

### 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
- 8V to 12V Input Supply Voltage
- No External Bootstrap Capacitors

### Ordering Information

Part No.	Description	Qty
MX6895BE	SOIC-16 Tube	49
MX6895BETR	SOIC-16 Tape & Reel	2500

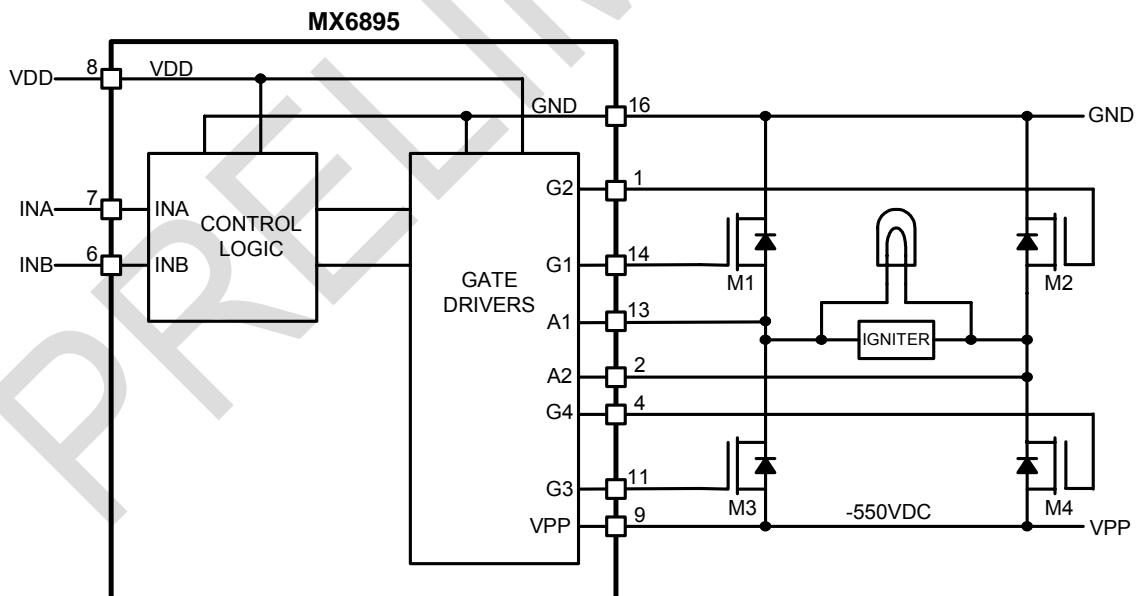
### General Description

The MX6895 features our high voltage integrated circuit (HVIC) technology integrating high and low side N-channel power MOSFET drivers in a full bridge configuration. The circuit is intended as a commutator for High Intensity Discharge (HID) lamps.

### Applications

- Commutator for High Intensity Discharge Lamps
  - Vehicle Head Lamps
  - Outdoor/Street Lighting
  - Multimedia Projectors
  - Retail Accent Lighting
  - Warehouse Lighting

### 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		1	W
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	G2	High Side Gate Driver 2 Output
2	A2	High Side Gate Driver 2 Floating DC Power Return
3	NC	No Connect
4	G4	Low Side Gate Driver 4 Output
5	NC	No Connect
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	A1	High Side Gate Driver 1 Floating DC Power Return
14	G1	High Side Gate Driver 1 Output
15	NC	No Connect
16	GND	Ground

**NOTE: The Exposed Thermal Pad of the device package must be connected to Ground.**

**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	VINAH, VINBH	2.5	VDD	VDD	V
Logic Input Voltage Low	VINAL, VINBL	0	0	0.5	V
Ambient Temperature	TA	-40	-	105	C°

**DC Electrical Characteristics**

TA=25°C, unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Current	IDD	VDD = 10V, VPP = -85V VINA = VDD, VINB = VDD		1	2	mA
Power Supply Current	IPP	VDD = 10V, VPP = -85V VINA = VDD, VINB = VDD		0.8	2	mA
Power Supply Current	IDD	VDD = 10V, VPP = -85V VINA = 2.5V, VINB = 2.5V		1.5	4	mA
High Input Current	IINAH IINBH	VINAH = 10V VINBH = 10V			10	μA
Low Input Current	IINAL IINBL	VINAL = 0V VINBL = 0V			10	μA
High Side Gate Driver Output Voltage	(VG1-VA1) (VG2-VA2)	VDD = 8V, VPP = -85V VA1, VA2 = 0V	7.0		8.0	V
High Side Gate Driver Output Voltage	(VG1-VA1) (VG2-VA2)	VDD = 10V, VPP = -85V VA1, VA2 = 0V	9.0		10.0	V
Low Side Gate Driver Output Voltage	(VG3-VPP) (VG4-VPP)	VDD = 8V to 10V VPP = -85V	7.0	15.0	18.0	V
High Side Gate Driver Output Source Current	(IG1, IG2)	VDD = 10V, VPP = -85V VA1, VA2 = 0V VG1 - VA1 = 0V VG2 - VA2 = 0V		4.5		mA
Low Side Gate Driver Output Source Current	(IG3, IG4)	VDD = 8V to 10V VPP = -85V VG3-VPP = 0V VG4-VPP = 0V		15.0		mA

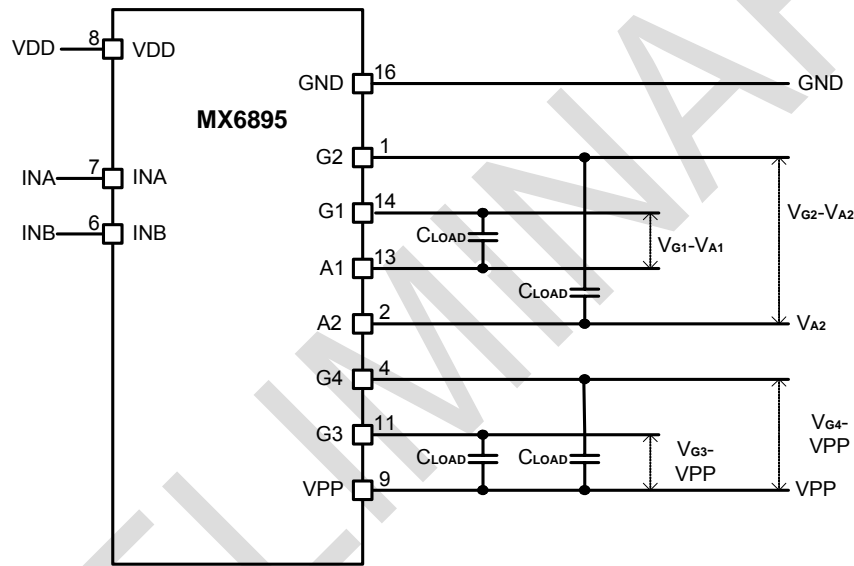
**AC Electrical Characteristics**

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

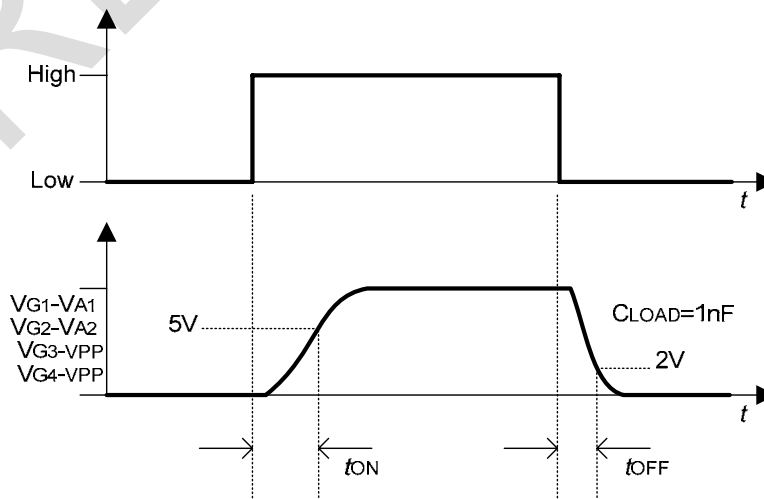
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating Frequency	fOP			0.5		KHz
High Side ON Time @ VOUT=5V	tonH	CLOAD = 1.0nF		2.7		μS
High Side OFF Time @ VOUT=2V	toffH	CLOAD = 1.0nF		0.4		μS
Low Side ON Time @ VOUT=5V	tonL	CLOAD = 1.0nF		1.0		μS
Low Side OFF Time @ VOUT=2V	toffL	CLOAD = 1.0nF		0.3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

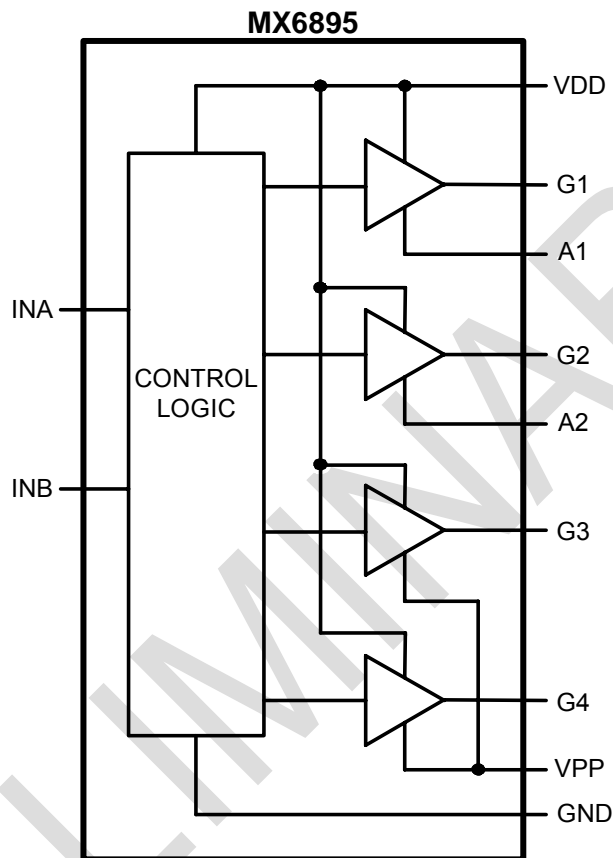
**AC Test Circuit**



**AC Switching Waveforms**



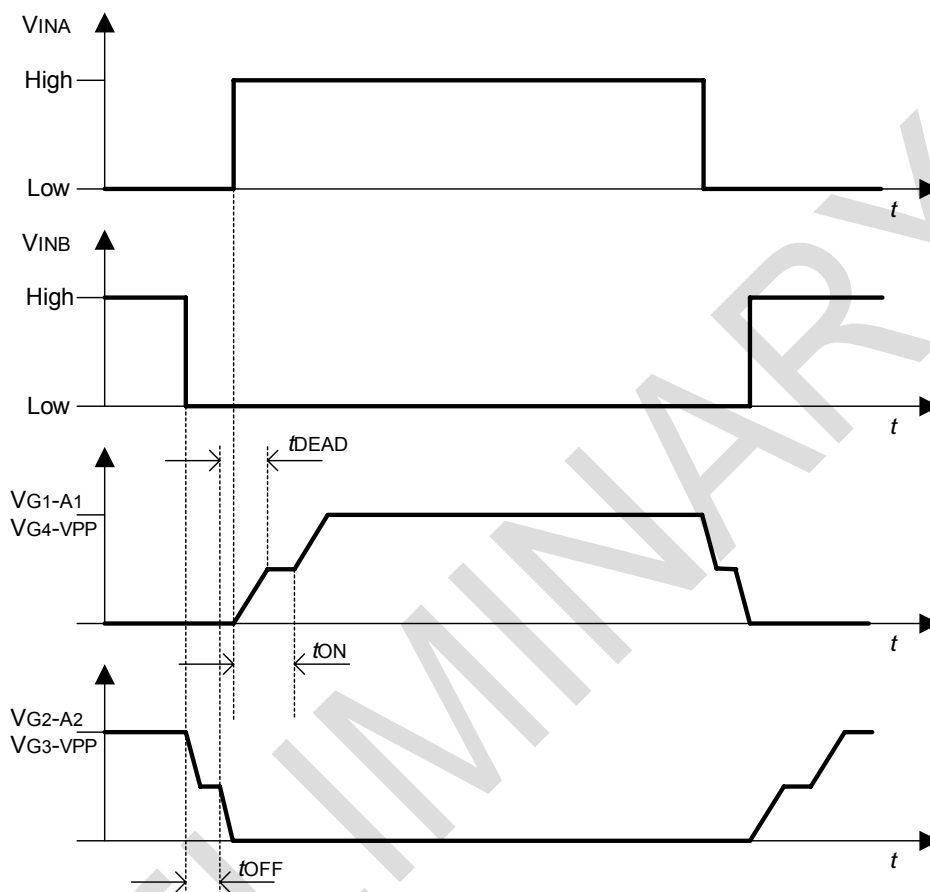
## Function Block Diagram



## 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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