

## 9-Line Low Capacitance SCSI Active Terminator

#### **FEATURES**

- Complies with SCSI, SCSI-2 and SPI-2 Standards
- 5pF Channel Capacitance during Disconnect
- Meets SCSI Hot Plugging
- –400mA Sourcing Current for Termination
- +100mA Sinking Current for Active Negation
- 1V Dropout Voltage Regulator
- Logic High Command Disconnects all Termination Lines
- 100μA Supply Current in Disconnect Mode
- Trimmed Termination Current to 5%
- Trimmed Impedance to 5%
- Low Thermal Resistance Surface Mount Packages

#### DESCRIPTION

The UC5612 provides 9 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.

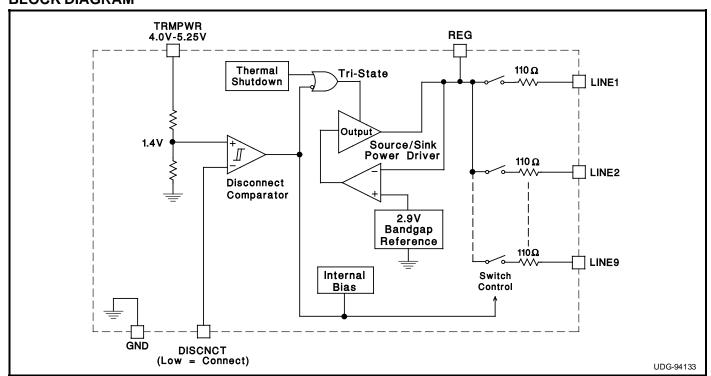
The only functional differences between the UC5603 and UC5612 is the absence of the negative clamps on the output lines. Parametrically, the UC5612 has a 5% tolerance on impedance and current compared to a 3% tolerance on the UC5603. Custom power packages are utilized to allow normal operation at full power (2 Watts).

The UC5612 provides a disconnect feature which, when opened or driven high, disconnects all terminating resistors, disables the regulator and greatly reduces standby power consumption. The output channels remain high impedance even without Termpwr applied. A low channel capacitance of 5pF allows interim points of the bus to have little to no effect on the signal integrity.

Internal circuit trimming is utilized, first to trim the impedance to a 5% tolerance, and then most importantly, to trim the output current to a 5% tolerance, as close to the maximum SCSI specification as possible. This maximizes the 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 16 pin narrow body SOIC, 16 pin ZIP (zig-zag in line package) and 24 pin TSSOP.

### **BLOCK DIAGRAM**



#### ABSOLUTE MAXIMUM RATINGS

Termpwr Voltage+7V
Signal Line Voltage
Regulator Output Current 0.6A
Storage Temperature65°C to +150°C
Operating Temperature
Lead Temperature (Soldering, 10 Sec.)+300°C

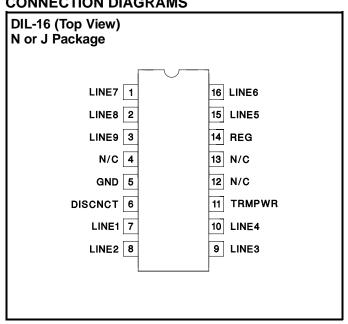
Unless otherwise specified all voltages are with respect to Ground. Currents are positive into, negative out of the speci-

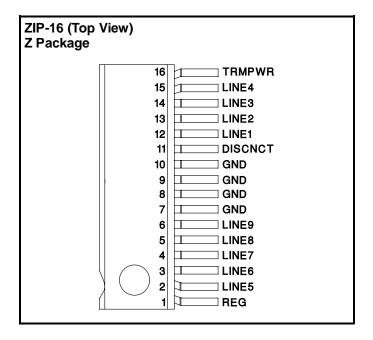
Consult Packaging Section of Unitrode Integrated Circuits databook for thermal limitations and considerations of packages.

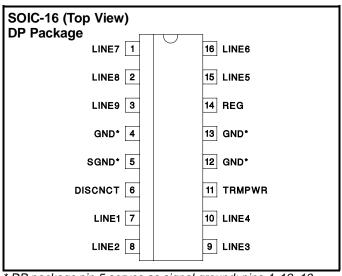
#### RECOMMENDED OPERATING CONDITIONS

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

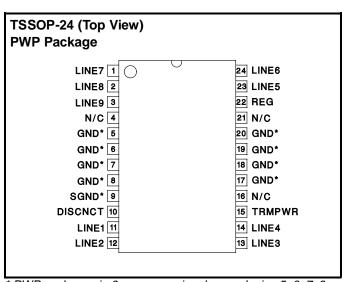
#### CONNECTION DIAGRAMS







\* DP package pin 5 serves as signal ground; pins 4, 12, 13 serve as heatsink/ground.



\* PWP package pin 9 serves as signal ground; pins 5, 6, 7, 8, 17, 18, 19, and 20 serve as heatsink/ground.

Note: Drawings are not to scale.

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

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNITS			
Supply Current Section										
Termpwr Supply Current					17	23	mA			
	All termination lines = 0.5V				200	225	mA			
Power Down Mode	DISCNCT = Open				100	150	μΑ			
<b>Output Section (Termination Lin</b>	es)									
Terminator Impedance	$\Delta$ ILINE = -5mA to -15mA			104.5	110	115.5	Ohms			
Output High Voltage				2.65	2.9	3.1	V			
Max Output Current	VLINE = 0.5V		TJ = 25°C	-20.3	-21.5	-22.4	mA			
		0°C < TJ < 70°C	-19.8	-21.5	-22.4	mA				
Max Output Current	VLINE = 0.5V, TRMPWR = 4V (Note 1)		T <sub>J</sub> = 25°C	-19.5	-21.5	-22.4	mA			
			0°C < TJ < 70°C	-19.0	-21.5	-22.4	mΑ			
	VLINE = 0.2V, TRMPWR = 4V to 5.25V		0°C < TJ < 70°C	-21.6	-24.0	-25.4	mA			
Output Leakage	DISCNCT = 4V TRMPWR = 0V to 5.25V	REG = 0V	VLINE = 0 to 4V		10	400	nA			
			VLINE = 5.25V			100	μΑ			
		REG = Open	VLINE = 0V to 5.25V		10	400	nA			
Output Capacitance	DISCNCT = Open (Note 2) (DP Package)				5	6	pF			
Regulator Section										
Regulator Output Voltage				2.7	2.9	3.1	V			
	All Termination Lines = 4V			2.7	2.9	3.1	V			
Line Regulation	TRMPWR = 4V to 6V				10	20	mV			
Drop Out Voltage	All Termination Lines = 0.5V			1.0	1.2	V				
Short Circuit Current	REG = 0V			-200	-400	-600	mA			
Sinking Current Capability	REG = 3.5V			75	100	400	mA			
Thermal Shutdown					170		°C			
Thermal Shutdown Hysteresis	rmal Shutdown Hysteresis				10		°C			
Disconnect Section										
Disconnect Threshold				1.1	1.4	1.7	V			
Input Current	DISCNCT = 0V				-10	-20	μΑ			

- Note 1: Measuring each termination line while other 8 are low.
- Note 2: Guaranteed by design. Not 100% tested in production.

## **APPLICATION INFORMATION**

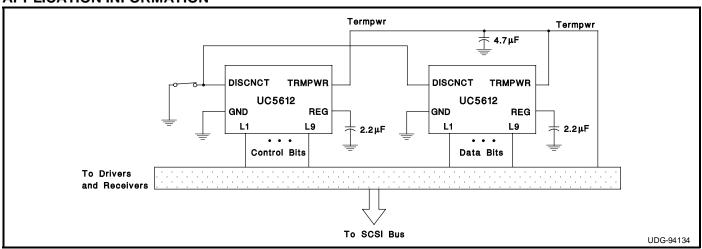


Figure 1: Typical SCSI Bus Configurations Utilizing 2 UC5612 Devices

## **APPLICATION INFORMATION (cont.)**

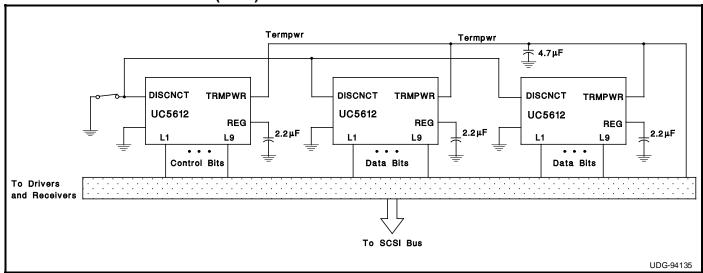


Figure 2: Typical Wide SCSI Bus Configurations Utilizing 3 UC5612 Devices.

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