

18-Line SCSI Terminator

FEATURES

- Complies with SCSI, SCSI-2, SCSI-3, SPI and FAST-20 Standards
- 2pF Channel Capacitance During Disconnect
- 50 μ A Supply Current in Disconnect Mode
- 110 Ω Termination
- SCSI Hot Plugging Compliant, 10nA Typical
- +400mA Sinking Current for Active Negation
- -650mA Sourcing Current for Termination
- Trimmed Impedance to 5%
- Thermal Shutdown
- Current Limit

DESCRIPTION

The UCC5618 provides 18 lines of active termination for a SCSI (Small Computers Systems Interface) parallel bus. The SCSI standard recommends and Fast-20 (Ultra) requires active termination at both ends of the cable.

Pin for pin compatible with the UC5601 and UC5608, the UCC5618 is ideal for high performance 5V SCSI systems, T_{mpwr} 4.0-5.25V. During disconnect the supply current is only 50 μ A typical, which makes the IC attractive for lower powered systems.

The UCC5618 is designed with a low channel capacitance of 2pF, which eliminates effects on signal integrity from disconnected terminators at interim points on the bus.

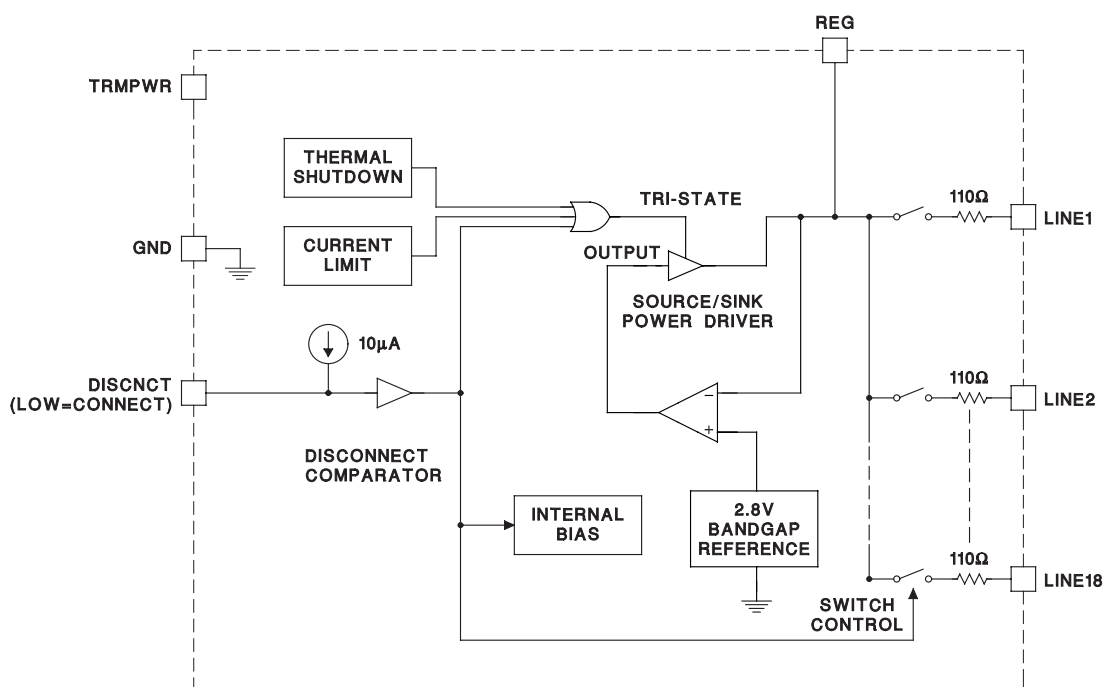
The power amplifier output stage allows the UCC5618 to source full termination current and sink active negation current when all termination lines are actively negated.

The UCC5618, as with all Unitrode terminators, is completely hot pluggable and appears as high impedance at the terminating channels with $TRMPWR=0V$ or open.

Internal circuit trimming is utilized, first to trim the 110 Ω impedance, and then most importantly, to trim the output current as close to the max SCSI-3 spec as possible, which maximizes noise margin in fast SCSI operation.

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

BLOCK DIAGRAM



Patented Circuit Design

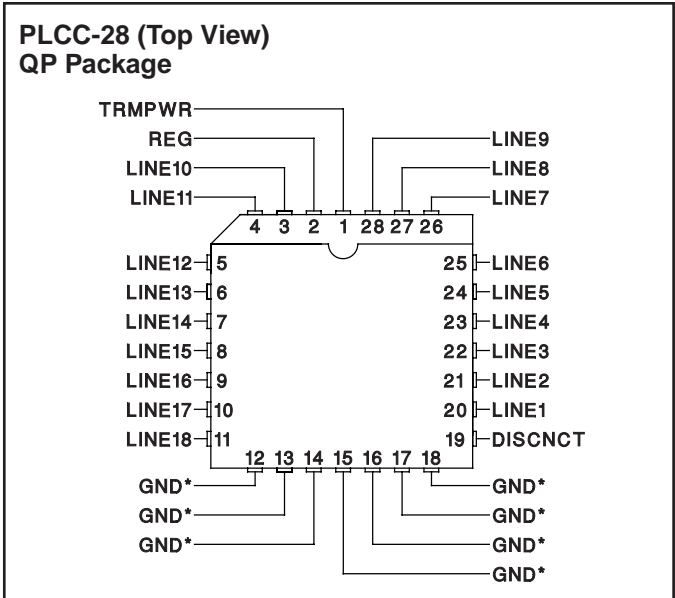
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ABSOLUTE MAXIMUM RATINGS

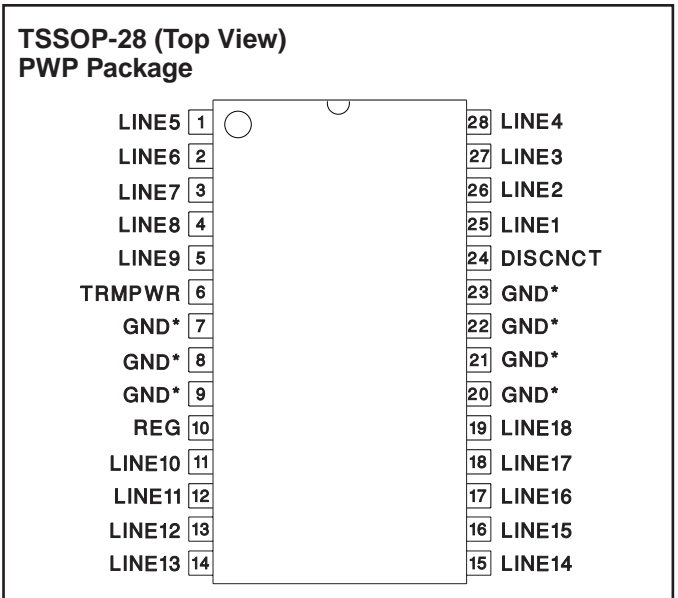
TEMPWR.	+7V
Signal Line Voltage	0V to +7V
Regulator Output Current	1A
Storage Temperature	–65°C to +150°C
Operating Junction Temperature	–55°C to +150°C
Lead Temperature (Soldering, 10 Seconds)	300°C

All currents are positive into, negative out of the specified terminal. Consult Packaging Section of Databook for thermal limitations and considerations of packages.

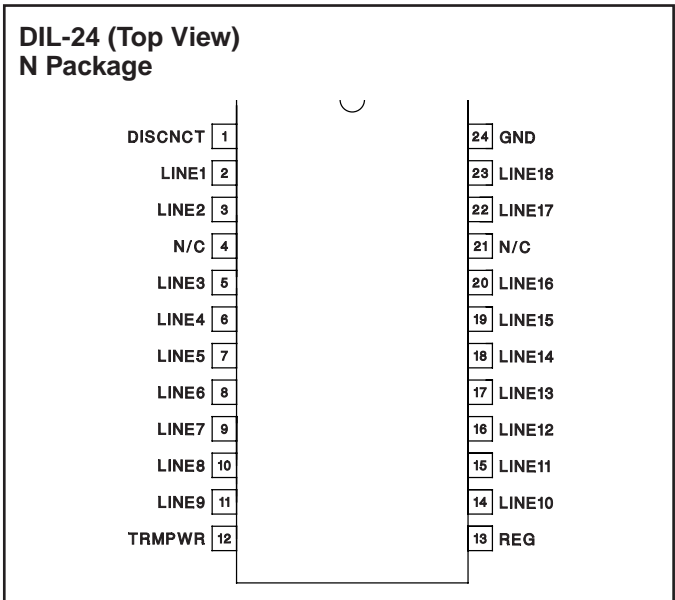
CONNECTION DIAGRAMS



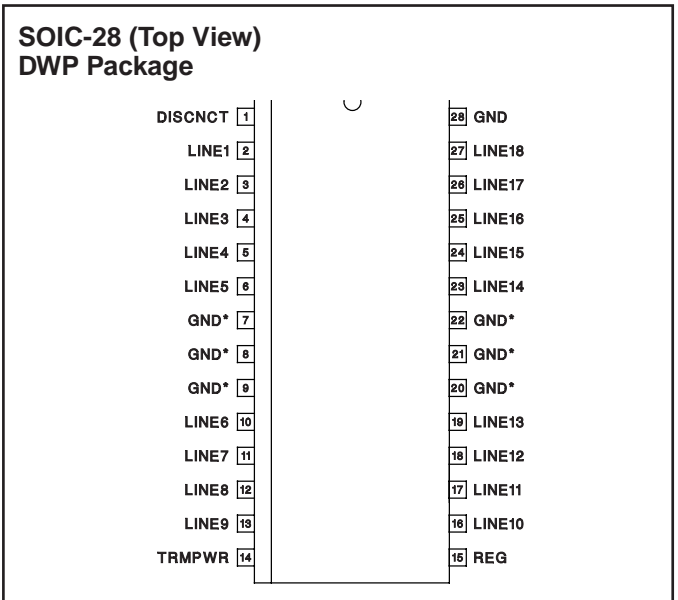
* DWP package pins 12–18 serve as both heatsink and signal ground.



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



Note: Drawings are not to scale.



* DWP package pin 28 serves as signal ground; pins 7, 8, 9, 20, 21, 22 serve as heatsink/ground.

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

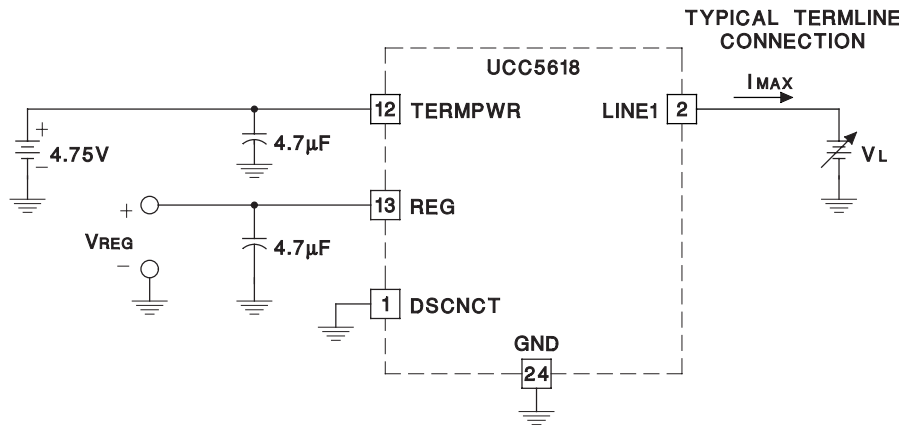
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current Section					
TERMPWR Supply Current	All Termination Lines = Open		1	2	mA
	All Termination Lines = 0.2V		420	440	mA
Power Down Mode	DISCNCT = TRMPWR		50	100	μA
Output Section (Termination Lines)					
Termination Impedance	See Figure 1	104.5	110	115.5	Ω
Output High Voltage	$V_{\text{TRMPWR}} = 4\text{V}$ (Note 1)	2.6	2.8	3	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
	$V_{\text{LINE}} = 0.2\text{V}$, $\text{TERMPWR} = 4\text{V}$, $T_J = 25^\circ\text{C}$ (Note 1)	-21	-23.3	-24	mA
	$V_{\text{LINE}} = 0.2\text{V}$, $\text{TRMPWR} = 4\text{V}$ (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, REG = 0.2V, $V_{\text{LINE}} = 5.25\text{V}$		10	400	nA
Output Capacitance	DISCNCT = 2.4V (Note 2)		2	3.5	pF
Regulator Section					
Regulator Output Voltage		2.6	2.8	3	V
Drop Out Voltage	All Termination Lines = 0.2V		0.4	0.8	V
Short Circuit Current	$V_{\text{REG}} = 0\text{V}$	-475	-650	-950	mA
Sinking Current Capability	$V_{\text{REG}} = 3.5\text{V}$	200	400	800	mA
Thermal Shutdown			170		$^\circ\text{C}$
Thermal Shutdown Hysteresis			10		$^\circ\text{C}$
Disconnect Section					
Disconnect Threshold		0.8	1.5	2	V
Input Current	DISCNCT = 0V		-10	-30	μA

Note 1: Measuring each termination line while other 17 are low (0.2V).

Note 2: Guaranteed by design. Not 100% tested in production.

Procedure:

- 1) Measure V_{REG} N.L.
- 2) Set $V_L = 0.2\text{V}$
- 3) Measure I_{MAX} at 0.2V
- 4) Impedance = $\frac{V_{\text{REG N.L.}} - 0.2\text{V}}{I_{\text{MAX}}}$



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Figure 1. Termline Impedance Measurement Circuit

PIN DESCRIPTIONS

DISCNCT: Taking this pin high or leaving it open causes the 18 channels to become high impedance and the chip to go into low-power mode; a low state allows the channels to provide normal termination.

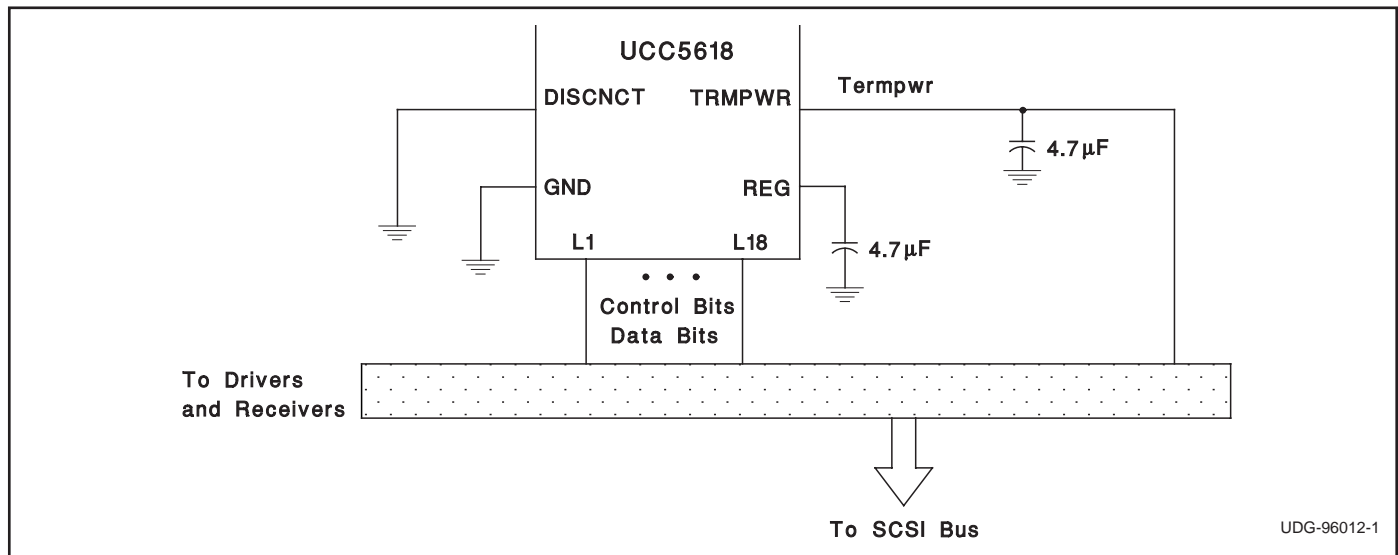
GND: Ground reference for the IC.

LINE1–LINE18: 110Ω termination channels.

REG: Output of the internal 2.8V regulator.

TRMPWR: Power for the IC.

APPLICATION INFORMATION



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