



FULL-BRIDGE MAGNETIC TRANSFORMER BACK-LIGHT CONVERTER

FEATURES

- 5-V to 24-V Operation
- Full-Bridge Topology With Integrated Power Switches
- Greater Than 90% Efficiency
- Programmable Strike and Operating Frequencies
- Soft-Start, Shutdown and Open Lamp Protection
- Analog or Burst-Mode Dimming
- Reduced Solution Size Requiring Only External Transformer
- 24-Pin Power TSSOP Package

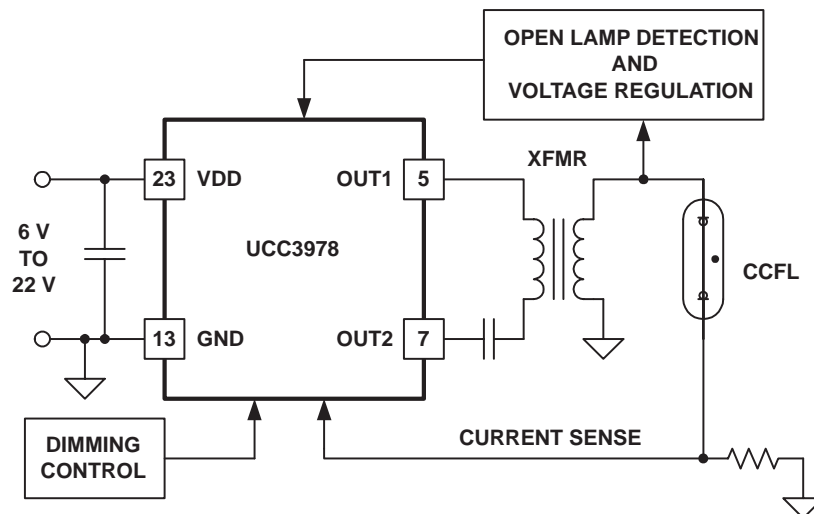
APPLICATIONS

- Notebook Computers
- Portable Electronic Displays
- Portable Instruments

DESCRIPTION

Liquid crystal display (LCD) enclosures and cold cathode fluorescent lamps (CCFLs) used in notebook computer and portable electronics displays are becoming increasingly thin and narrow, generating the need for a miniaturized CCFL power supply. The UCC2978 full-bridge converter provides a complete systems solution for a magnetic transformer based CCFL supply as shown in the typical application circuit. The primary inductance of the transformer and a dc blocking capacitor control current and assure the transformer does not saturate on the primary. Leakage inductance and system capacitance on the transformer secondary provides a nearly sinusoidal voltage to the lamp with no ballast capacitor. The UCC2978 integrates four low- $R_{DS(on)}$ power switches (100 m Ω typical) resulting in minimal board area and high efficiency. System functions such as open lamp, transformer voltage clamp, programmable strike and run frequencies, soft-start, and low-current shutdown are included.

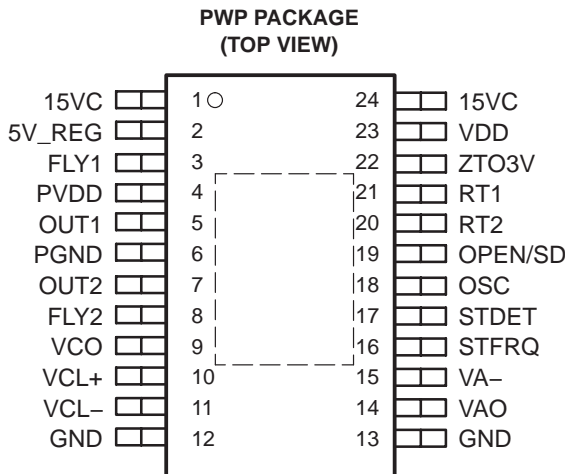
SIMPLIFIED APPLICATION DIAGRAM



UDG-02002

ADVANCE INFORMATION

TYPICAL APPLICATION



recommended operating conditions

	MIN	MAX	UNIT
Input voltage	5.0	24.0	V
Switch current		2	A

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

Input voltage range:	15VC, VCL+, VCL–	16.5 V
	5V_REG, VAO, VA–, STFRQ, STDET, OSC, OPEN/SD	
	RT2, RT1, ZTO3V	5.5 V
	FLY1, FLY2	5.5 V
	RT2, RT1, ZTO3V	V _{DD} + 15 V
	PVDD, VDD, OUT1, OUT2	25 V
	PGND	5 V
	VCO	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	UCC2978PWP

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

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

Copyright © 2003, Texas Instruments Incorporated