

# 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 Tempwr applied.

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

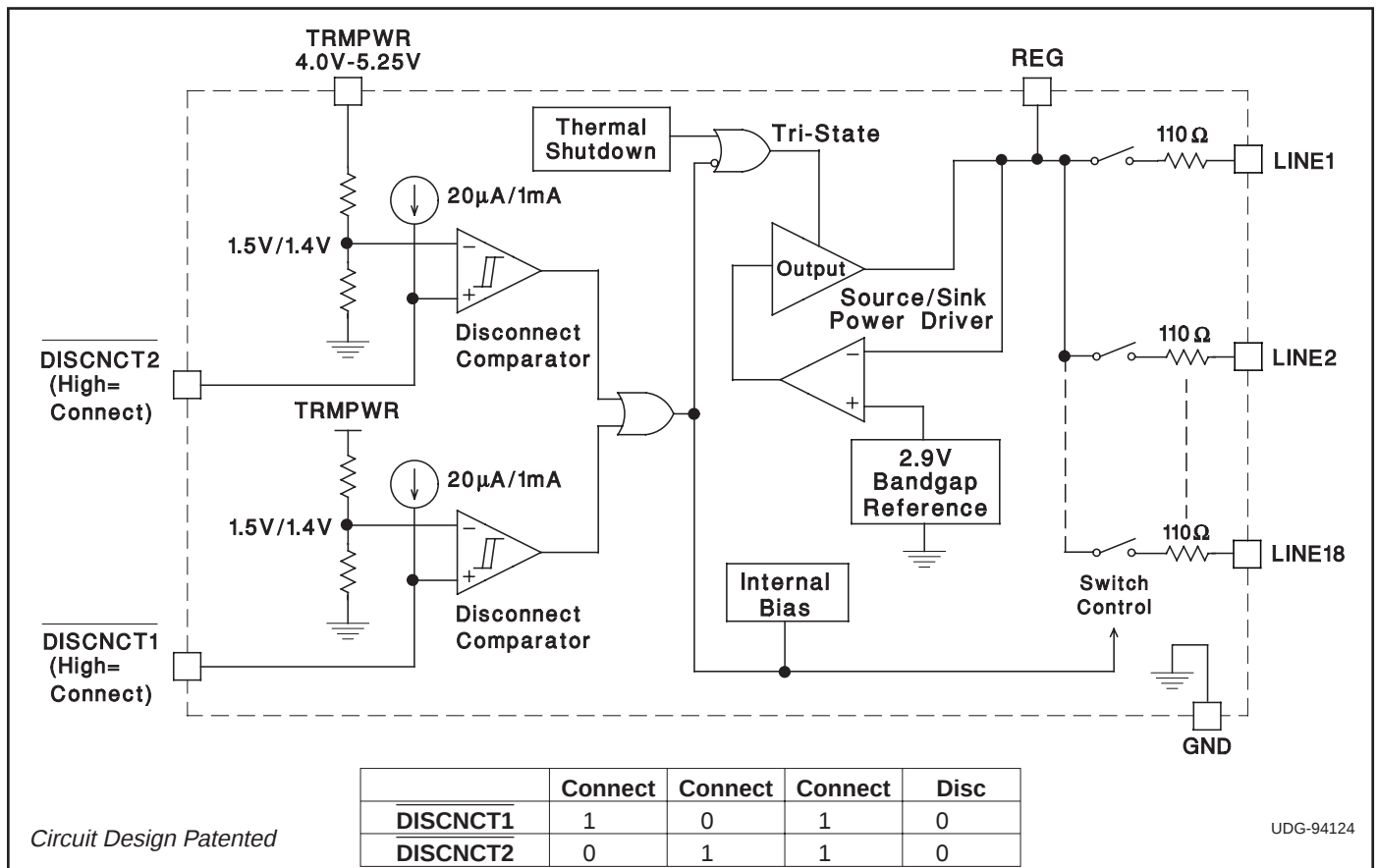
Custom power packages are utilized to allow normal operation at full power conditions (2 Watts).

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



## ABSOLUTE MAXIMUM RATINGS

|                                       |                 |
|---------------------------------------|-----------------|
| Tempwr 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          |

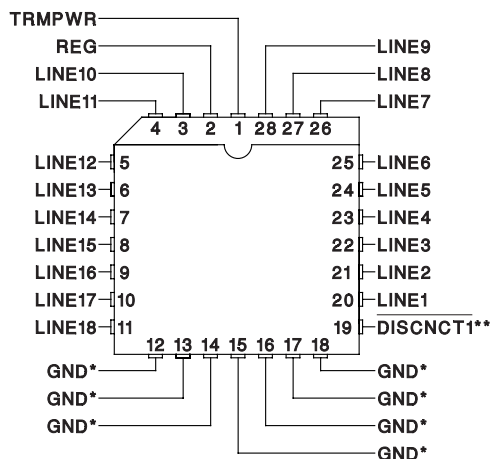
Unless otherwise specified all voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal. Consult Packaging Section of Unitrode Integrated Circuits databook for thermal limitations and considerations of packages.

## RECOMMENDED OPERATING CONDITIONS

|                          |               |
|--------------------------|---------------|
| Tempwr Voltage           | 3.8V to 5.25V |
| Signal Line Voltage      | 0V to +5V     |
| Disconnect Input Voltage | 0V to Tempwr  |

## CONNECTION DIAGRAMS

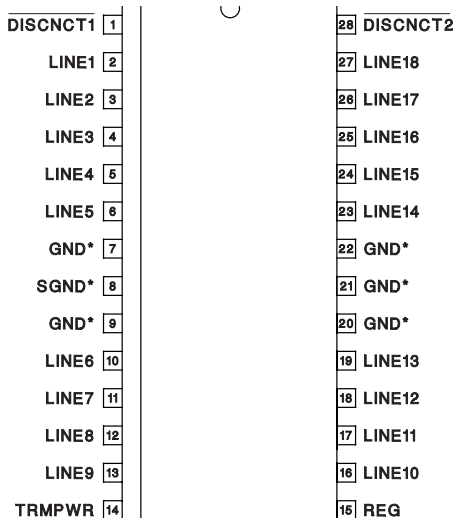
### PLCC-28 (Top View) QP Package



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

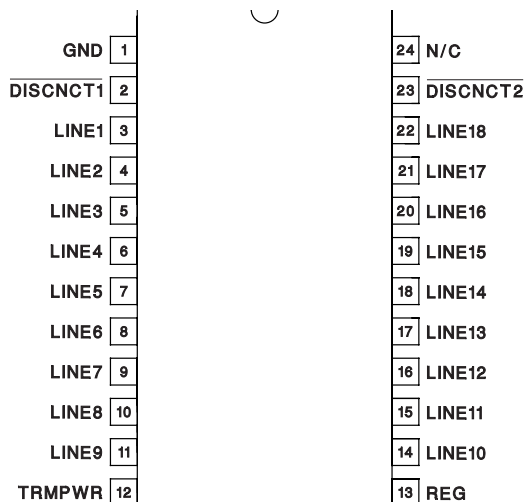
\*\* DISCNCT2 is internally tied to ground.

### 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.

### DIL-24 (Top View) N or J Package



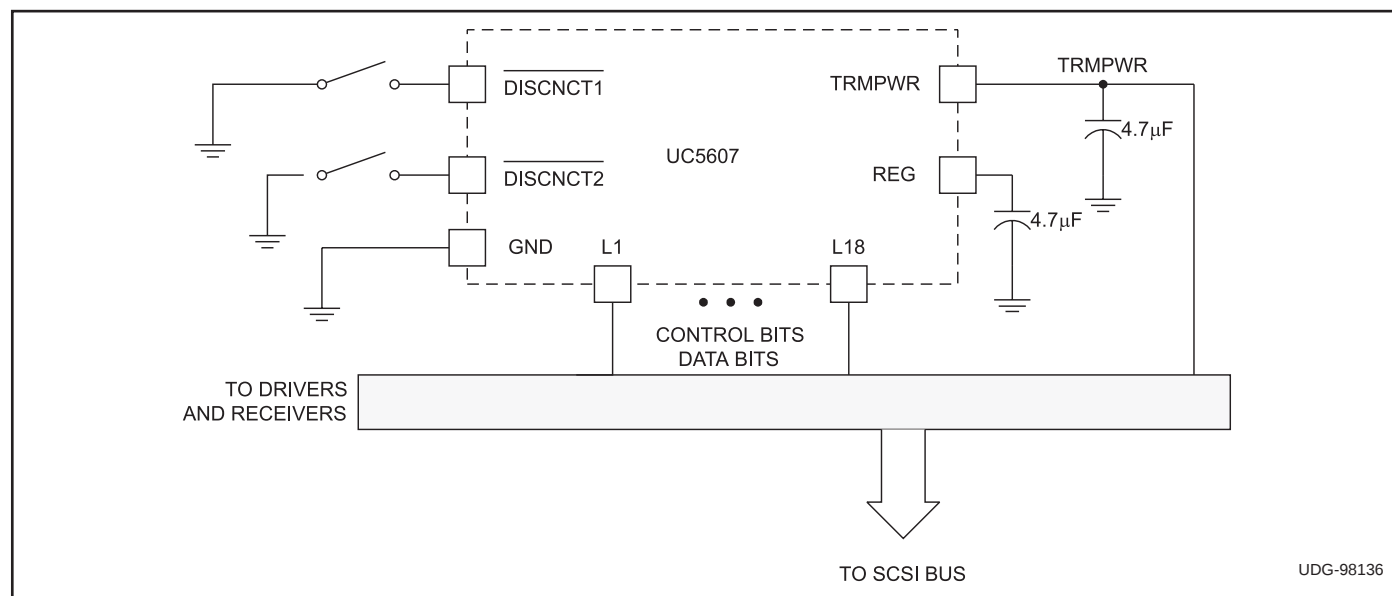
Note: Drawings are not to scale.

**ELECTRICAL CHARACTERISTICS** Unless otherwise stated, these specifications apply for  $T_A = 0^\circ\text{C}$  to  $70^\circ\text{C}$ .TRMPWR = 4.75V, DISCNCT1 = DISCNCT2 = 2.2V.  $T_A = T_J$ .

| PARAMETER                         |                                                | TEST CONDITIONS             |       | MIN   | TYP   | MAX  | UNIT<br>S |
|-----------------------------------|------------------------------------------------|-----------------------------|-------|-------|-------|------|-----------|
| Supply Current Section            |                                                |                             |       |       |       |      |           |
| Termppwr Supply Current           | All termination lines = Open                   |                             |       | 30    | 45    | mA   |           |
|                                   | All termination lines = 0.5V                   |                             |       | 420   | 470   | mA   |           |
| Power Down Mode                   | DISCNCT1 = DISCNCT2 = 0V                       |                             |       | 300   | 500   | μA   |           |
| Output Section (Terminator Lines) |                                                |                             |       |       |       |      |           |
| Terminator Impedance              | ΔI <sub>LINE</sub> = −5mA to −15mA             | T <sub>J</sub> = 25°C       | 102   | 110   | 118   | Ohms |           |
|                                   |                                                | 0°C < T <sub>J</sub> < 70°C | 97    | 110   | 129   | Ohms |           |
| Output High Voltage               | V <sub>TRMPWR</sub> = 4V (Note 1)              | T <sub>J</sub> = 25°C       | 2.6   | 2.9   | 3.1   | V    |           |
|                                   |                                                | 0°C < T <sub>J</sub> < 70°C | 2.55  | 2.9   | 3.2   | V    |           |
| Max Output Current                | V <sub>LINE</sub> = 0.5V                       | T <sub>J</sub> = 25°C       | −19.5 | −21.9 | −22.4 | mA   |           |
|                                   |                                                | 0°C < T <sub>J</sub> < 70°C | −18.5 | −21.9 | −22.4 | mA   |           |
| Max Output Current                | V <sub>LINE</sub> = 0.5V, TRMPWR = 4V (Note 1) | T <sub>J</sub> = 25°C       | −18.0 | −21.9 | −22.4 | mA   |           |
|                                   |                                                | 0°C < T <sub>J</sub> < 70°C | −17.0 | −21.9 | −22.4 | mA   |           |
| Output Leakage                    | DISCNCT1 = DISCNCT2 = 0V, TRMPWR = 0V to 5.25V |                             |       | 10    | 400   | nA   |           |
| Output Capacitance                | DISCNCT1 = DISCNCT2 = 0V (Note 2)              |                             |       | 8     | 10    | pF   |           |
| Regulator Section                 |                                                |                             |       |       |       |      |           |
| Regulator Output Voltage          | All Termination Lines = 5V                     | T <sub>J</sub> = 25°C       | 2.7   | 2.9   | 3.1   | V    |           |
|                                   |                                                | 0°C < T <sub>J</sub> < 70°C | 2.55  | 2.9   | 3.2   | V    |           |
| Line Regulation                   | TRMPWR = 4V to 6V                              |                             |       | 10    | 20    | mV   |           |
| Load Regulation                   | I <sub>REG</sub> = +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**

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