UNITRODE

Plug and Play, 18-Line SCSI Active Terminator

FEATURES

- Complies with SCSI and SCSI-2 Standards
- 8pF Channel Capacitance during Disconnect
- SCSI Plug and Play, Dual Low Disconnect, Logic Low Command Disconnects All Termination Lines
- Meets SCSI Hot Plugging Capability
- –650mA Sourcing Current for Termination
- +200mA Sinking Current for Active Negation
- 200µA Supply Current in Disconnect Mode
- Trimmed Termination Current to 7%
- Trimmed Impedance to 7%
- Provides Active Termination for 18 Lines

DESCRIPTION

The UC5607 provides 18 lines of active termination for a SCSI (Small Computer Systems Interface) parallel bus. The SCSI standard recommends active termination at both ends of the cable segment.

The UC5607 provides a low disconnect feature which will disconnect all terminating resistors, and will disable the regulator, greatly reducing standby power. The output channels remain high impedance even without Termpwr applied.

The UC5607 terminator is specially designed with two disconnect pins for full SCSI Plug and Play (PnP) applications.

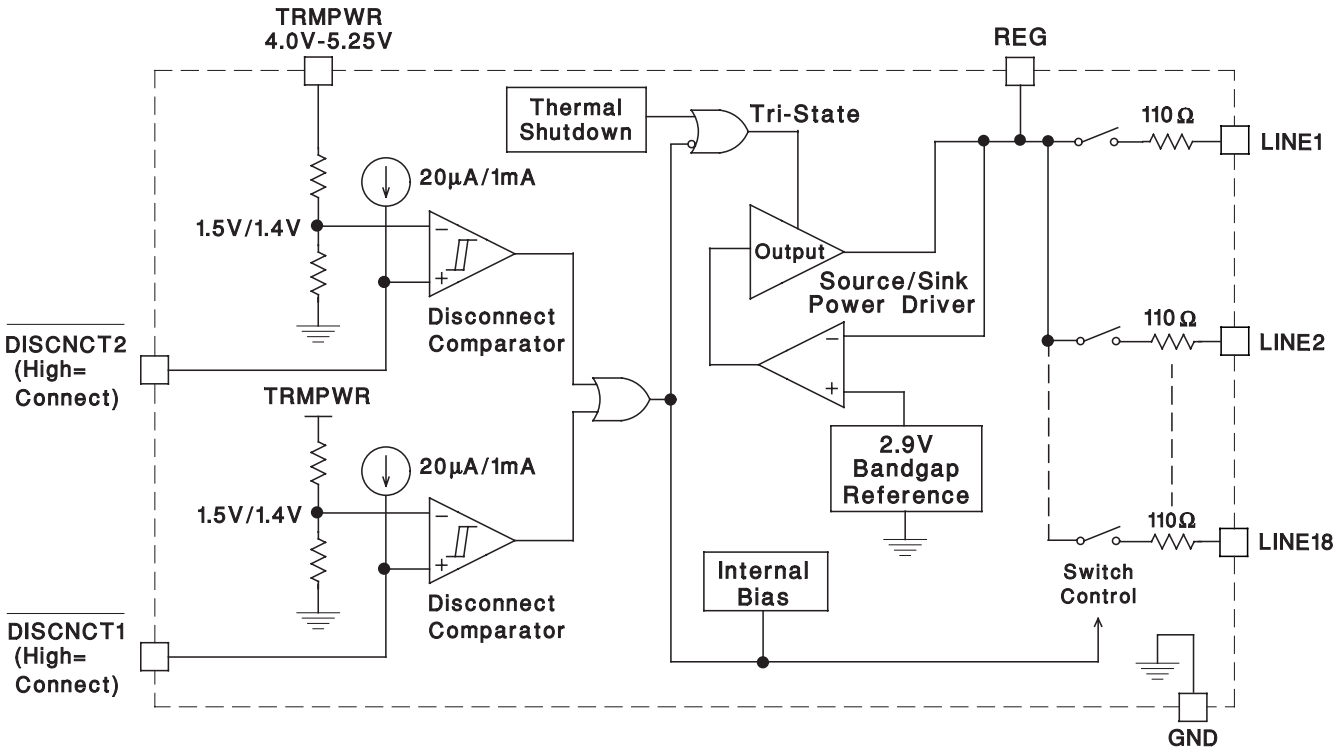
Custom power packages are utilized to allow normal operation at full power conditions (2 Watts).

Internal circuit trimming is utilized, first to trim the impedance to a 7% tolerance, and then most importantly, to trim the output current to a 7% tolerance, as close to the max SCSI spec as possible, which maximizes noise margin in fast SCSI operation.

Other features include thermal shutdown and current limit.

This device is offered in low thermal resistance versions of the industry standard 28 pin wide body SOIC, and 28 pin PLCC, as well as 24 pin DIP.

BLOCK DIAGRAM



	Connect	Connect	Connect	Disc
$\overline{\text{DISCNCT1}}$	1	0	1	0
$\overline{\text{DISCNCT2}}$	0	1	1	0

Circuit Design Patented

UDG-94124

ABSOLUTE MAXIMUM RATINGS

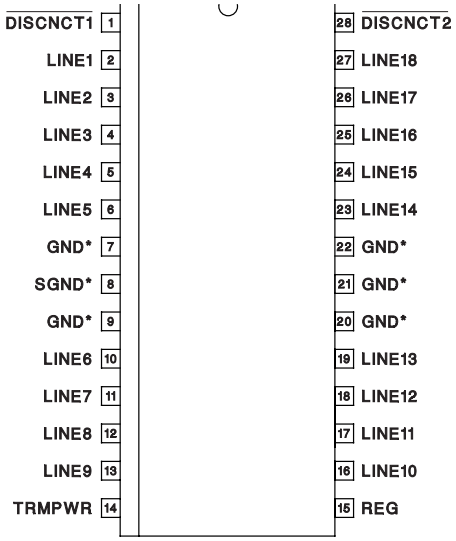
Termpwr Voltage . . . . . +7V
Signal Line Voltage . . . . . 0V to +7V
Regulator Output Current 1A
Storage Temperature . . . . . –65°C to +150°C
Operating Temperature . . . . . –55°C to +150°C
Lead Temperature (Soldering, 10 Sec.). . . . . +300°C

Unless otherwise specified all voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal. Consult Packaging Section of Unitrode Integrated Circuits databook for thermal limitations and considerations of packages.

RECOMMENDED OPERATING CONDITIONS

Termpwr Voltage . . . . . 3.8V to 5.25V
Signal Line Voltage . . . . . 0V to +5V
Disconnect Input Voltage . . . . . 0V to Termpwr

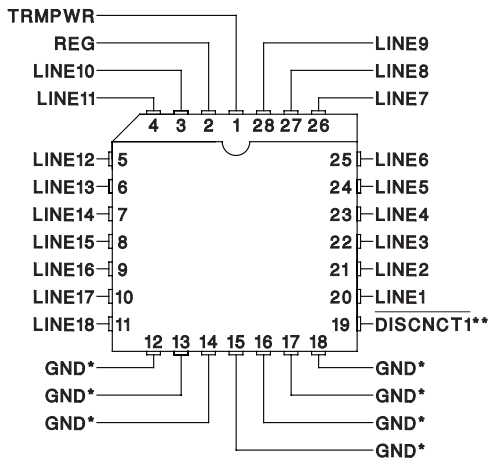
SOIC-28 (Top View)
DWP Package



** DWP package pin 8 serves as signal ground; pins 7, 8, 9, 20, 21, 22 serve as heatsink/ground.*

CONNECTION DIAGRAMS

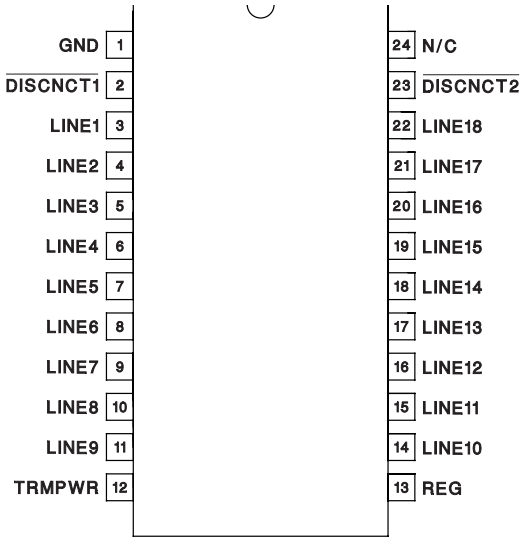
PLCC-28 (Top View)
QP Package



** QP package pins 12 - 18 serve as both heatsink and signal ground.*

*** $\overline{DISCNCT2}$ is internally tied to ground.*

DIL-24 (Top View)
N or J Package



Note: Drawings are not to scale.

ELECTRICAL CHARACTERISTICS Unless otherwise stated, these specifications apply for T_A = 0°C to 70°C. TRMPWR = 4.75V, DISCNCT1 = DISCNCT2 = 2.2V. $T_A = T_J$.

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNITS
Supply Current Section						
Termpwr Supply Current	All termination lines = Open			30	45	mA
	All termination lines = 0.5V			420	470	mA
Power Down Mode	$\overline{\text{DISCNCT1}}$ = $\overline{\text{DISCNCT2}}$ = 0V			300	500	µA
Output Section (Terminator Lines)						
Terminator Impedance	ΔI_{LINE} = –5mA to –15mA	T_J = 25°C	102	110	118	Ohms
		0°C < T_J < 70°C	97	110	129	Ohms
Output High Voltage	V_{TRMPWR} = 4V (Note 1)	T_J = 25°C	2.6	2.9	3.1	V
		0°C < T_J < 70°C	2.55	2.9	3.2	V
Max Output Current	V_{LINE} = 0.5V	T_J = 25°C	–19.5	–21.9	–22.4	mA
		0°C < T_J < 70°C	–18.5	–21.9	–22.4	mA
Max Output Current	V_{LINE} = 0.5V, TRMPWR = 4V (Note 1)	T_J = 25°C	–18.0	–21.9	–22.4	mA
		0°C < T_J < 70°C	–17.0	–21.9	–22.4	mA
Output Leakage	$\overline{\text{DISCNCT1}}$ = $\overline{\text{DISCNCT2}}$ = 0V, TRMPWR = 0V to 5.25V			10	400	nA
Output Capacitance	$\overline{\text{DISCNCT1}}$ = $\overline{\text{DISCNCT2}}$ = 0V (Note 2)			8	10	pF
Regulator Section						
Regulator Output Voltage	All Termination Lines = 5V	T_J = 25°C	2.7	2.9	3.1	V
		0°C < T_J < 70°C	2.55	2.9	3.2	V
Line Regulation	TRMPWR = 4V to 6V			10	20	mV
Load Regulation	I_{REG} = +100mA to –100mA			20	50	mV

Note 1: Measuring each termination line while other 17 are low (0.5V).
Note 2: Guaranteed by design. Not 100% tested in production.

APPLICATION INFORMATION

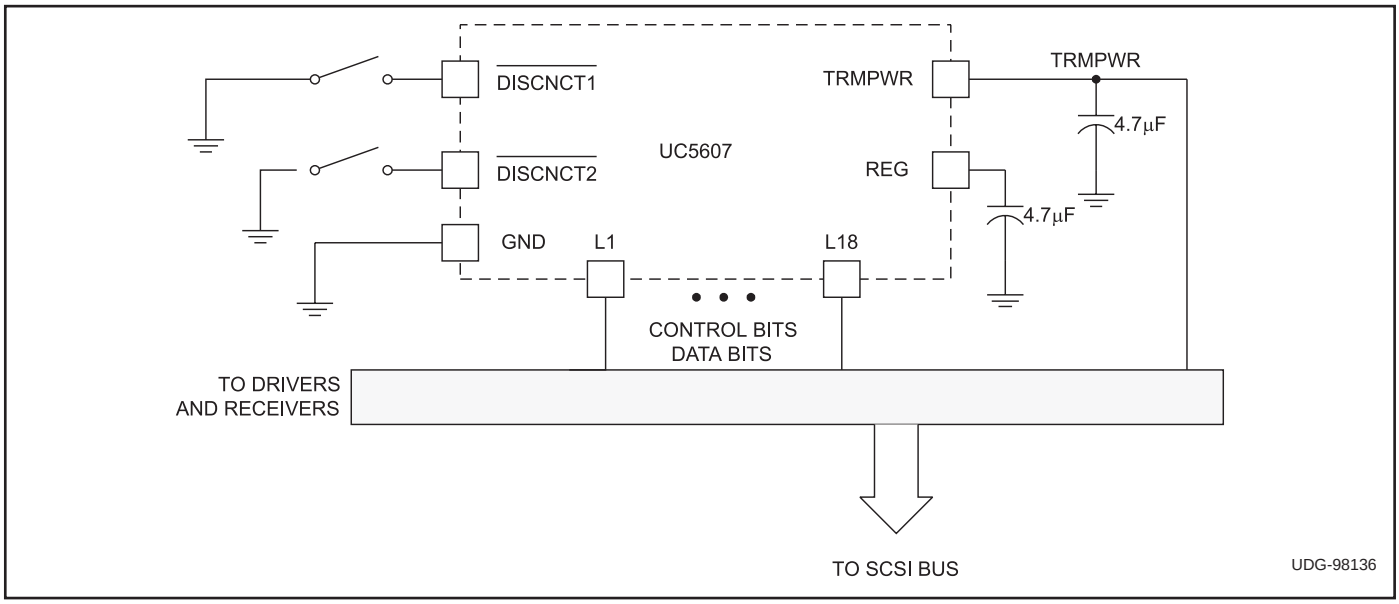


Figure 1: Typical SCSI Bus Configuration Utilizing UC5607 Device

UNITRODE CORPORATION
7 CONTINENTAL BLVD. • MERRIMACK, NH 03054
TEL. (603) 424-2410 FAX (603) 424-3460

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

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

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.

Copyright © 1999, Texas Instruments Incorporated