

18-Line Low Capacitance SCSI Active Terminator

FEATURES

- Complies with SCSI, SCSI-2 and SPI-2 Standards
- 6pF Channel Capacitance during Disconnect
- 100 μ A Supply Current in Disconnect Mode
- Meets SCSI Hot Plugging Capability
- -650mA Sourcing Current for Termination
- +200mA Sinking Current for Active Negation
- Provides Active Termination for 18 Lines
- Logic Command Disconnects all Termination Lines
- Trimmed Termination Current to 5%
- Trimmed Impedance to 5%
- Current Limit and Thermal Shutdown Protection

DESCRIPTION

The UC5608 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 bus cable.

The UC5608 is pin-for-pin compatible with its predecessors, the UC5601 and UC5602 - 18 Line Active Terminator. Parametrically the UC5608 has a 5% tolerance on impedance and current compared to a 3% tolerance on the UC5601 and the sink current is increased from 20 to 200mA. The low side clamps have been removed. Custom power packages are utilized to allow normal operation at full power conditions (2 Watts).

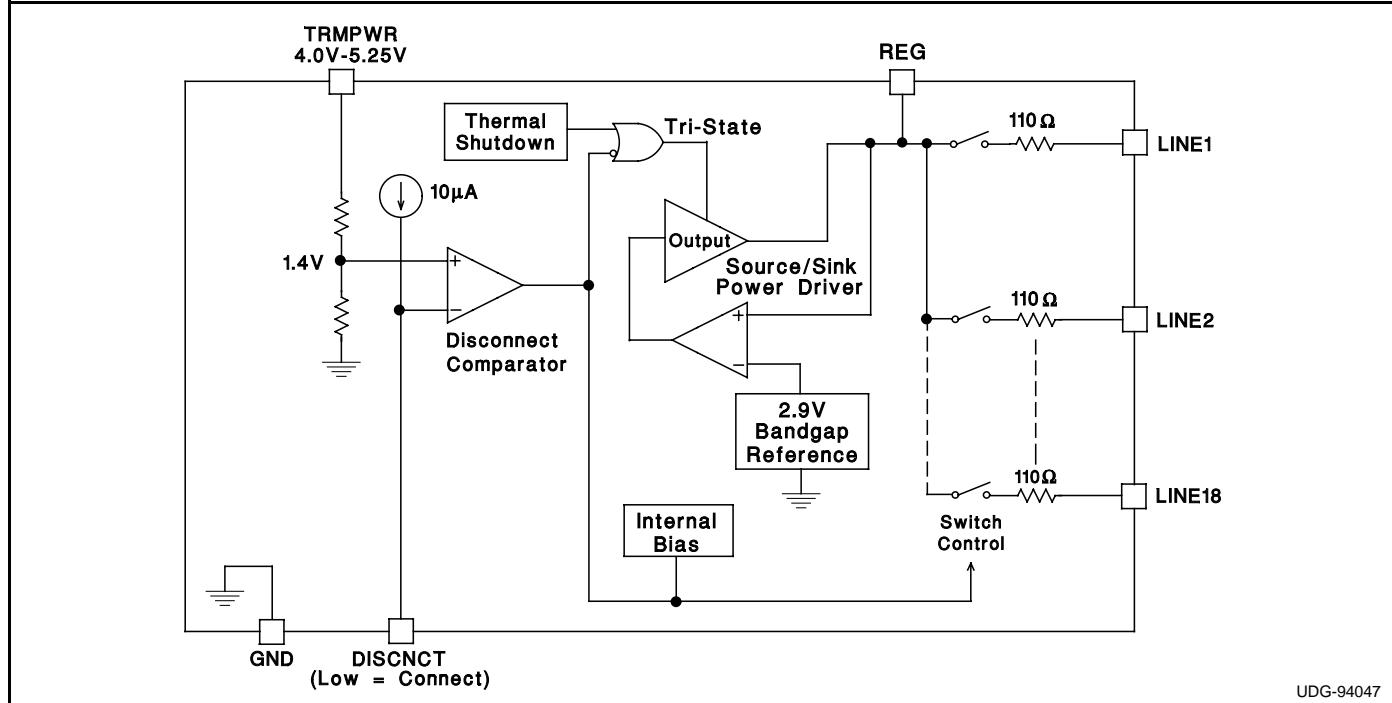
When in disconnect mode the terminator will disconnect all terminating resistors and disable the regulator, greatly reducing standby power. The output channels remain high impedance even without Termpwr applied.

Internal circuit trimming is utilized to trim the impedance to a 5% tolerance and, most importantly, to trim the output current to a 5% tolerance, as close to the max SCSI spec as possible, which maximizes noise margin in fast SCSI operation.

Other features include 4.0 to 5.25V Termpwr, thermal shutdown and current limit.

This device is offered in low thermal resistance versions of the industry standard 28 pin wide body SOIC, 28 pin wide body TSSOP, and 28 pin PLCC, as well as 24 pin DIP.

BLOCK DIAGRAM



Circuit Design Patented

UDG-94047

ABSOLUTE MAXIMUM RATINGS

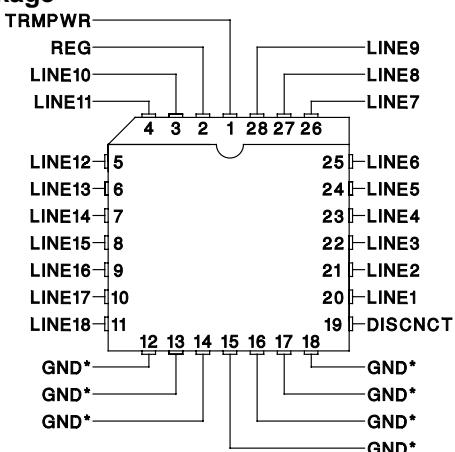
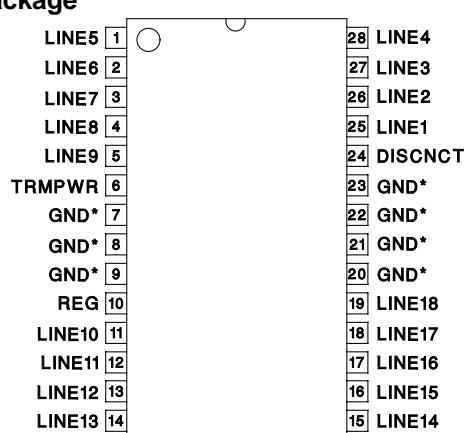
Termpwr Voltage	+7V
Signal Line Voltage	0V to +7V
Regulator Output Current	1A
Storage Temperature	-65°C to +150°C
Operating Temperature	-55°C to +150°C
Lead Temperature (Soldering, 10 Sec.)	+300°C

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.

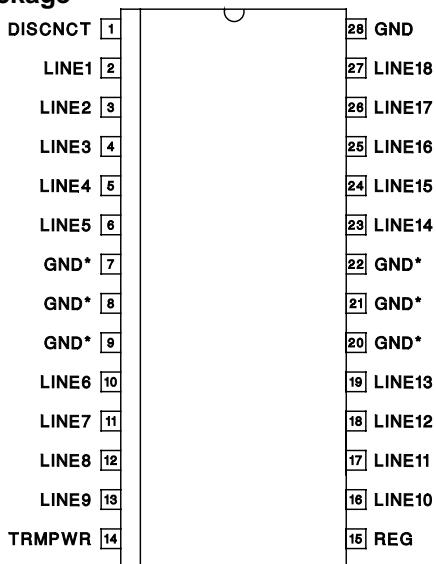
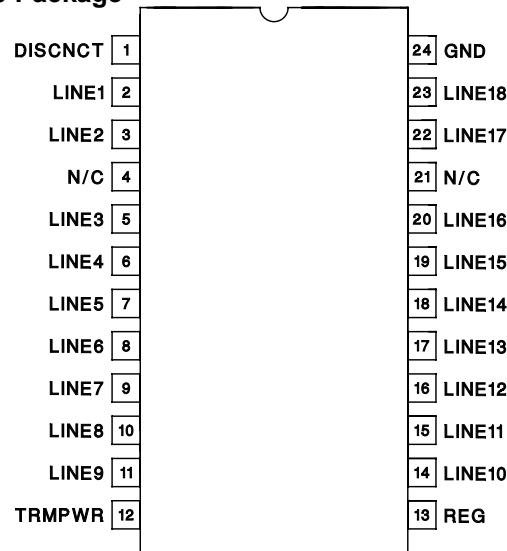
RECOMMENDED OPERATING CONDITIONS

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

CONNECTION DIAGRAMS**PLCC-28 (Top View)****QP Package****TSSOP-28 (Top View)****PWP Package**

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

* PWP package pin 23 serves as signal ground; pins 7, 8, 9, 20, 21 and 22 serve as heatsink/ground.

SOIC-28 (Top View)**DWP Package****DIL-24 (Top View)****N or J Package**

* DWP package pin 28 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 . $\text{TRMPWR} = 4.75\text{V}$, $\text{DISCNCT} = \text{Ground}$. $T_A = T_J$.

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNITS	
Supply Current Section								
Termpwr Supply Current	All termination lines = Open			17	25		mA	
	All termination lines = 0.5V			400	430		mA	
Power Down Mode	DISCNCT = Open			100	150		μA	
Output Section (Terminator Lines)								
Terminator Impedance	$\Delta I_{\text{LINE}} = -5\text{mA}$ to -15mA			104.5	110	115.5	Ohms	
Output High Voltage	$V_{\text{TRMPWR}} = 4\text{V}$ (Note 1)			2.65	2.9	3.0	V	
Max Output Current	$V_{\text{LINE}} = 0.5\text{V}$		$T_J = 25^\circ\text{C}$	-20.3	-21.5	-22.4	mA	
	$0^\circ\text{C} < T_J < 70^\circ\text{C}$		-19.8	-21.5	-22.4		mA	
Max Output Current	$V_{\text{LINE}} = 0.5\text{V}$, $\text{TRMPWR} = 4\text{V}$ (Note 1)		$T_J = 25^\circ\text{C}$	-19.5	-21.5	-22.4	mA	
	$0^\circ\text{C} < T_J < 70^\circ\text{C}$		-19.0	-21.5	-22.4		mA	
	$V_{\text{LINE}} = 0.2\text{V}$, $\text{TRMPWR} = 4\text{V}$ to 5.25V		$0^\circ\text{C} < T_J < 70^\circ\text{C}$	-21.6	-24.0	-25.4	mA	
Output Leakage	DISCNCT = 4V	$\text{TRMPWR} = 0\text{V}$ to 5.25V $\text{REG} = 0\text{V}$	$V_{\text{LINE}} = 0$ to 4V		10	400	nA	
			$V_{\text{LINE}} = 5.25\text{V}$			100	μA	
		$\text{TRMPWR} = 0\text{V}$ to 5.25V , $\text{REG} = \text{Open}$	$V_{\text{LINE}} = 0\text{V}$ to 5.25V		10	400	nA	
Output Capacitance	DISCNCT = Open (Note 2)				6	7	pF	
Regulator Section								
Regulator Output Voltage				2.8	2.9	3	V	
Regulator Output Voltage	All Termination Lines = 4V			2.8	2.9	3	V	
Line Regulation	$\text{TRMPWR} = 4\text{V}$ to 6V				10	20	mV	
Drop Out Voltage	All Termination Lines = 0.5V				1.0	1.2	V	
Short Circuit Current	$V_{\text{REG}} = 0\text{V}$			-450	-650	-950	mA	
Sinking Current Capability	$V_{\text{REG}} = 3.5\text{V}$			100	200	500	mA	
Thermal Shutdown					170		$^\circ\text{C}$	
Thermal Shutdown Hysteresis					10		$^\circ\text{C}$	
Disconnect Section								
Disconnect Threshold					1.1	1.4	1.7	V

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

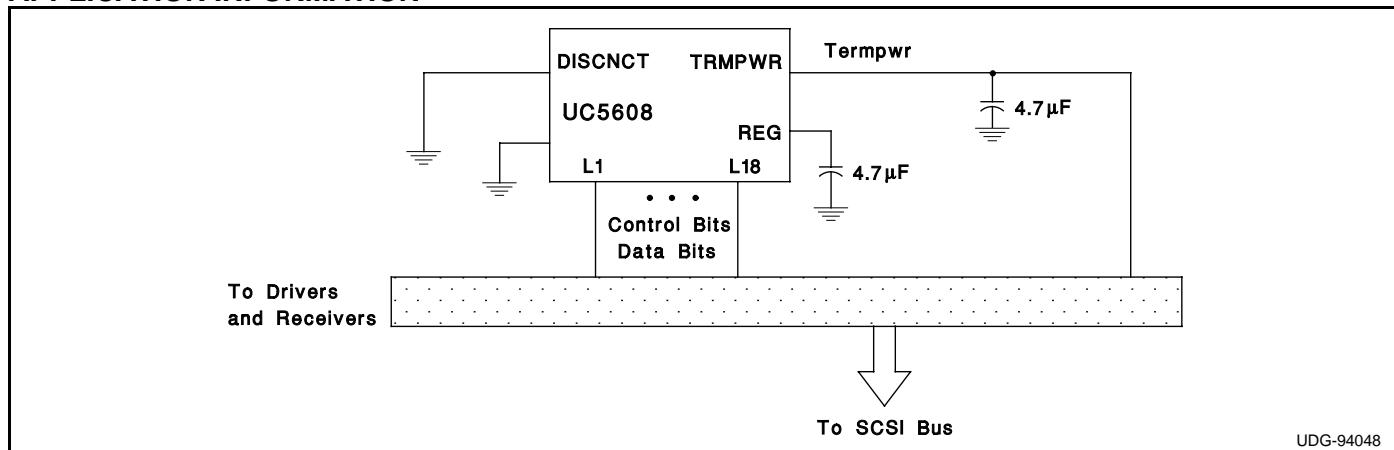


Figure 1: Typical SCSI Bus Configuration

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