

# FAN7710

## Ballast Control IC for CFL

### Features

- Intergrated Half-Bridge MOSFETs
- Floating Channel Designed for Bootstrap Operation to +600V.
- Low Start-up and Operating Current : 120 $\mu$ A, 2.7mA
- Under Voltage Lock Out with 2V of Hysteresis
- Adjustable Run Frequency and Preheat Time
- Internal Adaptable ZVS Control
- Internal Protection Function (No Lamp)
- Internal Clamping Zener Diode
- High Accuracy Oscillator
- Soft Start

### Applications

- Compact Fluorescent Lamp Ballast

### Description

The FAN7710 provides simple and high performance for CFL electronic ballast control. FAN7710 is optimized for CFL ballast up to 20W requiring a minimum board area, reduced component count and low power dissipation. The FAN7710 contains two power MOSFETs, in the classical half-bridge topology, ensuring all the features needed to drive and properly control a fluorescent lamp. A dedicated timing section in the FAN7710 allows the user set the necessary parameters for proper preheat and ignition of the lamp

8-DIP



### Ordering Information

Part Number	Operating Temp. Range	Pb-Free	Package	Packing Method
FAN7710N	-25°C to +125°C	Yes	DIP	Tube

Typical Application Diagram

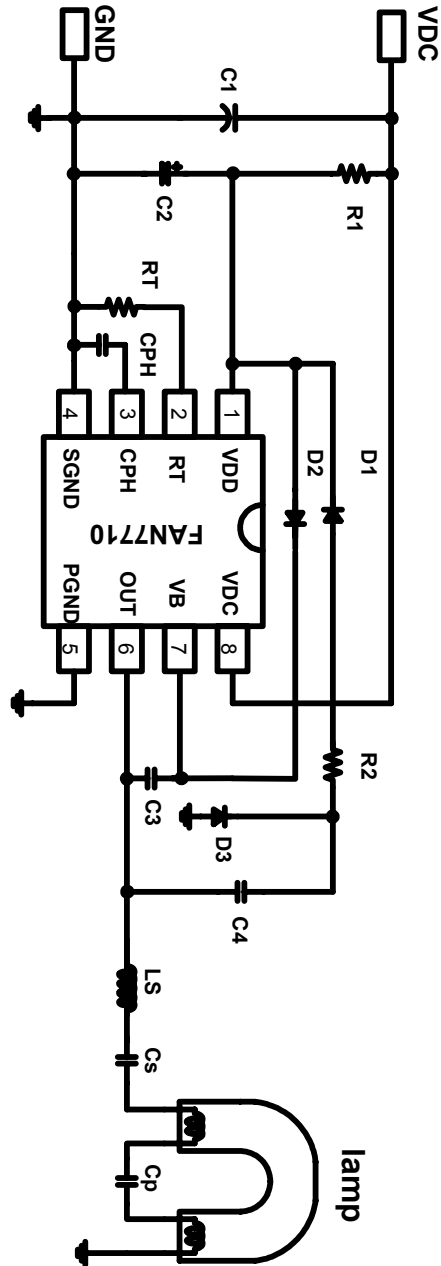


Figure 1. Typical Application Diagram

### Internal Block Diagram

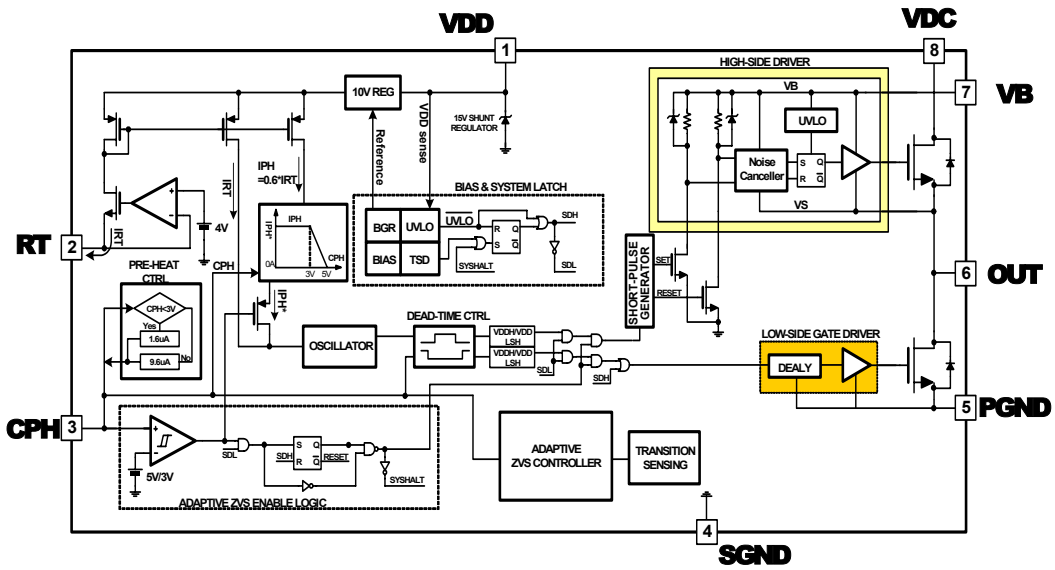
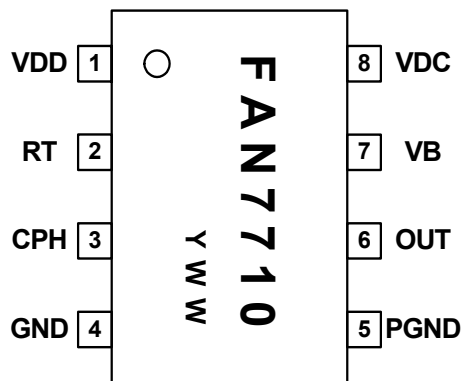


Figure 2. Functional Block Diagram of FAN7710

### Pin Assignments



YWW : Work Week Code

### Pin Definitions

Pin Number	Pin Name	I/O	Pin Function Description
1	VDD	I	Supply voltage
2	RT	I	Oscillator frequency set resistor
3	CPH	I	Preheating time set capacitor
4	GND	-	Ground
5	PGND	-	Power ground
6	OUT	O	High side floating supply return
7	VB	-	High side floating supply
8	VDC	I	High voltage supply

**Absolute Maximum Ratings (Ta = 25°C)**

Parameter		Symbol	Value	Unit
High Side Floating Supply		$V_B$	-0.3 to 625	V
High side floating supply return		$V_S$	-0.3 to 600	
Supply Voltage		$V_{DD}$	15	
RT,CPH Pins Input Voltage		$V_{IN}$	-0.3 to 6	
Allowable Offset Voltage Slew Rate		$dV_S/dt$	50	V/ns
Operating Temperature Range		$T_{opr}$	-25 to 125	°C
Storage Temperature Range		$T_{stg}$	-65 to 150	
Power Dissipation	8-DIP	$P_d$		W
Thermal Resistance (Junction-to-Air)	8-DIP	$R_{\theta ja}$		°C/W

**Caution:**

You must not supply a low impedance voltage source to the internal clamping zener diode that is between the GND and the VDD pin of this device.

## Electrical Characteristics

V<sub>DD</sub>=14V, V<sub>B</sub>-V<sub>out</sub>=14V, for typical values Ta=25°C. Unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>High Voltage Supply Section</b>						
High-Voltage Supply Voltage	V <sub>DC</sub>		-	-	550	V
<b>Low Voltage Supply Section</b>						
UVLO Positive going threshold	V <sub>TH(st+)</sub>	V <sub>DD</sub> Increasing	12.5	13.5	14.5	V
UVLO Negative going threshold	V <sub>TH(st-)</sub>	V <sub>DD</sub> decreasing	11.0	11.6	12.2	
UVLO Hysteresis	HY(st)	-	-	2	-	V
Supply Clamping Voltage	V <sub>CL</sub>	IDD=10mA	14.8	15.4	-	V
Start Up Supply Current	I <sub>ST</sub>	V <sub>DD</sub> = 10V	-	120	200	μA
Dynamic Operating Supply Current	I <sub>DD</sub>	50kHz, C <sub>L</sub> = 1nF	-	2.7	5	mA
Minimum Dead-time	Dtmin	VCPH=6V, VS=GND during run mode	-	1	-	μS
Maximum Dead-time	Dtmax	VCPH=1V, VS=GND during preheat mode	-	3.4	-	μS
Running Frequency	fosc	Rt=90kΩ	46	50	54	kHz
Preheating frequency	fpre	Rt=90kΩ, VCPH=2V	65	80	95	kHz
CPH Pin Charging Current during preheating	I <sub>ph</sub>	VCPH=1V	0.4	1.4	2.5	μA
CPH Pin Charging Current during ignition	I <sub>ig</sub>	VCPH=4V	6	9.6	14	μA
Thermal Shutdown <sup>(Note)</sup>	TSD	-	-	165	-	°C
<b>Protection Section</b>						
Shutdown Voltage	V <sub>CPHSD</sub>	VRT=0 after run mode	-	2.2	-	V
Shutdown Current	I <sub>SD</sub>		-	230	-	μA
<b>LDMOS Section</b>						
LDMOS Leakage Current	I <sub>LKMOS</sub>	VDS=550V	-	-	1	μA
ON resistance(Dynamic)	Ron	VGS=12, ID=100mA	-	6.2	-	Ohm
		VGS=12, ID=500mA	-	6.5	-	
Saturation current <sup>(Note)</sup>	I <sub>SAT</sub>	VGS=12, VDS=30V	800	-	-	mA

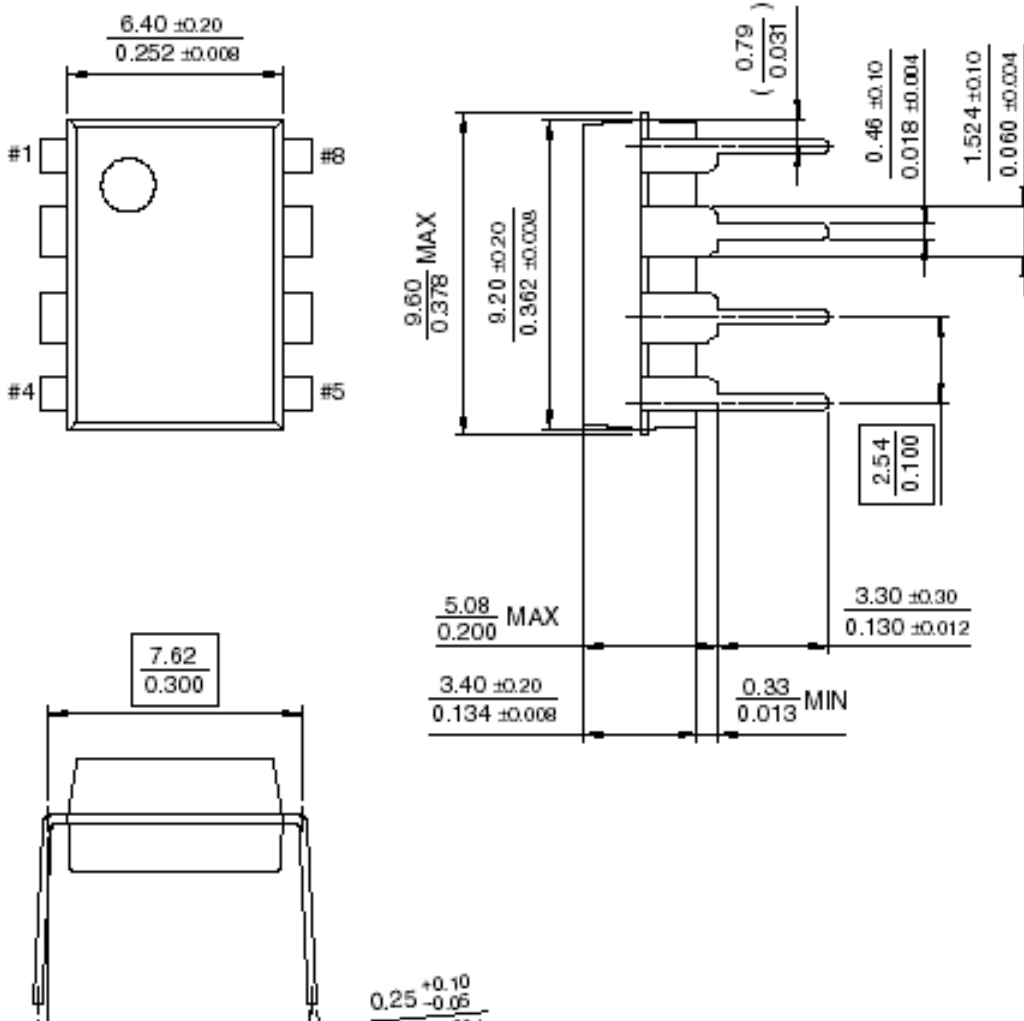
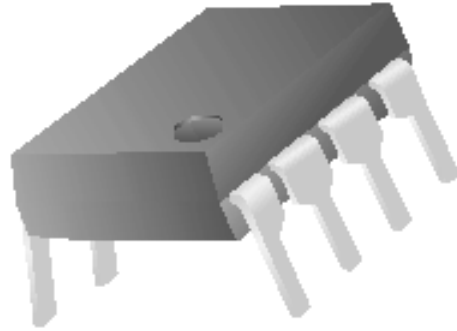
Note)

This parameter, although guaranteed, is not 100% tested in production.

Package Dimension

Dimensions in millimeters/inches

8-DIP-300



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Rev. 116