

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.

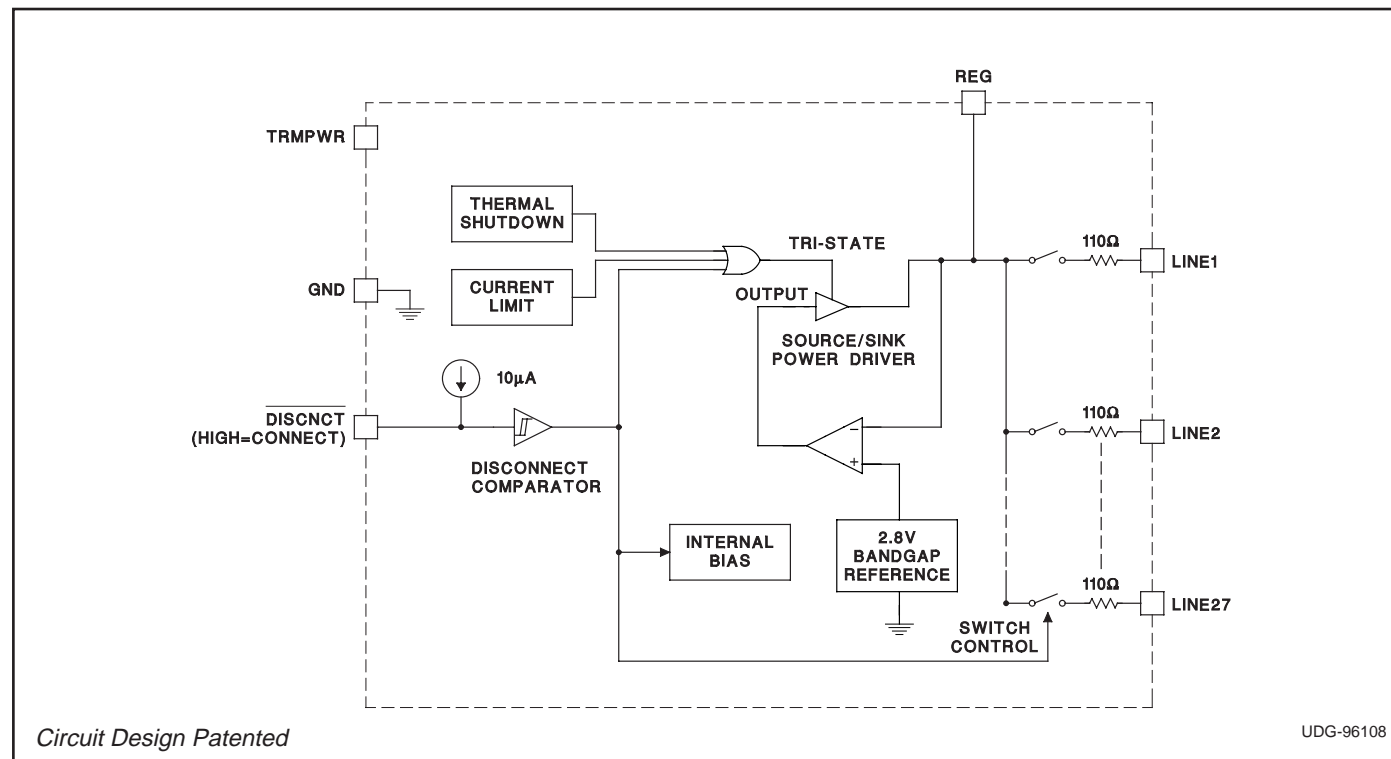
The UCC5619, as with all Unitrode terminators, is completely hot pluggable and appears as high impedance at the terminating channels with $V_{TRMPWR} = 0V$ or open.

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) and 48 pin LQFP (FQP).

Consult SSOP-36 (MWP QSSOP-36) and FQP-48 Packaging Diagram for exact dimensions.

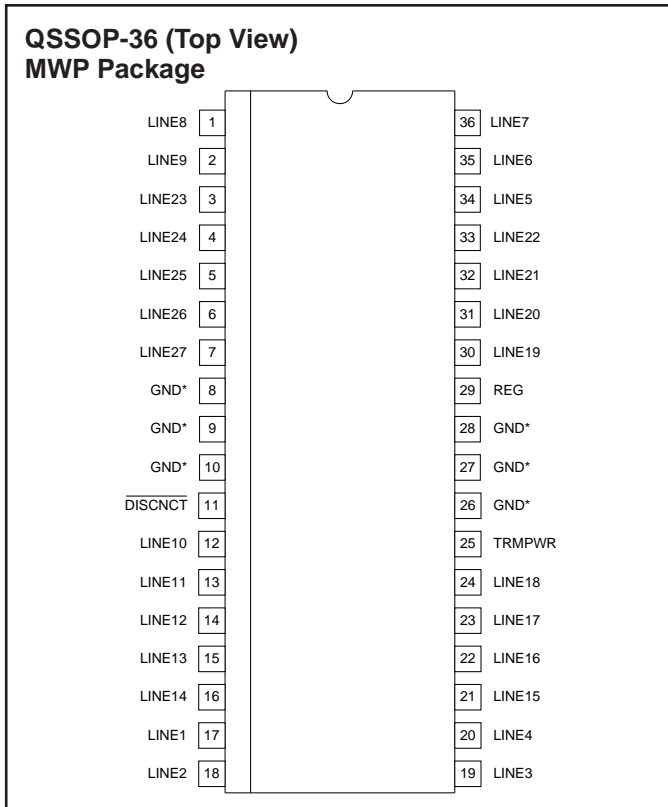
BLOCK DIAGRAM



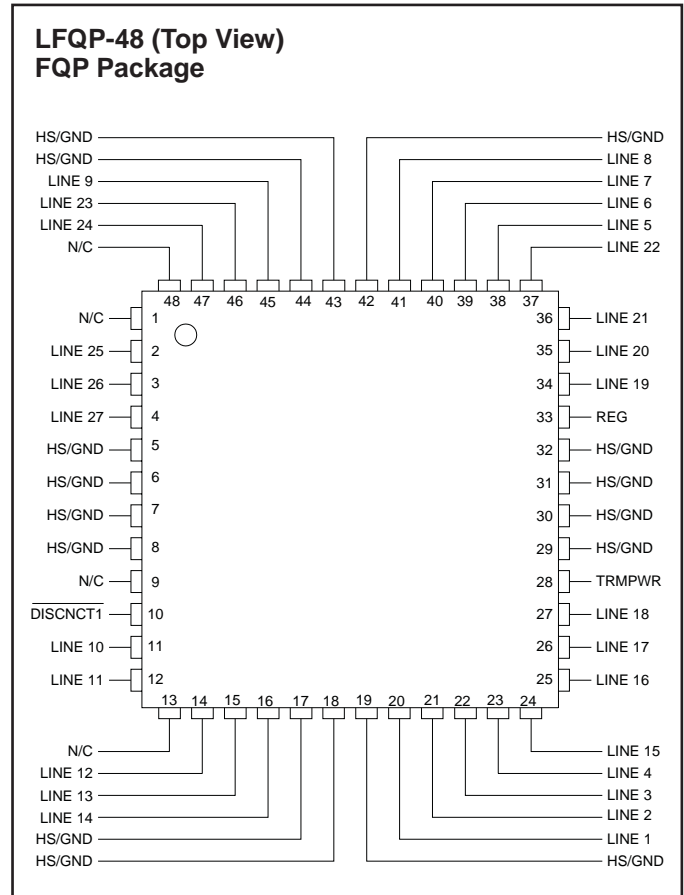
ABSOLUTE MAXIMUM RATINGS

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.



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

CONNECTION DIAGRAM

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

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
	$V_{\text{LINE}} = 0.2\text{V}$, $\text{TRMPWR} = 4\text{V}$, $T_J = 25^\circ\text{C}$ (Note 1)	–21	–23	–24	mA
	$V_{\text{LINE}} = 0.2\text{V}$, $\text{TRMPWR} = 4\text{V}$ (Note 1)	–20	–23	–24	mA

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Output Section (CONT.)					
	$V_{\text{LINE}} = 0.5\text{V}$			22.4	mA
Output Leakage	$\overline{\text{DISCNET}} = 0\text{V}$, $\text{TRMPWR} = 0\text{V}$ to 5.25V		10	400	nA
Output Capacitance	$\overline{\text{DISCNET}} = 0\text{V}$ (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	$V_{\text{REG}} = 0\text{V}$	-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	$\overline{\text{DISCNET}} = 0\text{V}$		-20	-60	μA

PIN DESCRIPTIONS

DISCNET: 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: 110Ω termination channels.

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

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

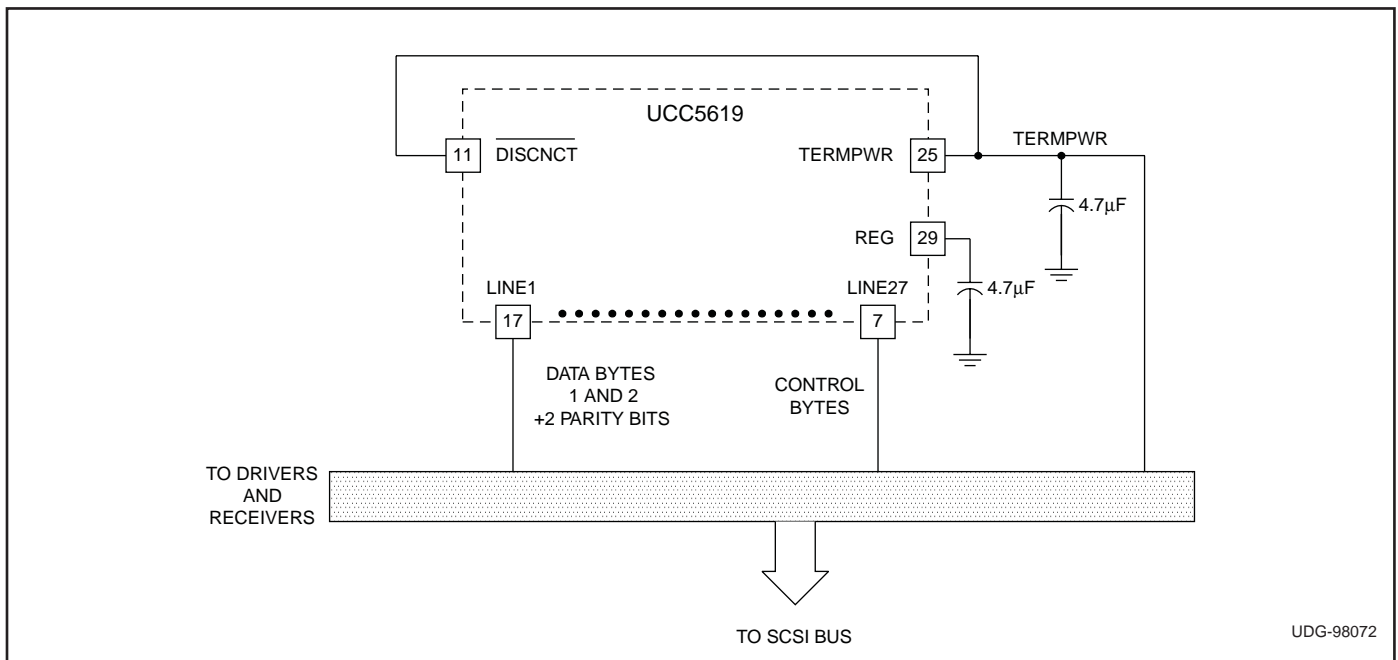


Figure 1. Typical wide SCSI bus configuration using the UCC5619

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