Half-Bridge Bipolar Switch

FEATURES

- Source or Sink 4.0A

- Supply Voltage to 35V

- High-Current Output Diodes

- Tri-State Operation

- TTL and CMOS Input Compatibility

- Thermal Shutdown Protection

- 300kHz Operation

- Low-Cost TO-220 Package

TRUTH TABLE

Source Drive Pin 2	Sink Drive Pin 5	Output Pin 4
Low	Low	Low
Low	High	Off
High	Low	High
High	High	High

Note: With no load, output voltage will be HIGH in the OFF state.

DESCRIPTION

This device is a monolithic integrated circuit designed to provide high-current switching with low saturation voltages when activated by low-level logic signals. Source and sink switches may be independently activated without regard to timing as a built-in interlock will keep the sink off if the source is on.
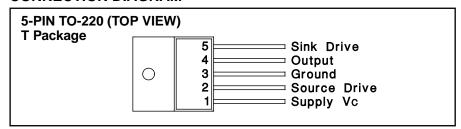
This driver has the high current capability to drive large capacitive loads with fast rise and fall times; but with high-speed internal flyback diodes, it is also ideal for inductive loads. Two UC2950s can be used together to form a full bridge, bipolar motor driver compatible with high frequency chopper current control.
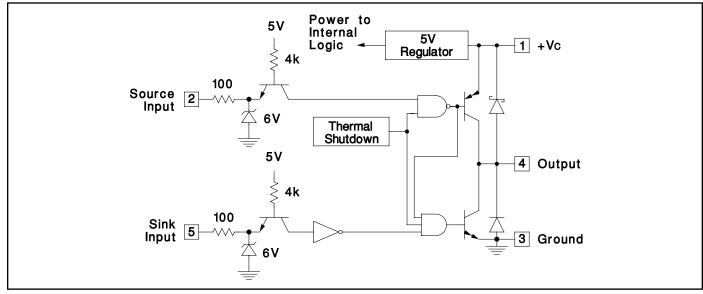
ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage Range, V_C . . . . 8V to 35V
Output Voltage Range, V_O . . . . –3.0V to V_C+3V
Input Voltage Range, V_{IN} . . . . –0.3V to +7.0V
Peak Output Current (100 ms, 10% DC) . . . . ± 4.0A
Continuous Output Current . . . . ± 2.0A
Power Dissipation with Heat Sink. 15W
Power Dissipation in Free Air 2W
Operating Temperature Range, T_A . . . . –20°C to +100°C
Storage Temperature Range, T_S . . . . –55°C to +125°C

Note 1: Consult Packaging section of databook for thermal limitations and considerations of package.

CONNECTION DIAGRAM

5-PIN TO-220 (TOP VIEW)
T Package

Pin	Function
5	Sink Drive
4	Output
3	Ground
2	Source Drive
1	Supply Vc

SIMPLIFIED SCHEMATIC

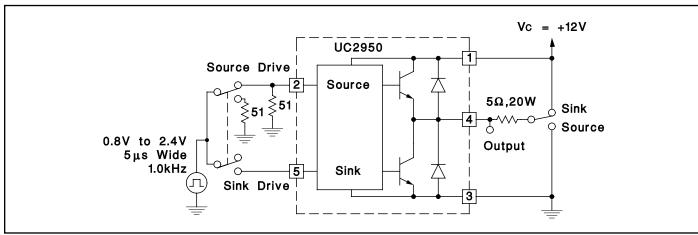**ELECTRICAL CHARACTERISTICS:** Unless otherwise stated, V_C = 35V, T_A = -20°C to +100°C, V_{IL} = 0.8V, V_{IH} = 2.4V for either input, $T_A = T_J$.

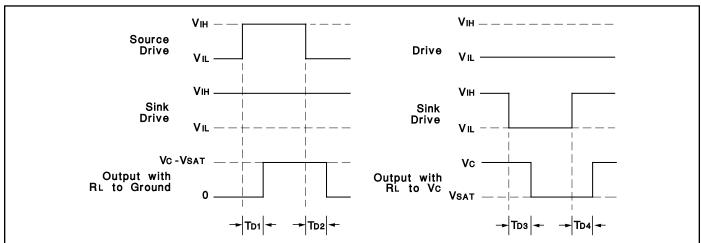| PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Output Leakage to V_C	Output Off		20	500	μA
Output Leakage to Ground	Output Off		−200	−500	μA
Output Sink Saturation	V_{OL}, I_L = 2.0A		1.2	2.0	V
Output Source Saturation	(V_C-V_{OL}), I_L = −2.0A		1.2	2.0	V
Sink Diode Forward Voltage	I_D = −2.0A		1.4	2.0	V
Source Diode Forward Voltage	I_D = 2.0A		1.4	2.0	V
Input Current	Either Input, V_I = 5V		20	100	μA
	Either Input, V_I = 0V		−1.0	−1.6	mA
Supply Current	Output High		20	36	mA
	Output Low		10	20	mA

SWITCHING CHARACTERISTICS: See Test Circuit. V_C = 12V, R_L = 5Ω, T_A = 25°C. Guaranteed by design, not 100% tested in production.

PARAMETERS	MIN	TYP	MAX	UNITS
Source Turn-On Delay, t_{D1}		300	500	ns
Source Turn-Off Delay, t_{D2}		1.0	2.0	μs
Sink Turn-On Delay, t_{D3}		200	400	ns
Sink Turn-Off Delay, t_{D4}		100	300	ns
Cross-Conduction Current Spike When Source and Sink are Activated Together		0.6	1.0	μs

SWITCHING TEST CIRCUIT

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