thermal Shutdown
- TTL and 5 V CMOS Compatible Inputs
- Integral Transient-Suppression Diodes

ABSOLUTE MAXIMUM RATINGS at $T_J \leq 150°C$

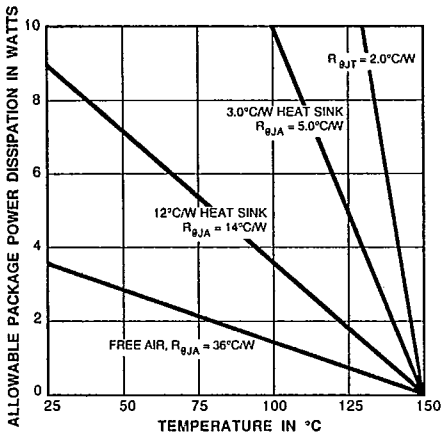
Supply Voltage, V_S . . . . . 40 V
Output Current, I_{OUT} . . . . . ±6.0 A
Input Voltage, V_{IN} . . . . . 7.0 V
Sense Voltage, V_{SENSE} . . . . . 1.5 V
Package Power Dissipation,
P_D . . . . . See Graph
Operating Temperature Range,
T_A . . . . . -20°C to + 85°C
Storage Temperature Range,
T_S . . . . . -55°C to + 150°C

Output current rating may be limited by duty cycle, ambient temperature, and heat sinking. Under any set of conditions, do not exceed the specified output current rating or a junction temperature of +150°C.

Always order by complete part number: **UDN2955W–2** .

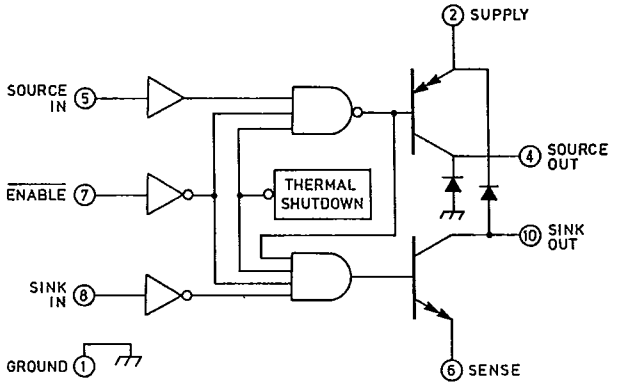
2955-2
HIGH-CURRENT HALF-BRIDGE POWER DRIVER

T-52-17



Dwg. GP-012A

FUNCTIONAL BLOCK DIAGRAM



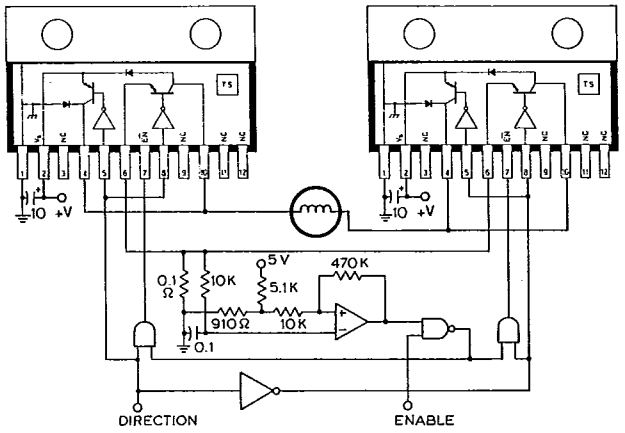
Dwg. FP-009

TRUTH TABLE

INPUTS			OUTPUTS	
ENABLE	SOURCE	SINK	SOURCE	SINK
Low	Low	Low	OFF	ON
Low	Low	High	OFF	OFF
Low	High	X	ON	OFF
High	X	X	OFF	OFF

X = Irrelevant

TYPICAL APPLICATION



The printed wiring board should utilize a heavy ground plane. For optimum performance, the driver should be soldered directly into the board. The power supply (V_S) should be decoupled with an electrolytic capacitor (≥ 10 µF) as close as possible to pin 2.

Dwg. EP-019A

2955-2
HIGH-CURRENT HALF-BRIDGE POWER DRIVER

T-52-17

ELECTRICAL CHARACTERISTICS at T_A = + 25°C, $T_J \leq$ + 150°C, V_S = 40 V

Characteristic	Symbol	Test Conditions	Limits			
			Min.	Typ.	Max.	Units
Functional Supply Range	V_S		10	—	40	V
Output Leakage Current	I_{CEX}	$SINK_{OUT}$ = 40 V, $SOURCE_{IN}$ = 0.8 V, $SINK_{IN}$ = 2.0 V	—	<1.0	50	µA
		$SOURCE_{OUT}$ = 0 V, $SOURCE_{IN}$ = 0.8 V, $SINK_{IN}$ = 2.0 V	—	<-1.0	- 50	µA
Output Sustaining Voltage	$V_{CE(sus)}$	I_{OUT} = ± 6.0 A, L =10 mH	40	—	—	V
Output Saturation Voltage	$V_{CE(SAT)}$	$SINK_{OUT}$ = 5.0 A	—	—	1.5	V
		$SINK_{OUT}$ = 6.0 A	—	—	2.0	V
		$SOURCE_{OUT}$ = -5.0 A	—	—	2.0	V
		$SOURCE_{OUT}$ = -6.0 A	—	—	2.5	V
Input Voltage	Logic 1	$SOURCE_{IN}$ or $SINK_{IN}$	2.0	—	—	V
	Logic 0	$SOURCE_{IN}$ or $SINK_{IN}$	—	—	0.8	V
Input Current	Logic 1	$SOURCE_{IN}$ or $SINK_{IN}$ = 2.0 V	—	3.0	10	µA
	Logic 0	$SOURCE_{IN}$ or $SINK_{IN}$ = 0.8 V	—	-1.0	-10	µA
Propagation Delay	t_{PHL}	Sink Driver (includes Turn-On Delay)	—	2.5	—	µs
		Source Driver	—	2.5	—	µs
	t_{PLH}	Sink Driver	—	0.2	—	µs
		Source Driver (includes Turn-On Delay)	—	2.5	—	µs
Supply Current	$I_{S(ON)}$	$SOURCE_{IN}$ = 2.0 V	—	10	15	mA
		$SOURCE_{IN}$ = $SINK_{IN}$ = 0.8 V	—	20	25	mA
	$I_{S(OFF)}$	$SOURCE_{IN}$ = 0.8 V, $SINK_{IN}$ = 2.0 V	—	8.0	10	mA
Flyback Diode Forward Voltage	V_F	I_F = 6.0 A	—	—	2.8	V
Clamp Diode Forward Voltage	V_F	I_F = 6.0 A	—	—	2.1	V
Diode Leakage Current	I_R	Each Diode, V_R = 40 V	—	<1.0	50	µA
Thermal Shutdown	T_J		—	165	—	°C

NOTE: Typical Data is given for circuit design information only.
Negative current is defined as coming out of (sourcing) the specified device pin.