

Features:

- Full Bridge Gate Driver
- Internal high voltage level shift function
- Negative 550V Lamp Supply Voltage
- 3V to 12V CMOS Logic Compatible
- External Dead Time Control

General Description

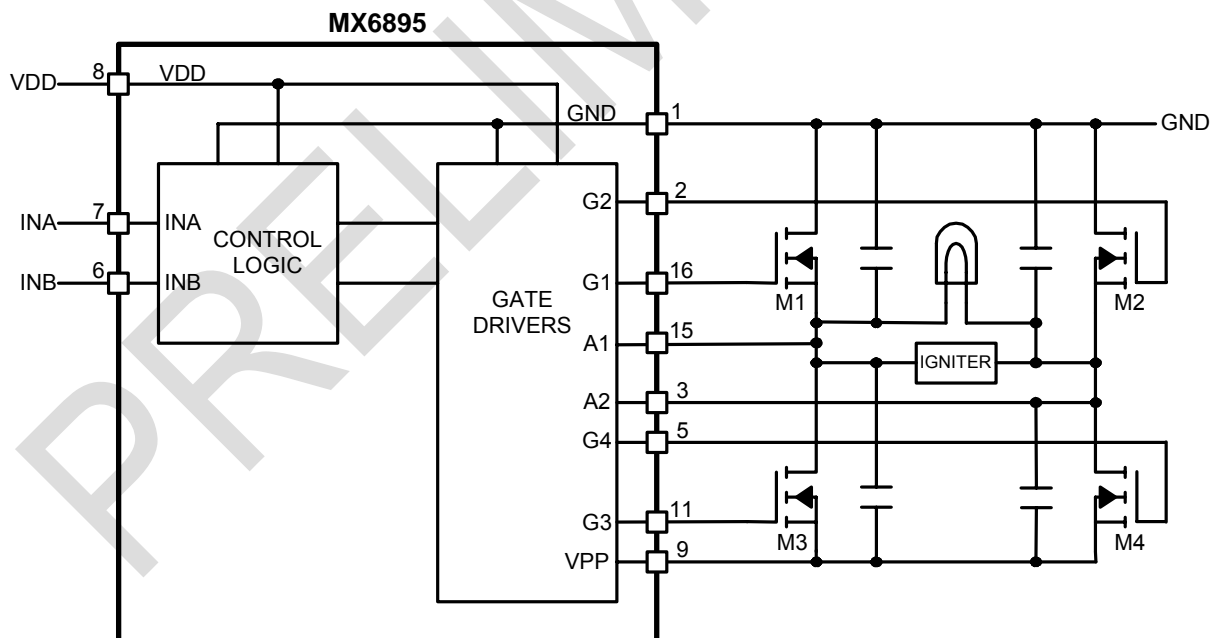
The MX6895 is a high voltage integrated circuit fabricated using a trench isolated BiCMOS process. The circuit is designed for driving N-channel power MOSFETs in a full bridge configuration. The circuit is intended as a commutator for High Intensity Discharge (HID) lamps.

Ordering Information

Part No.	Description	Qty
MX6895B	SOIC-16 Tube	49
MX6895BTR	SOIC-16 Tape & Reel	2500

Applications:

- Commutator for High Intensity Discharge Lamps

Functional Block Diagram and Typical Application Circuit


Absolute Maximum Ratings (Voltages with respect to GND=0V)

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	VDD	-0.3	15	V
Lamp Supply Voltage	VPP		-600	V
Input Voltage	VINA, VINB	-0.3	VDD+0.3V	V
Gate Driver Output Voltage	(VG1-VA1) (VG2-VA2) (VG3-VPP) (VG4-VPP)	-0.3	20	V
Power Dissipation	PTOT	-50	150	C°
Storage Temperature	TSTG	-50	150	C°
Operating Junction Temp	TJ		150	C°
Thermal Resistance (Junction to Ambient)	RθJA	42 Typical (NOTE 1)		C°/W
Input Capacitance of external Power Transistors	CISS(LOAD)	0.4	1.5	nF

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and affect its reliability.

Note 1: 4 layer PCB

Pin Description

Pin No.	Pin Name	Description
1	GND	Ground
2	G2	High Side Gate Driver 2 Output
3	A2	High Side Gate Driver 2 Floating DC Power Return
4	NC	No Connect
5	G4	Low Side Gate Driver 4 Output
6	INB	Control Input for High Side Driver 2 and Low Side Driver 3
7	INA	Control Input for High Side Driver 1 and Low Side Driver 4
8	VDD	Logic Power Supply
9	VPP	High Voltage Negative Lamp Supply
10	NC	No Connect
11	G3	Low Side Gate Driver 3 Output
12	NC	No Connect
13	NC	No Connect
14	NC	No Connect
15	A1	High Side Gate Driver 1 Floating DC Power Return
16	G1	High Side Gate Driver 1 Output

ESD Warning

ESD (electrostatic discharge) sensitive device. Although the MX6895 features proprietary ESD protection circuitry, permanent damage may be sustained if subjected to high energy electrostatic discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality.

Operating Range (Voltages with respect to GND=0V)

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	VDD	8	10	12	V
Lamp Supply Voltage	VPP	-50	-	-550	V
Logic Input Voltage High	V _{INAH} , V _{INBH}	2.5	VDD	VDD	V
Logic Input Voltage Low	V _{INAL} , V _{INBL}	0	0	0.5	V
Ambient Temperature	T _A	-40	-	105	C°

DC Electrical Characteristics

 T_A=25°C, unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Current	I _{DD}	VDD = 10V, VPP = -85V V _{INA} = VDD, V _{INB} = VDD		1	2	mA
Power Supply Current	I _{PP}	VDD = 10V, VPP = -85V V _{INA} = VDD, V _{INB} = VDD		0.8	2	mA
Power Supply Current	I _{DD}	VDD = 10V, VPP = -85V V _{INA} = 2.5V, V _{INB} = 2.5V		1.5	4	mA
High Input Current	I _{INAH} I _{INBH}	V _{INAH} = 10V V _{INBH} = 10V			10	μA
Low Input Current	I _{INAL} I _{INBL}	V _{INAL} = 0V V _{INBL} = 0V			10	μA
High Side Gate Driver Output Voltage	(V _{G1} -V _{A1}) (V _{G2} -V _{A2})	VDD = 8V, VPP = -85V V _{A1} , V _{A2} = 0V	7.0		8.0	V
High Side Gate Driver Output Voltage	(V _{G1} -V _{A1}) (V _{G2} -V _{A2})	VDD = 10V, VPP = -85V V _{A1} , V _{A2} = 0V	9.0		10.0	V
Low Side Gate Driver Output Voltage	(V _{G3} -V _{PP}) (V _{G4} -V _{PP})	VDD = 8V to 10V VPP = -85V	7.0	15.0	18.0	V
High Side Gate Driver Output Source Current	(I _{G1} , I _{G2})	VDD = 10V, VPP = -85V V _{A1} , V _{A2} = 0V V _{G1} - V _{A1} = 0V V _{G2} - V _{A2} = 0V		4.5		mA
Low Side Gate Driver Output Source Current	(I _{G3} , I _{G4})	VDD = 8V to 10V VPP = -85V V _{G3} -V _{PP} = 0V V _{G4} -V _{PP} = 0V		15.0		mA

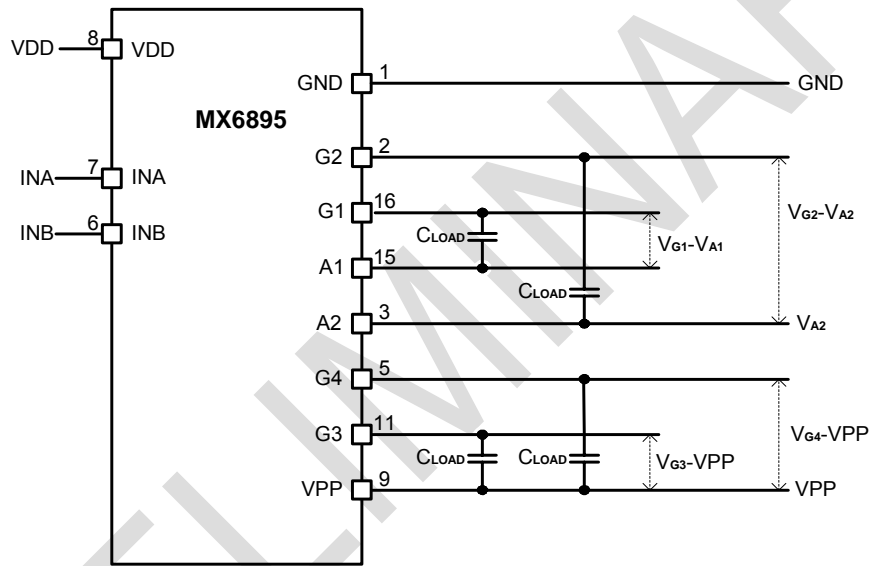
AC Electrical Characteristics

VDD = 10V, VPP = -85V, VA1 = VA2 = 0V, TA=25°C, unless otherwise specified.

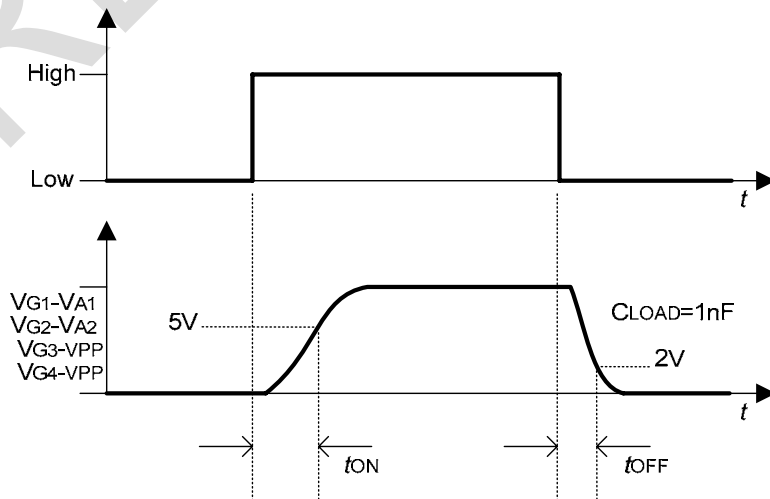
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating Frequency	fOP			0.5		KHz
High Side ON Time @ VOUT=5V	tonH	CLOAD = 1.0nF		2.7		μS
High Side OFF Time @ VOUT=2V	toffH	CLOAD = 1.0nF		0.4		μS
Low Side ON Time @ VOUT=5V	tonL	CLOAD = 1.0nF		1.0		μS
Low Side OFF Time @ VOUT=2V	toffL	CLOAD = 1.0nF		0.3		μS

Notes: 1. VOUT is the voltage on CLOAD at the defined time.
 2. VOUT = VG1-VA1, or VOUT = VG2-VA2, or VOUT = VG3-VPP, or VOUT = VG4-VPP

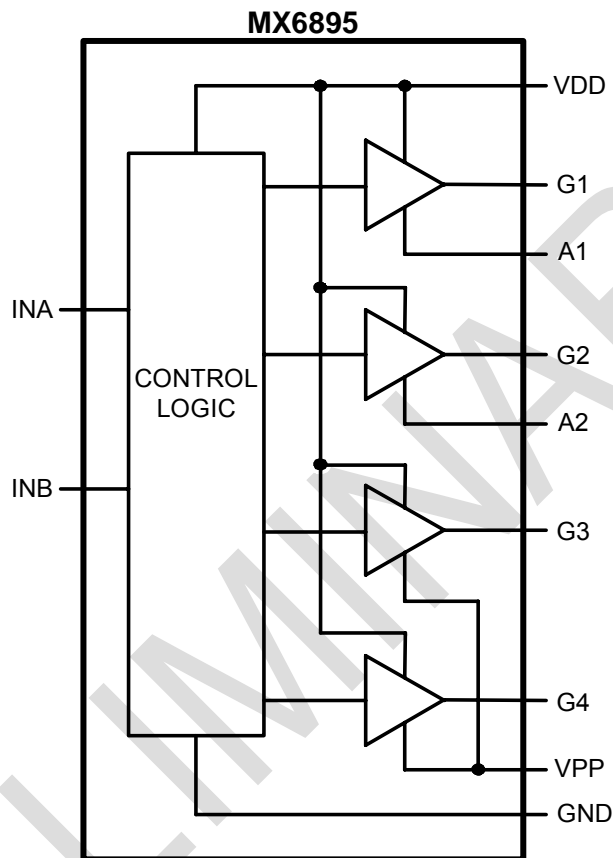
AC Test Circuit



AC Switching Waveforms



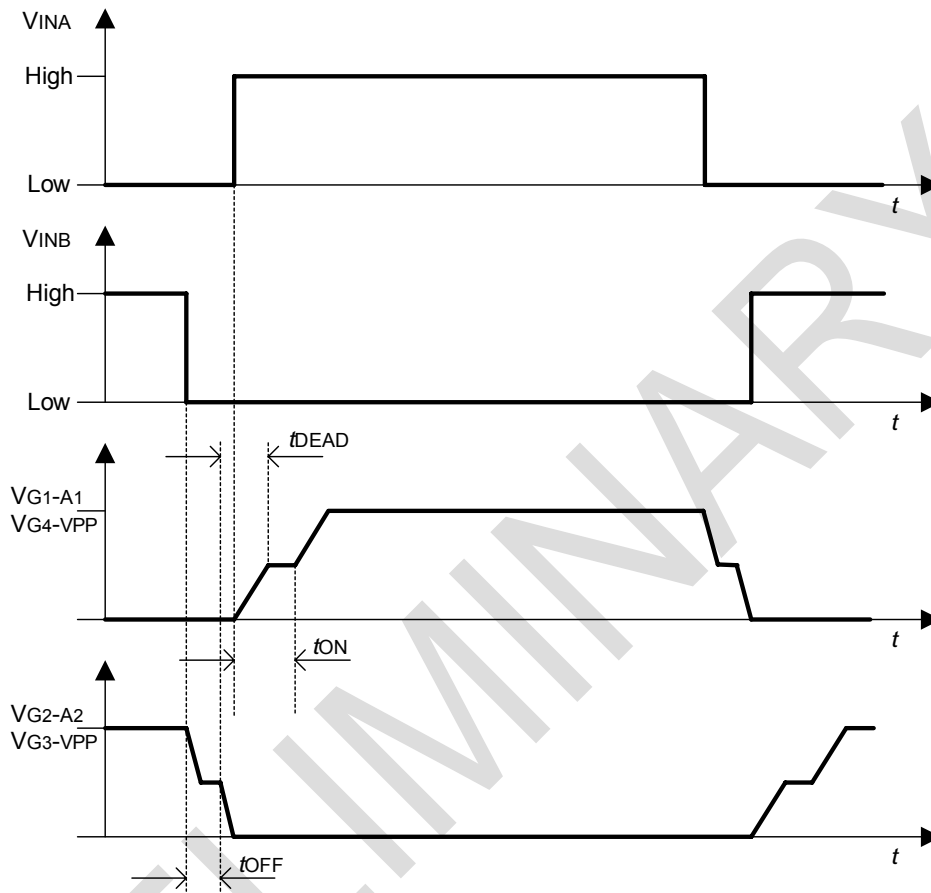
Function Block Diagram



Function Table

INA	INB	G1 - A1	G2- A2	G3 - VP	G4 - VPP
LOW	LOW	LOW	LOW	LOW	LOW
HIGH	LOW	HIGH	LOW	LOW	HIGH
LOW	HIGH	LOW	HIGH	HIGH	LOW
HIGH	HIGH	LOW	LOW	LOW	LOW

Input / Output Switching Waveforms



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