

# 27-Line SCSI Terminator

**PRELIMINARY**
**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
- 110Ω 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.

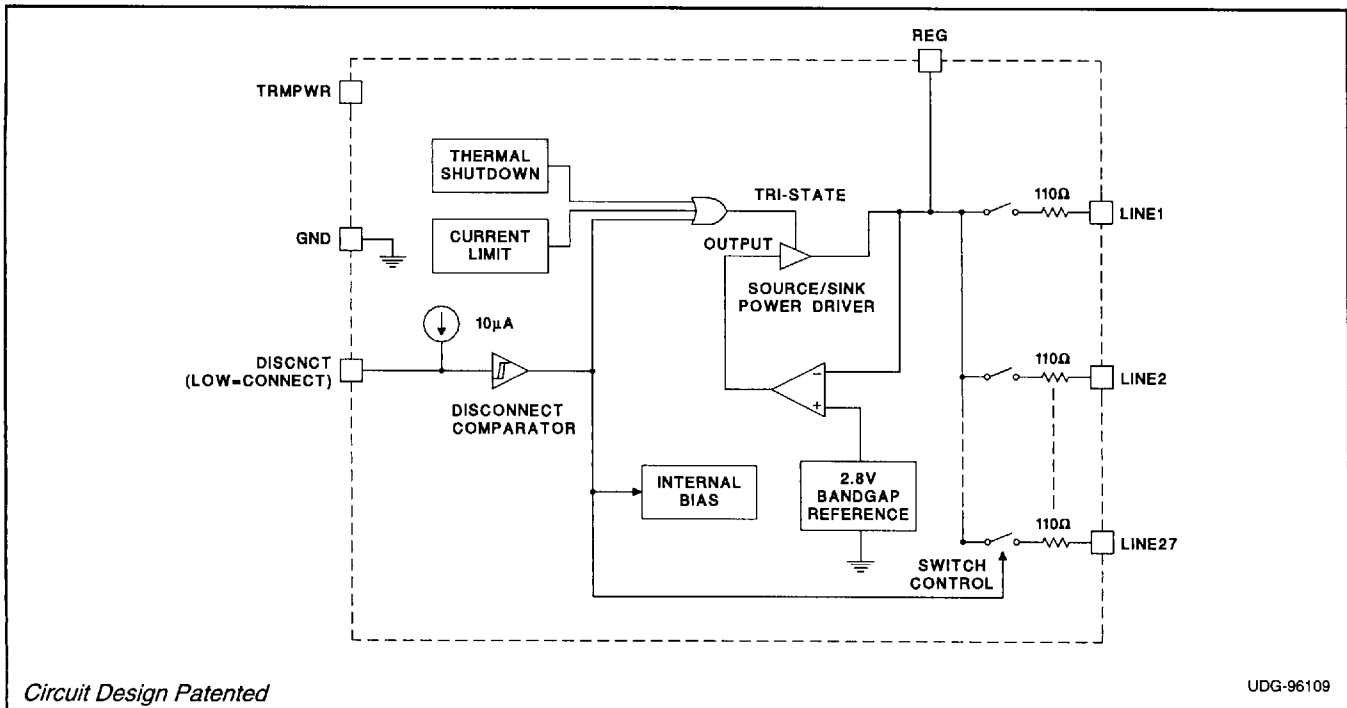
The power amplifier output stage allows the UCC5620 to source full termination current and sink active negation current when all termination lines are actively negated.

The UCC5620, as with all Unitrode terminators, is completely hot pluggable and appears as high impedance at the terminating 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.

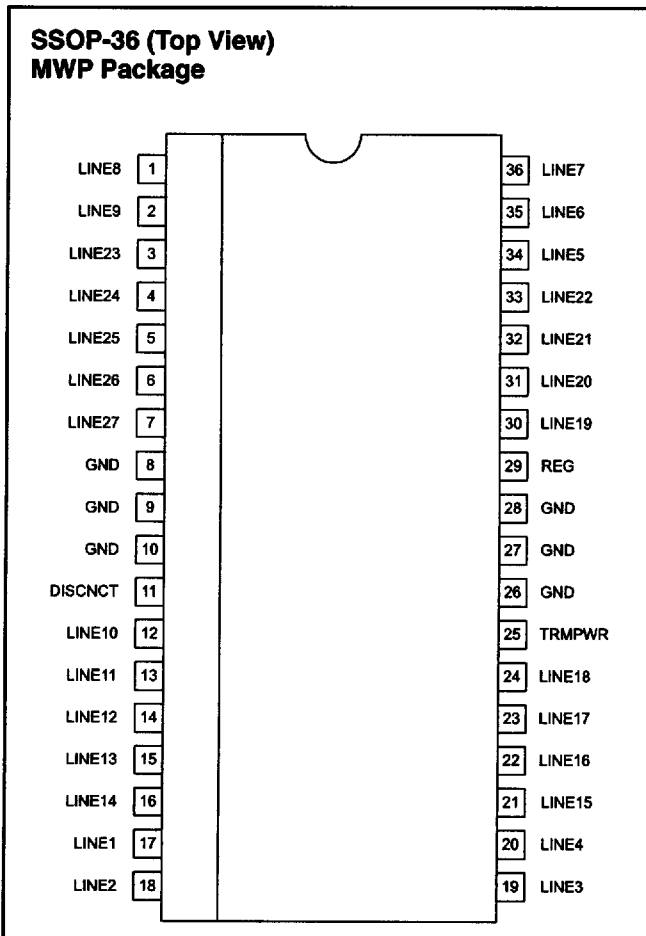
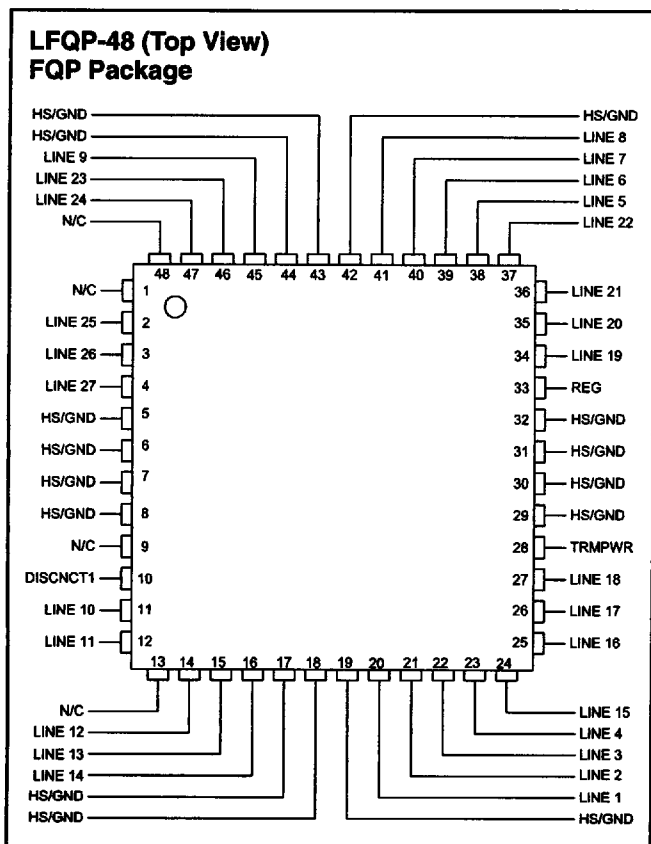
**BLOCK DIAGRAM**


**ABSOLUTE MAXIMUM RATINGS**

Tempwr 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**



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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>Supply Current Section</b>					
TRMPWR Supply Current	All Termination Lines = Open		1	2	mA
	All Termination Lines = 0.2V		630	650	mA
Power Down Mode	DISCNECT = TRMPWR		100	200	$\mu\text{A}$

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>Output Section (Termination Lines)</b>					
Termination Impedance	(Note 3)	104.5	110	115.5	$\Omega$
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 = 2.4V, TRMPWR = 0V to 5.25V		10	400	nA
Output Capacitance	DISCNCT = 2.4V (Note 2)		2.5	4	pF
<b>Regulator Section</b>					
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		$^\circ\text{C}$
<b>Disconnect Section</b>					
Disconnect Threshold		0.8	1.5	2.0	V
Input Current	DISCNCT = 0V		-20	-60	$\mu\text{A}$

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

## 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:** 110 $\Omega$  termination channels.

**REG:** Output of the internal 2.7V regulator.

**TRMPWR:** Power for the IC.

APPLICATION INFORMATION

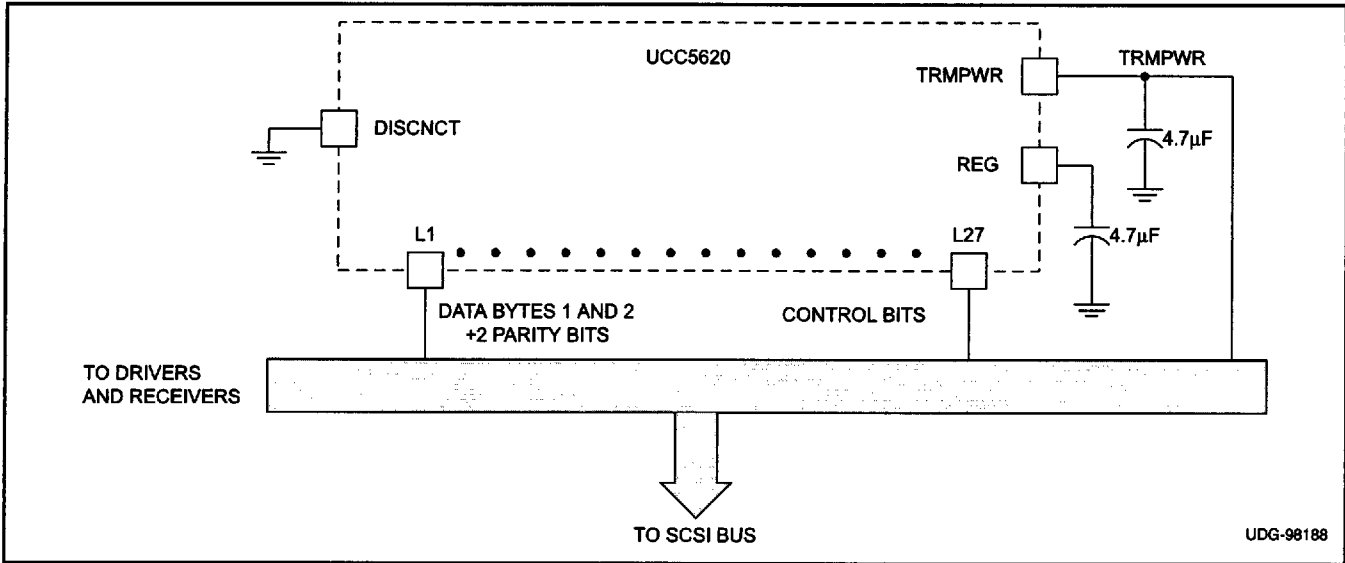


Figure 1. Typical Wide SCSI Bus Configuration Using the UCC5620



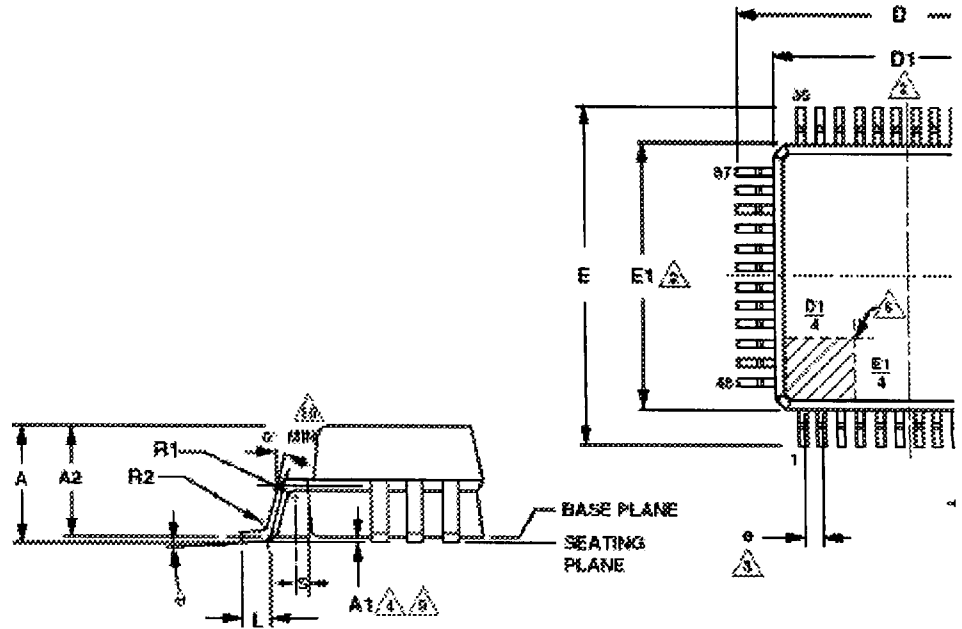
**UNITRODE**

# Mechanical Drawings

[Back to Packaging Index](#)

## 48-PIN LQFP ~ FQ and FQP PACKAGE SUFFIX

DIMENSIONS				
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	1.60	-	.063
A1	0.05	0.15	.002	.006
A2	1.35	1.45	.053	.057
b	0.17	0.27	.007	.011
b1	0.17	0.23	.007	.009
C	0.09	0.20	.003	.008
C1	0.09	0.16	.003	.006
D	9.00 BSC		.354 BSC	
D1	7.00 BSC		.276 BSC	
E	9.00BSC		.354 BSC	
E1	7.00 BSC		.276 BSC	
e	0.50 BSC		.020 BSC	
L	0.45	0.75	.018	.030
R1	0.08	-	.003	-
R2	0.08	0.20	.003	.008
S	0.20	-	.008	-



**NOTES:**

1. CONTROLLING DIMENSION: MILLIMETERS. INCHES SHOWN FOR REFERENCE ONLY.
2. 'D1' AND 'E1' DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS. MOLD FLASH OR PROTRUSIO PER SIDE. 'D1' AND 'E1' INCLUDE MOLD MISMATCH.
3. THE BASIC LEAD SPACING IS 0.50mm BETWEEN CENTERLINES. EACH LEAD CENTERLINE SHAL OF ITS EXACT TRUE POSITION.
4. LEADS SHALL BE COPLANAR WITHIN 0.08mm AT THE SEATING PLANE.
5. DIMENSION 'b' DOES NOT INCLUDE DAMBAR PROTRUSION. THE DAMBAR PROTRUSION(S) SH WIDTH TO EXCEED 'b' MAXIMUM BY MORE THAN 0.08mm. DAMBAR CAN NOT BE LOCATED O LEAD FOOT. MINIMUM SPACE BETWEEN PROTRUSION AND AN ADJACENT LEAD IS 0.07mm.
6. DETAILS OF PIN1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE ZONE INDI
7. EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.
8. THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10mm AND 0.25m
9. 'A1' IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF TH





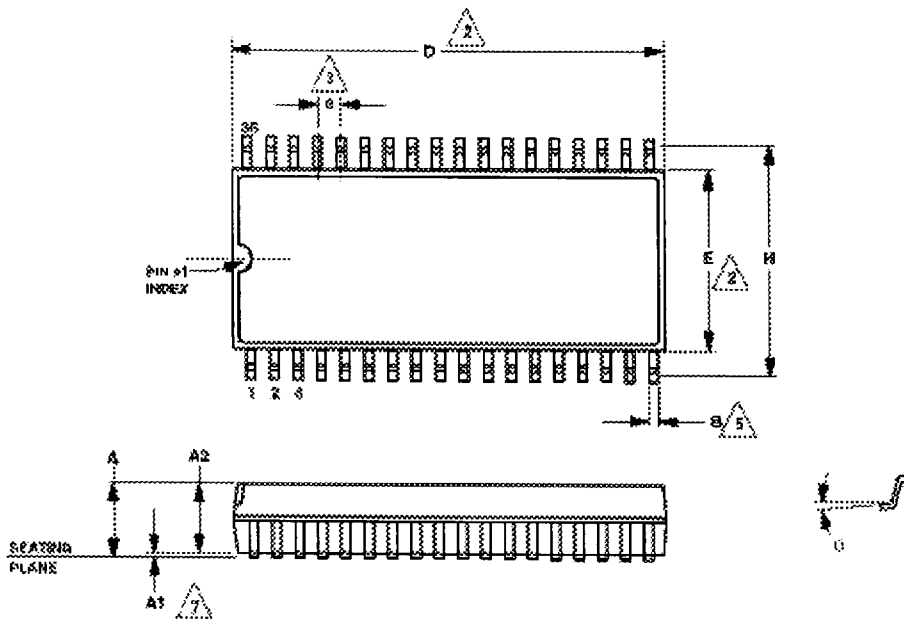
**UNITRODE**

**Mechanical Drawings**

[Back to Packaging Index](#)

**36-PIN QSOP ~ MWP PACKAGE SUFFIX**

SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.093	.104	2.35	2.65
A1	.004	.012	0.10	0.30
A2	.092 TYP		2.34 TYP	
B	.011	.015	0.28	0.39
C	.006	.0125	0.15	0.32
D	.598	.614	15.20	15.60
E	.291	.299	7.40	7.60
e	.031 BSC		0.80 BSC	
H	.394	.419	10.00	10.65
L	.016	.050	0.40	1.27
⊿	0°	8°	0°	8°



**NOTES:**

1. CONTROLLING DIMENSION: INCHES. MILLIMETERS CONTROL LEAD PITCH ONLY.
2. 'D' AND 'E' DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS. MOLD FLASH OR PROTRUSION EXCEED 0.15mm PER SIDE.
3. THE BASIC LEAD SPACING IS 0.80mm BETWEEN CENTERLINES. EACH LEAD CENTERLINE SHAL WITHIN ±0.10mm OF ITS EXACT TRUE POSITION.
4. LEADS SHALL BE COPLANAR WITHIN 0.10mm AT THE SEATING PLANE.
5. DIMENSION 'B' DOES NOT INCLUDE DAMBAR PROTRUSION. THE DAMBAR PROTRUSION(S) SH THE LEAD WIDTH TO EXCEED 'B' MAXIMUM BY MORE THAN 0.08mm. DAMBAR CAN NOT BE L LOWER RADIUS OR THE LEAD FOOT.
6. THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10mm AND 0.25m LEAD TIP.
7. 'A1' IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF TH BODY (BASE PLANE).