

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 Termpwr applied.

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

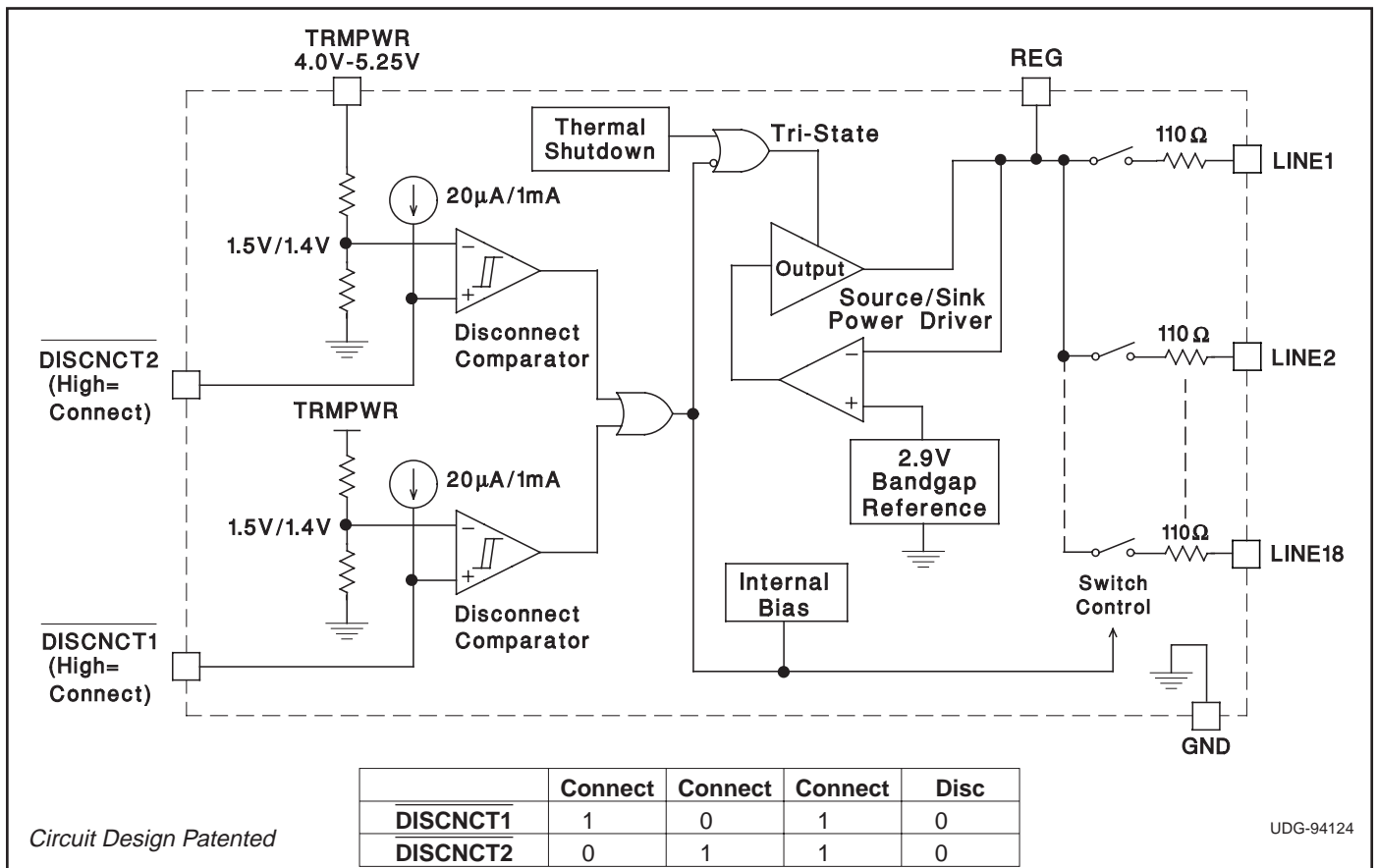
Custom power packages are utilized to allow normal operation at full power conditions (2 Watts).

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

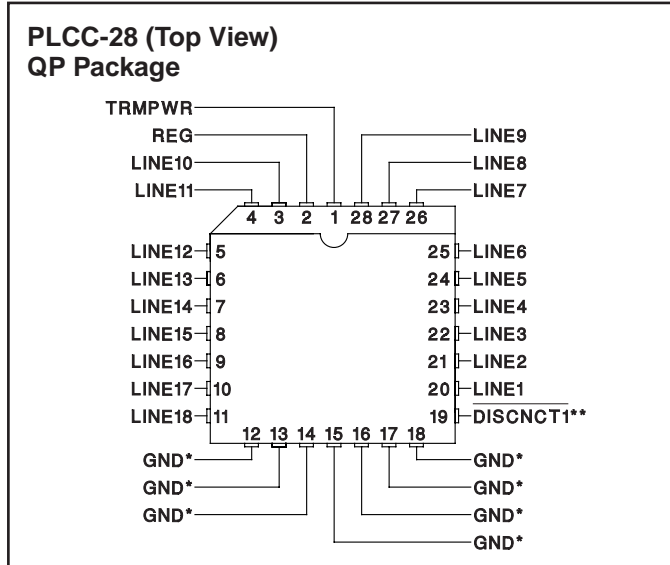
Tempwr Voltage	+7V
Signal Line Voltage	0V to +7V
Regulator Output Current	1A
Storage Temperature	-65°C to +150°C
Operating Temperature	-55°C to +150°C
Lead Temperature (Soldering, 10 Sec.)	+300°C

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

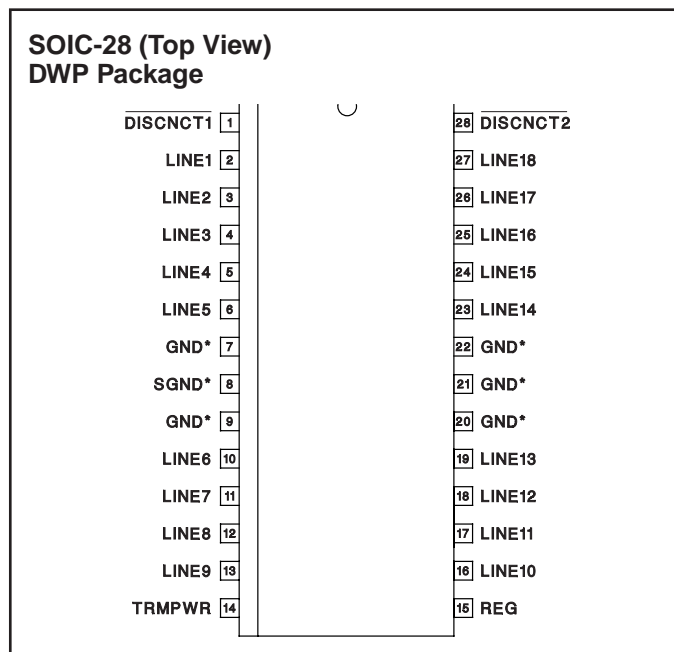
Tempwr Voltage	3.8V to 5.25V
Signal Line Voltage	0V to +5V
Disconnect Input Voltage	0V to Tempwr

CONNECTION DIAGRAMS

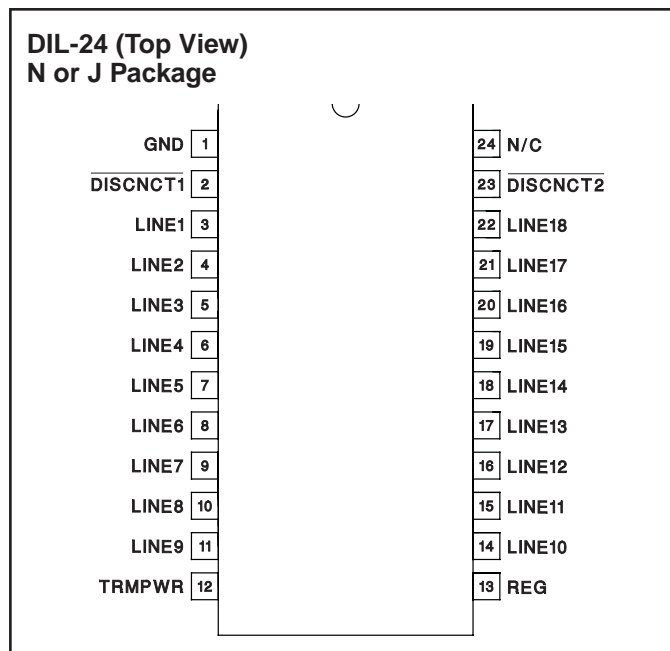


* QP package pins 12 - 18 serve as both heatsink and signal ground.

** DISCNCT2 is internally tied to ground.



* DWP package pin 8 serves as signal ground; pins 7, 8, 9, 20, 21, 22 serve as heatsink/ground.



Note: Drawings are not to scale.

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Supply Current Section						
Termpwr 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	$\Delta I_{\text{LINE}} = -5\text{mA}$ to -15mA	$T_J = 25^\circ\text{C}$	102	110	118	Ohms
		$0^\circ\text{C} < T_J < 70^\circ\text{C}$	97	110	129	Ohms
Output High Voltage	$V_{\text{TRMPWR}} = 4\text{V}$ (Note 1)	$T_J = 25^\circ\text{C}$	2.6	2.9	3.1	V
		$0^\circ\text{C} < T_J < 70^\circ\text{C}$	2.55	2.9	3.2	V
Max Output Current	$V_{\text{LINE}} = 0.5\text{V}$	$T_J = 25^\circ\text{C}$	-19.5	-21.9	-22.4	mA
		$0^\circ\text{C} < T_J < 70^\circ\text{C}$	-18.5	-21.9	-22.4	mA
Max Output Current	$V_{\text{LINE}} = 0.5\text{V}$, TRMPWR = 4V (Note 1)	$T_J = 25^\circ\text{C}$	-18.0	-21.9	-22.4	mA
		$0^\circ\text{C} < T_J < 70^\circ\text{C}$	-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	$T_J = 25^\circ\text{C}$	2.7	2.9	3.1	V
		$0^\circ\text{C} < T_J < 70^\circ\text{C}$	2.55	2.9	3.2	V
Line Regulation	TRMPWR = 4V to 6V		10	20	mV	
Load Regulation	$I_{\text{REG}} = +100\text{mA}$ 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.

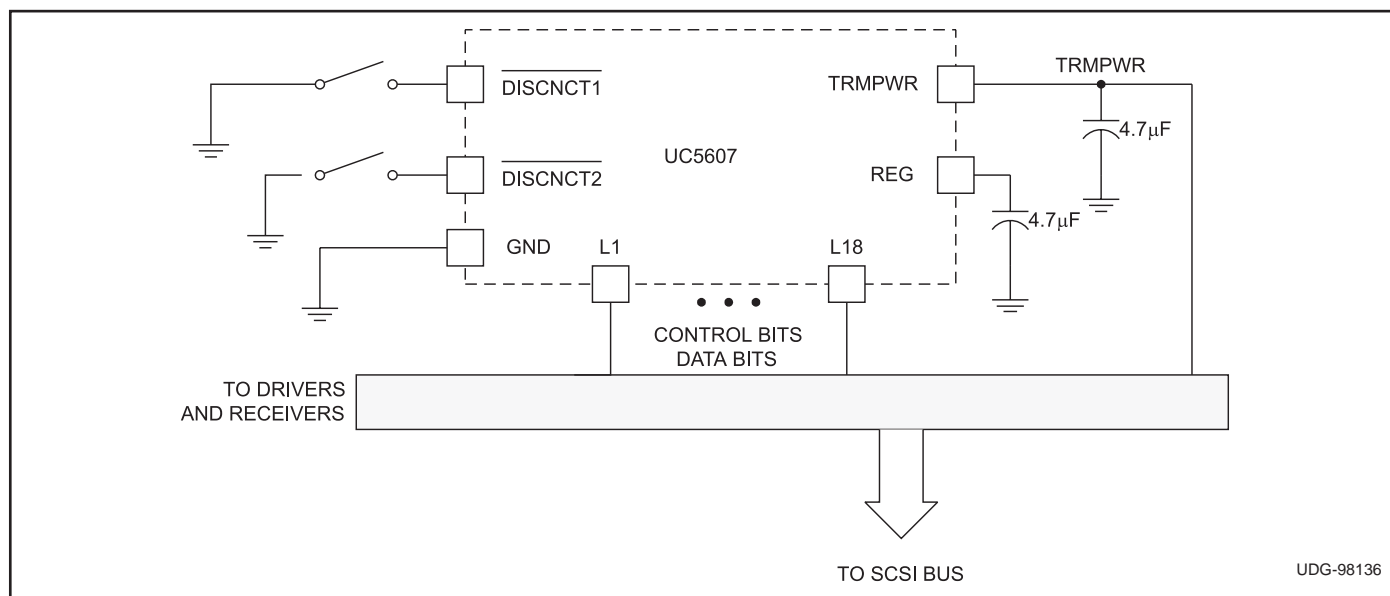
APPLICATION INFORMATION

Figure 1: Typical SCSI Bus Configuration Utilizing UC5607 Device

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UC5607, 18-Line SE Terminator for SCSI and Fast SCSI with Plug & Play Support

Device Status: Active

- > [Description](#)
- > [Features](#)
- > [Datasheets](#)
- > [Pricing/Samples/Availability](#)
- > [Application Notes](#)
- > [Applications](#)

Parameter Name	UC5607
Number of Lines	18
Driver Types Supported	SE
TERMPWR Voltage (max) (V)	5.25
TERMPWR Voltage (min) (V)	4.0
Disconnect Active State	Dual Low
Integrated SPI-3 Mode Switching Filter/Delay	No
Process	Bi-Polar
Active Negation Support	Yes
Channel Capacitance (pF)	8
Resistor Tolerance (ppm)	1200
Typical Sink Current (mA)	200
Current Tolerance (%)	7
Single-Ended Termination Impedance (ohms)	110
Single-Ended Tolerance (%)	7
Integrated TERMPWR Regulation	No

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To view the following documents, [Acrobat Reader 3.x](#) is required.

To download a document to your hard drive, right-click on the link and choose 'Save'.

Datasheets

Full datasheet in Acrobat PDF: [slus250.pdf](#) (245 KB)

Pricing/Samples/Availability

Orderable Device	Package	Pins	Temp (°C)	Status	Price/unit USD (100-999)	Pack Qty	Availability / Samples
UC5607DWP	DW	28	0 TO 70	ACTIVE	7.30	25	Check stock or order
UC5607DWPTR	DW	28	0 TO 70	ACTIVE	6.36	1000	Check stock or order

Application Reports

- [Comparing Bus Solutions](#) (SLLA067 - Updated: 03/02/2000)
- [Jitter Analysis](#) (SLLA075 - Updated: 03/30/2000)

Table Data Updated on: 8/29/2000