UNITRODE

27-Line SCSI Terminator

FEATURES

- Complies with SCSI, SCSI-2, SCSI-3, SPI and FAST-20 (Ultra) Standards
- 2.5pF Channel Capacitance during Disconnect
- 100mA Supply Current in Disconnect Mode
- 4V To 7V Operation
- 110 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

UCC5620 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 UCC5620 is ideal for high performance 5V SCSI systems. During disconnect the supply current is typically only 100µA, which makes the IC attractive for lower powered systems.

The UCC5620 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 UCC5620 to source full termination current and sink active negation current when all termination lines are actively negated.

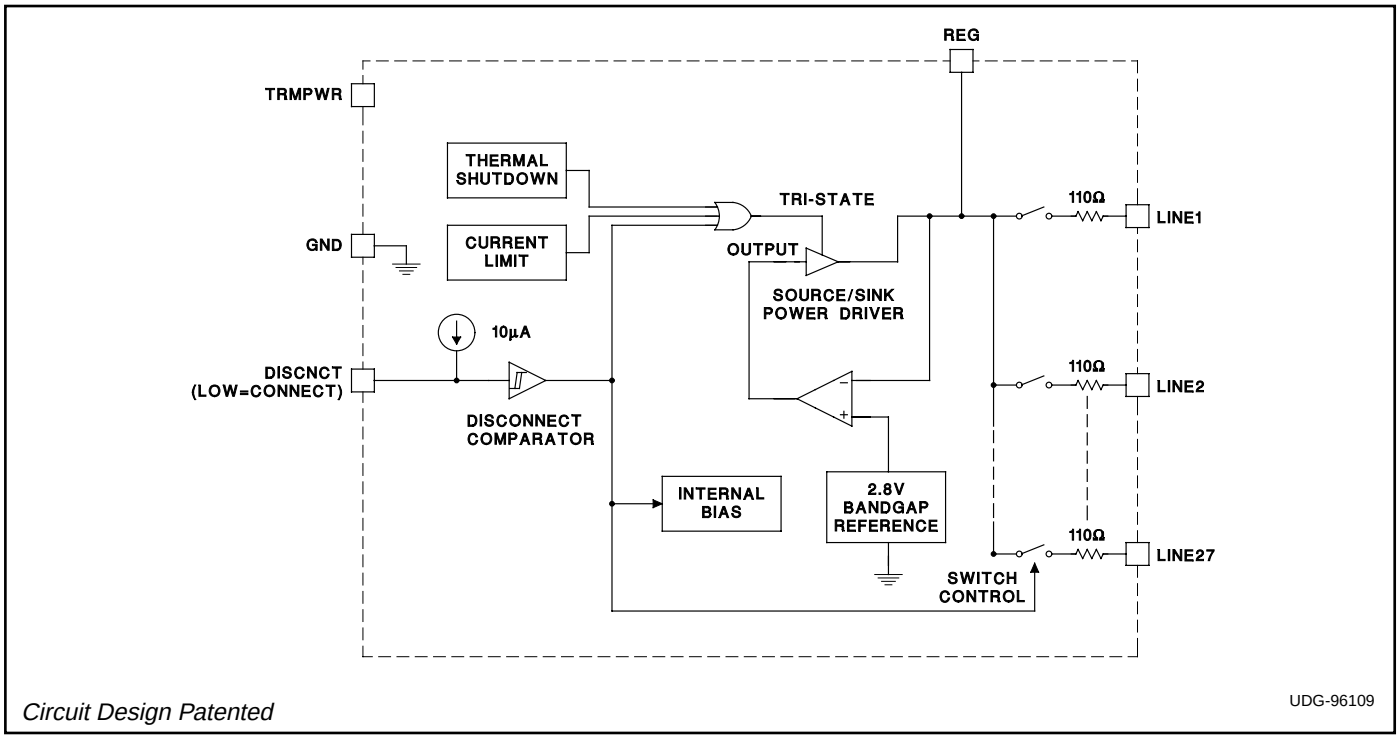
The UCC5620, as with all Unitrode terminators, is completely hot pluggable and appears as high impedance at the teminating channels with V_{TRMPWR} = 0V or open.

Internal circuit trimming is utilized, first to trim the 110Ω 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 QSOP (MWP) and 48-Pin LQFP (FQP).

Consult QSOP-36 or LQFP-48 packaging diagram for exact dimensions.

BLOCK DIAGRAM



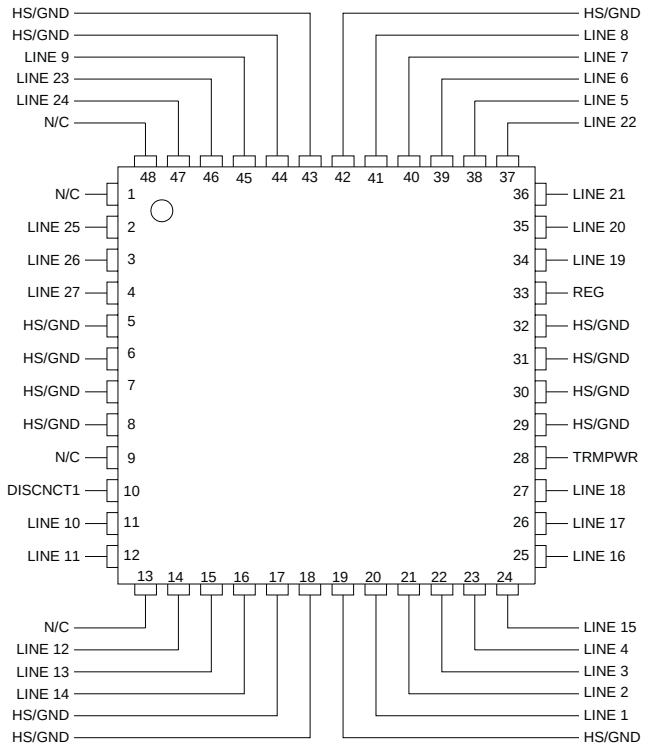
Circuit Design Patented

ABSOLUTE MAXIMUM RATINGS

Termpwr 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

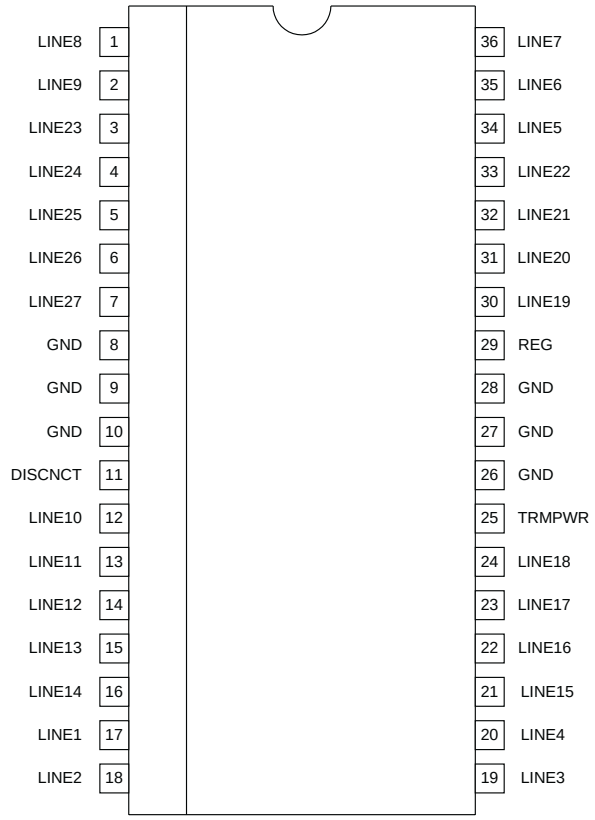
Currents are positive into, negative out of the specified terminal. Consult Packaging Section of Databook for thermal limitations and considerations of packages.

LFQP-48 (Top View)
FQP Package



CONNECTION DIAGRAM

SSOP-36 (Top View)
MWP Package



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

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 = TRMPWR		100	200	µA

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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_{LINE} = 0.2V, T_J = 25°C	–22.1	–23.3	–24	mA
	V_{LINE} = 0.2V	–20.7	–23.3	–24	mA
	V_{LINE} = 0.2V, TRMPWR = 4V, T_J = 25°C (Note 1)	–21	–23	–24	mA
	V_{LINE} = 0.2V, TRMPWR = 4V (Note 1)	–20	–23	–24	mA
	V_{LINE} = 0.5V			–22.4	mA
Output Leakage	DISCNCT = 2.4V, TRMPWR = 0V to 5.25V		10	400	nA
Output Capacitance	DISCNCT = 2.4V (Note 2)		2.5	4	pF
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_{REG} = 0V	–650	–900	–1300	mA
Sinking Current Capability	V_{REG} = 3.5V	300	500	900	mA
Thermal Shutdown			170		C°
Thermal Shutdown Hysteresis			10		C°
Disconnect Section					
Disconnect Threshold		0.8	1.5	2.0	V
Input Current	DISCNCT = 0V		–20	–60	µA

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

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

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

PIN DESCRIPTIONS

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

GND: Ground reference for the IC.

LINE1 - LINE27: 110Ω termination channels.

REG: Output of the internal 2.7V regulator.

TRMPWR: Power for the IC.

APPLICATION INFORMATION

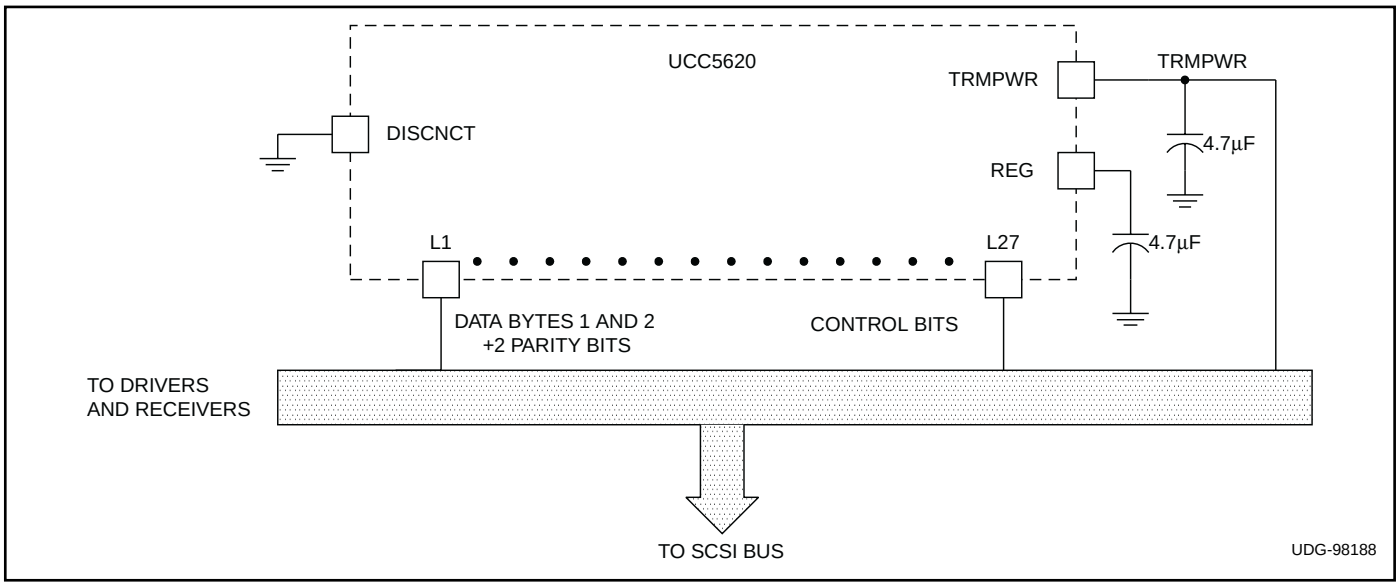


Figure 1. Typical Wide SCSI Bus Configuration Using the UCC5620

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