

27-Line SCSI Terminator With Reverse Disconnect

FEATURES

- Complies with SCSI, SCSI-2, SCSI-3, SPI and FAST-20 (Ultra) Standards
- 2.5pF Channel Capacitance during Disconnect
- 100 μ A Supply Current in Disconnect Mode
- 4V To 7V Operation
- 110 Ω Termination
- Completely Meets SCSI Hot Plugging
- -900mA Sourcing Current for Termination
- +500mA Sinking Current for Active Negation
- Logic Command Disconnects all Termination Lines
- Trimmed Impedance to 5%
- Current Limit and Thermal Shutdown Protection

DESCRIPTION

UCC5619 provides 27 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.

The UCC5619 is ideal for high performance 5V SCSI systems. During disconnect the supply current is typically only 100 μ A, which makes the IC attractive for lower powered systems.

The UCC5619 is designed with a low channel capacitance of 2.5pF, which eliminates effects on signal integrity from disconnected terminators at interim points on the bus.

The power amplifier output stage allows the UCC5619 to source full termination current and sink active negation current when all termination lines are actively negated.

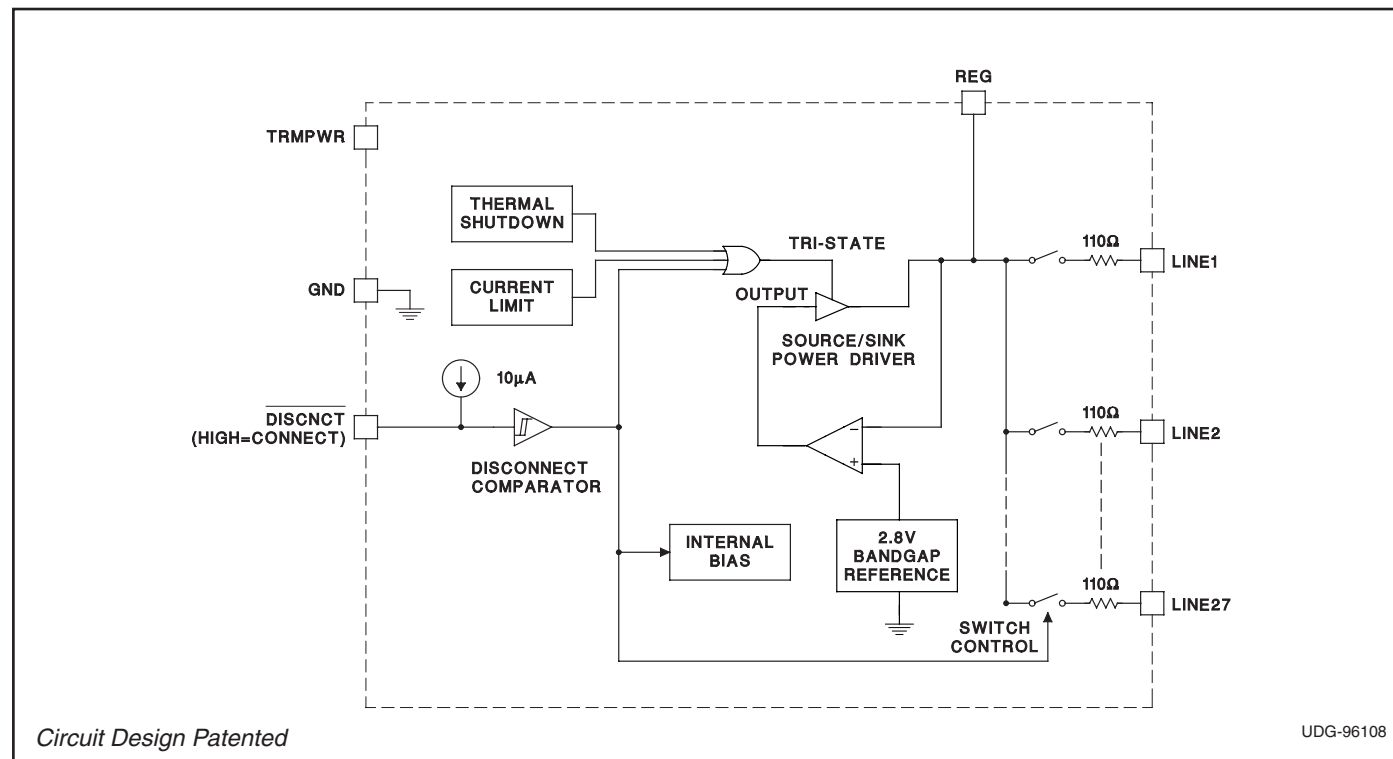
The UCC5619, as with all Unitrode terminators, is completely hot pluggable and appears as high impedance at the terminating channels with $V_{TRMPWR} = 0V$ or open.

Internal circuit trimming is utilized, first to trim the 110 Ω impedance, and then most importantly, to trim the output current as close to the maximum SCSI-3 specification 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 36 pin wide body QSSOP (MWP).

Consult SSOP-36 (MWP QSSOP-36) Packaging Diagram for exact dimensions.

BLOCK DIAGRAM



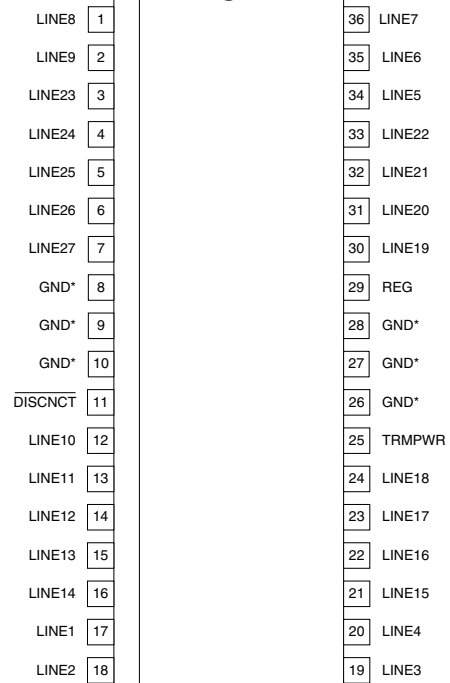
ABSOLUTE MAXIMUM RATINGS

TRMPWR Voltage +7V
 Signal Line Voltage 0V to +7V
 Regulator Output Current 1.5A
 Storage Temperature –65°C to +150°C
 Junction Temperature –55°C to +150°C
 Lead Temperature (Soldering, 10 Sec.) +300°C

*Currents are positive into, negative out of the specified terminal.
 Consult Packaging Section of Databook for thermal limitations
 and considerations of packages.*

CONNECTION DIAGRAM

**QSSOP-36 (Top View)
 MWP Package**



* MWP package pins 8 - 10 and 26 - 28 serve as heatsink/ground.

ELECTRICAL CHARACTERISTICS Unless otherwise stated, these specifications apply for $T_A = 0^\circ\text{C}$ to 70°C ,
 TRMPWR = 4.75V, DISCNCT = 4.75V, $T_A = T_J$.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current Section					
TRMPWR Supply Current	All Termination Lines = Open		1	2	mA
	All Termination Lines = 0.2V		630	650	mA
Power Down Mode	DISCNCT = 0V		100	200	μA
Output Section (Termination Lines)					
Termination Impedance	(Note 3)	104.5	110	115.5	Ω
Output High Voltage	(Note 1)	2.6	2.8	3.0	V
Max Output Current	$V_{\text{LINE}} = 0.2\text{V}$, $T_J = 25^\circ\text{C}$	–22.1	–23.3	–24	mA
	$V_{\text{LINE}} = 0.2\text{V}$	–20.7	–23.3	–24	mA
	$V_{\text{LINE}} = 0.2\text{V}$, TRMPWR = 4V, $T_J = 25^\circ\text{C}$ (Note 1)	–21	–23	–24	mA
	$V_{\text{LINE}} = 0.2\text{V}$, TRMPWR = 4V (Note 1)	–20	–23	–24	mA
	$V_{\text{LINE}} = 0.5\text{V}$			22.4	mA
Output Leakage	DISCNCT = 0V, TRMPWR = 0V to 5.25V		10	400	nA
Output Capacitance	DISCNCT = 0V (Note 2)		2.5	4	pF

ELECTRICAL CHARACTERISTICS Unless otherwise stated, these specifications apply for $T_A = 0^\circ\text{C}$ to 70°C , $\text{TRMPWR} = 4.75\text{V}$, $\text{DISCNCNT} = 4.75\text{V}$, $T_A = T_J$.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Regulator Section					
Regulator Output Voltage		2.6	2.8	3.0	V
Drop Out Voltage	All Termination Lines = 0.2V		0.4	0.8	V
Short Circuit Current	$V_{\text{REG}} = 0\text{V}$	-650	-900	-1300	mA
Sinking Current Capability	$V_{\text{REG}} = 3.5\text{V}$	300	500	900	mA
Thermal Shutdown			170		$^\circ\text{C}$
Thermal Shutdown Hysteresis			10		$^\circ\text{C}$
Disconnect Section					
Disconnect Threshold		0.8	1.5	2.0	V
Input Current	$\overline{\text{DISCNCNT}} = 0\text{V}$		-20	-60	μA

Note 1: Measuring each termination line while other 26 are low (0.2V).

Note 2: Ensured by design. Not 100% tested in production.

Note 3: Tested by measuring I_{OUT} with $V_{\text{OUT}} = 0.2\text{V}$ and V_{OUT} with no load, then calculate: $Z = \frac{V_{\text{OUT}} \text{ N.L.} - 0.2\text{V}}{I_{\text{OUT}} \text{ at } 0.2\text{V}}$

PIN DESCRIPTIONS

DISCNCNT: Taking this pin low causes all channels to become high impedance, and the chip to go into low-power mode; a high state or leaving it open allows the channels to provide normal termination.

GND: Ground reference for the IC.

LINE1 - LINE27: 110 Ω termination channels.

REG: Output of the internal 2.7V regulator; bypass with a 4.7 μF capacitor to GND.

TRMPWR: Power for the IC; bypass with a 4.7 μF capacitor to GND.

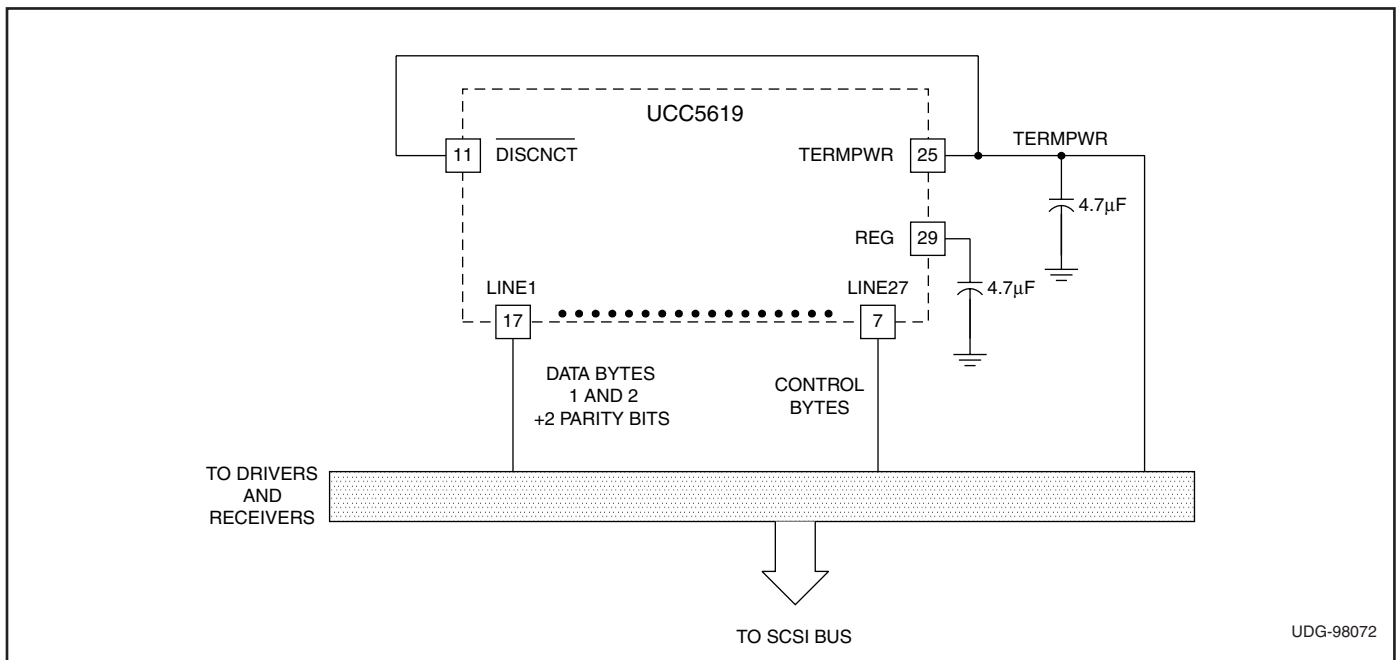


Figure 1. Typical wide SCSI bus configuration using the UCC5619

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.

Mailing Address:

Texas Instruments
Post Office Box 655303
Dallas, Texas 75265