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FULL-BRIDGE CCFL CONVERTER FOR PIEZOELECTRIC TRANSFORMERS

ADVANCE INFORMATION

FEATURES

- 5-V to 24-V Operation
- Full-Bridge Topology With Integrated Power Switches
- Greater Than 90% Efficiency Over a Wide Input Voltage Range
- Frequency Loop Controls Lamp Current
- Programmable Strike and Operating Frequencies
- Voltage Loop Controls PZT Primary Voltage
- Soft-Start, Shutdown, and Open Lamp Protection
- Dimming Control

APPLICATIONS

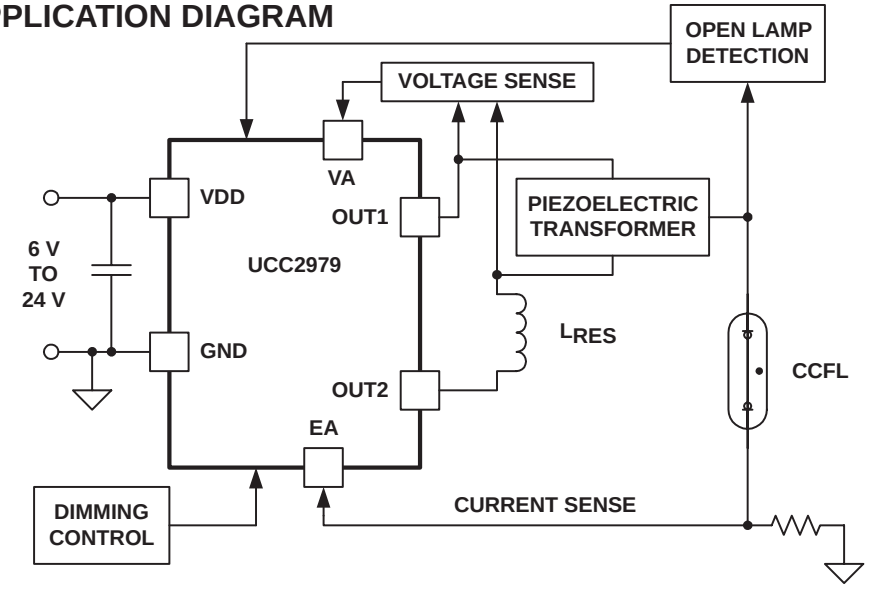
- Notebook Computers
- Portable Electronic Displays
- Portable Instruments

DESCRIPTION

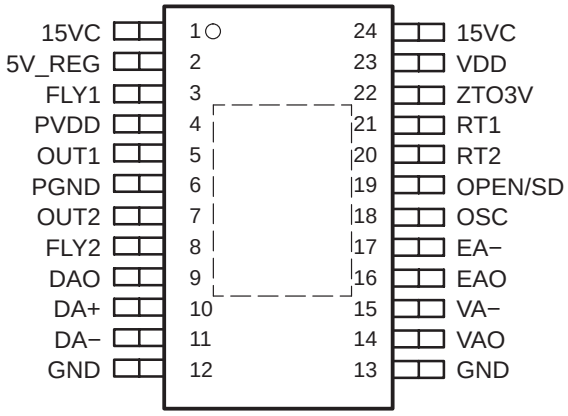
Liquid crystal display (LCD) enclosures used in notebook computers and portable electronic devices are becoming increasingly thin and narrow, generating the need for a miniaturized cold cathode fluorescent lamp (CCFL) backlight supply. Piezoelectric transformers (PZTs) are becoming popular for these size-constrained applications, offering higher efficiency (> 90%), lower profile, and narrower footprint when compared to their magnetic transformer counterparts. These transformers provide inherent sinusoidal operation, non-flammability, and low electromagnetic noise, making them ideal for CCFL backlight applications. The UCC2979 full-bridge converter provides a simplified systems solution for a piezoelectric transformer-based CCFL supply.

The UCC2979 has a patent-pending 2-loop design. The first control loop regulates lamp current by adjusting the operating frequency. The second loop regulates the PZT primary voltage over the full input voltage range, improving system efficiency.

SIMPLIFIED APPLICATION DIAGRAM



PWP PACKAGE
(TOP VIEW)



recommended operating conditions

	MIN	MAX	UNIT
Input voltage	5	24	V
Switch current		2	A

absolute maximum ratings over operating free-air temperature (unless otherwise noted)†

Input voltage range:
- 15VC, DA+, DA− . . . . . 16.5 V
- 5V_REG, EA−, EAO, VAO, VA−,OSC, OPEN/SD
- RT2, RT1, ZTO3V . . . . . 5.5 V
- FLY1, FLY2 . . . . . V_{DD} + 15 V
- PVDD, VDD, OUT1, OUT2 . . . . . 25 V
- PGND . . . . . 5 V
- DAO . . . . . 8 V

Operating virtual temperature range, T_J . . . . . −40°C to 100°C
Storage temperature range, T_{stg} . . . . . −55°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds . . . . . 260°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

AVAILABLE OPTIONS

T_A	PACKAGE
	PowerPad TSSOP (PWP)
−40°C to 85°C	UCC2979PWP

Dissipation Ratings(1)

AIRFLOW IN LFM	DERATING FACTOR ABOVE T_A = 25°C	T_A < 25°C POWER RATING	T_A = 85°C POWER RATING
0	33.2 mW/°C	3.8 W	1.8 W
150	42.3 mW/°C	4.8 W	2.3 W
250	45.9 mW/°C	5.2 W	2.5 W

NOTE 1: For more information on the PWP package, refer to TI technical brief, literature number SLMA002.

ADVANCE INFORMATION

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Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265