Dual High Voltage Isolated MOSFET Driver

Ordering Information

Input to Output Isolation Voltage	Package Option
	8-Pin Narrow Body SOIC
±400V	HT0440LG

Features

- ❏ ±400V input to output isolation
- ❏ ±700V isolation between outputs
- ❏ No external voltage supply required
- ❏ Dual isolated output drivers
- ❏ Option of internal or external clock

Applications

- ❏ Telecommunications
- ❏ Modems
- ❏ Solid state relays
- ❏ High side switches
- ❏ High end audio switches
- ❏ Avionics
- ❏ ATE

General Description

The Supertex HT0440 is a dual high voltage isolated driver utilizing Supertex's proprietary HVCMOS® technology. It is designed to drive discrete MOSFETs configured as bi-directional or unidirectional switches. It can drive N-channel MOSFETs as high side switches up to 400V. The HT0440 generates two independent DC isolated voltages to the outputs, V_{OUTA} and V_{OUTB} when logic inputs A and B are at logic high. The internal clock of the HT0440 can be disabled by applying an external clock signal to the CLK pin. This allows the power dissipation and AC characteristics to be tailored to meet specific needs. The CLK pin should be connected to ground when not in use. The HT0440 does not require any external power supplies. The internal supply voltage is supplied by either of the two logic inputs A or B when they are at logic high.

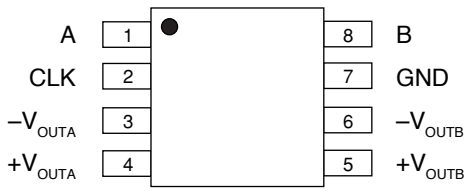
Absolute Maximum Ratings[1]

Input to Output Isolation Voltage, V_{ISO}	±400V
Logic Input Voltage, V_A, V_B	–0.5 to +7.0V
Operating Temperature	–40°C to +85°C
Storage Temperature	–55°C to +150°C
Soldering Temperature[2]	300°C

Note:
1. All voltages are referenced to ground.
2. Distance of 1.6mm from case for 10 seconds.

For detailed circuit and application information, please refer to application note #AN-D26.

Pin Configuration



top view
SO-8

Note: See Package Outline section for dimensions.

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Electrical Characteristics

(Over recommended operating conditions, T_A = 25°C unless otherwise specified)

DC Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
I_{IHA} + I_{IHB}	Total logic high input current			300	μA	V_A = 3.5V, V_B = 3.5V, CLK = 0V
				500	μA	V_A = 3.5V, V_B = 3.5V, CLK = 500KHz
				2.0	mA	V_A = 3.5V, V_B = 3.5V, CLK = 2.0MHz
				1.0	mA	V_A = 5.5V, V_B = 5.5V, CLK = 0V
				2.0	mA	V_A = 5.5V, V_B = 5.5V, CLK = 500KHz
V_{OUTA}, V_{OUTB}	Output Voltage	6.0			V	V_A = 3.15V, V_B = 3.15V, CLK = 0V, no load
		5.0			V	V_A = 3.15V, V_B = 3.15V, CLK = 500KHz, no load
		6.0			V	V_A = 3.15V, V_B = 3.15V, CLK = 2.0MHz, no load
		10.0			V	V_A = 4.5V, V_B = 4.5V, CLK = 0V, no load
		8.0			V	V_A = 4.5V, V_B = 4.5V, CLK = 500KHz, no load
I_{ILA}	Logic low input A current			10	μA	V_A = 0.5V, V_B = high
I_{ILB}	Logic low input B current			10	μA	V_A = high, V_B = 0.5V
I_{ILQ}	Quiescent current			10	μA	V_A = 0.5V, V_B = 0.5V
V_{ISO}	Input to output isolation voltage	±400			V	
V_{CISO}	Output to output isolation voltage	±700			V	

AC Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
$t_{d(ON)}$	Turn on delay time			50	μs	See timing diagram and test circuit
t_r	Rise time			650	μs	CLK = 0V, C_L = 600pF
$t_{d(OFF)}$	Turn off delay time			150	μs	
t_f	Fall time			3.0	ms	

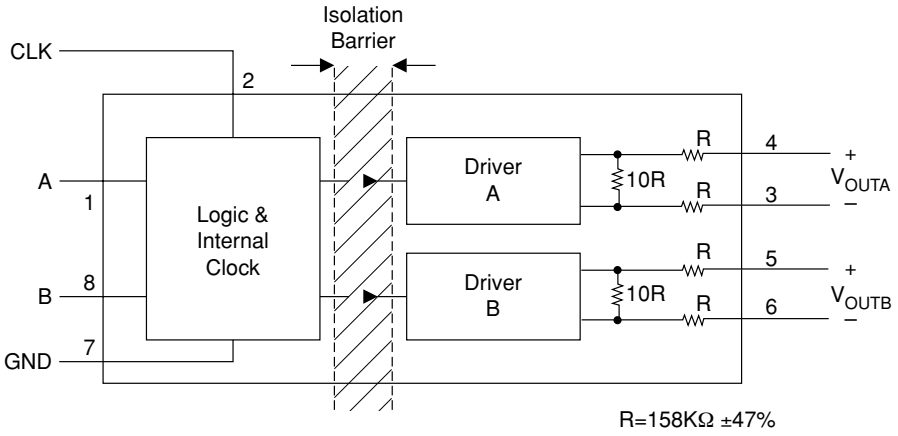
Recommended Conditions

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
CLK	External clock frequency	0.5		2.0	MHz	
V_{IHCLK}	Clock input high voltage	3.15		5.5	V	
V_{ILCLK}	Clock input low voltage	0		0.5	V	
V_{IH}	Logic input high voltage	3.15		5.5	V	
V_{IL}	Logic input low voltage	0		0.5	V	
T_A	Operating temperature	-40		+85	°C	

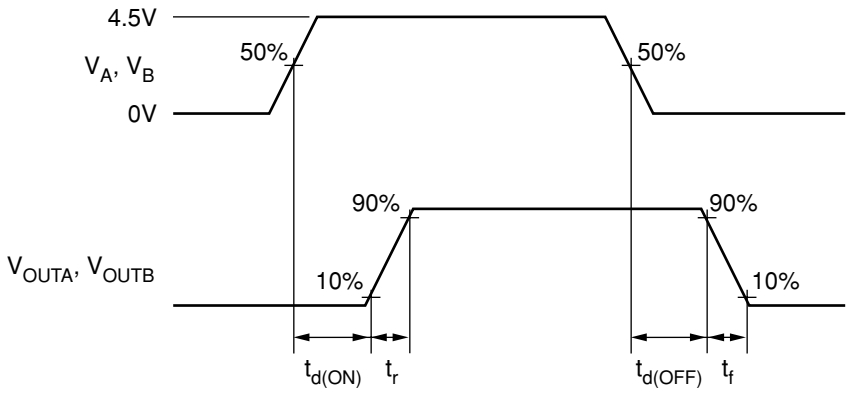
Truth Table

A	B	CLK	$V_{OUT}A$	$V_{OUT}B$	Internal Clock
0	0	0	Off	Off	Off
0	⌐	0	Off	On	On
⌐	0	0	On	Off	On
1	1	0	On	On	On
0	0	Clk	Off	Off	Off
0	⌐	Clk	Off	On	Off
⌐	0	Clk	On	Off	Off
1	1	Clk	On	On	Off

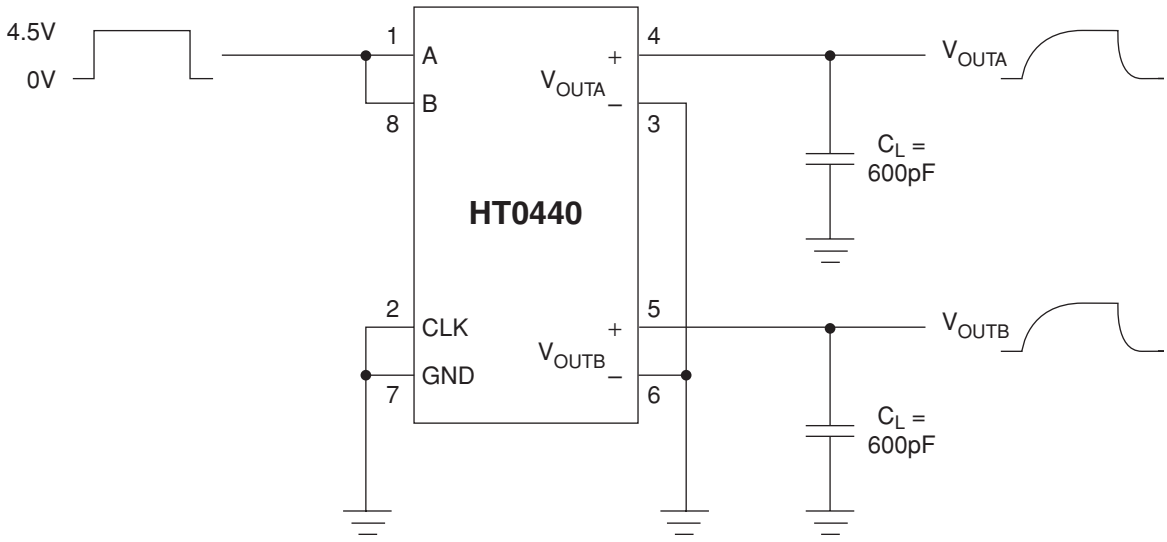
Block Diagram



Timing Diagram



Test Circuit



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