LINFINITY MICROELECTRONICS

THE INFINITE POWER OF INNOVATION

LX5203

9-LINE SCSI ACTIVE TERMINATOR

PRODUCTION DATA SHEET

DESCRIPTION

The LX5203 is a nine-line active terminator for the SCSI parallel bus. This SCSI standard recommends active termination at both ends of the SCSI bus.

During disconnect mode, the LX5203 requires a meager 60µA of supply current, while offering only 6pF of output capacitance. To enter this low-power mode, the disconnect pin can be left open (floating) or driven high, thereby disconnecting the terminating resistors and placing the internal low dropout regulator into low-power mode. In disconnect mode each termination line presents a high impedance to the SCSI bus with the overall effect being to preserve high signal integrity and yield subsequent reliable, error-free communications.

During normal operation, the LX5203 consumes only 600µA of current. Linfinity's proprietary BiCMOS low dropout regulator architecture enables oscillation-free operation with minimal output capacitance. Linfinity recommends a minimum stabilization capacitor value of 2.2µF.

The LX5203 also offers a precisely trimmed channel output current specified to a 5% tolerance. The maximum value of the output current is trimmed as closely as possible to the SCSI standard maximum specification to give the highest possible noise margin for fast SCSI operation. And the LX5203 sinks up to 150mA of current making it compatible with today's fast active negation drivers.

The LX5203 is a superior, pin-for-pin replacement for a variety of industry products such as the UC5603 and UC5613.

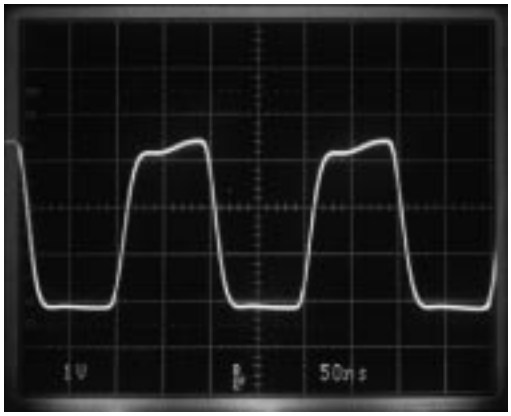
KEY FEATURES

- 6pF OUTPUT CAPACITANCE DURING DISCONNECT
- 60µA SUPPLY CURRENT IN DISCONNECT MODE
- 600µA SUPPLY CURRENT DURING NORMAL OPERATION
- 150mA SINK CURRENT FOR ACTIVE NEGATION
- LOGIC COMMAND DISCONNECTS ALL TERMINATION LINES
- CURRENT LIMIT AND THERMAL PROTECTION
- COMPATIBLE WITH SCSI 1, 2 AND 3 STANDARDS
- CONSULT FACTORY FOR APPLICATION TEST REPORT: **5203TR**

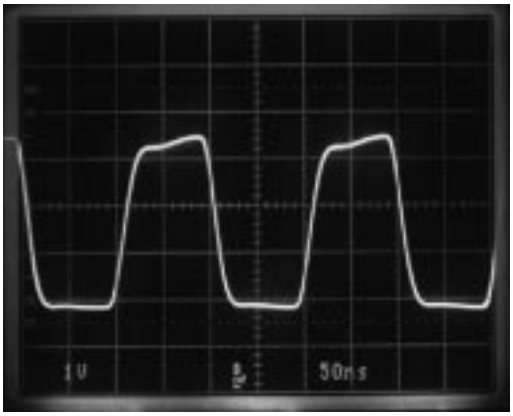
IMPORTANT: For the most current data, consult LinFinity's web site: **http://www.linfinity.com**.

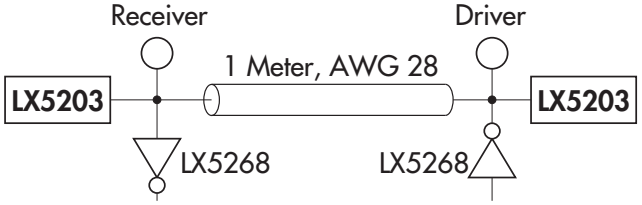
PRODUCT HIGHLIGHT

RECEIVING WAVEFORM - 5MHz



DRIVING WAVEFORM - 5MHz





NOTE:
For An In-Depth Discussion On Applying SCSI, Request Linfinity Application Note: "Understanding The Single-Ended SCSI Bus"

PACKAGE ORDER INFORMATION

T_A (°C)	N Plastic DIP 16-pin	DP Plastic SOIC 16-pin, Power
0 to 70	LX5203CN	LX5203CDP

Note: All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number. (i.e. LX5203CDPT)

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ABSOLUTE MAXIMUM RATINGS (Note 1)

TermPwr Voltage ..... +7V
Signal Line Voltage ..... 0V to +7V
Regulator Output Current 0.4A
Operating Junction Temperature
Plastic (N, DP Packages) ..... 150°C
Storage Temperature Range ..... -65°C to 150°C
Lead Temperature (Soldering, 10 seconds) ..... 300°C

Note 1. Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

THERMAL DATA

N PACKAGE:

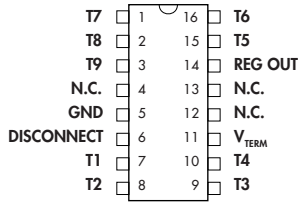
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	**65°C/W**

DP PACKAGE:

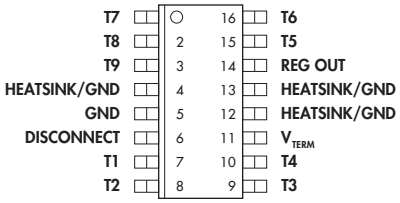
THERMAL RESISTANCE-JUNCTION TO LEADS, θ_{JL}	**20°C/W**
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	**45°C/W**

Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$.
The θ_{JA} numbers are guidelines for the thermal performance of the device/pc-board system. All of the above assume no ambient airflow.

PACKAGE PIN OUTS



N PACKAGE
(Top View)



DP PACKAGE
(Top View)

POWER UP / POWER DOWN FUNCTION TABLE

Disconnect	Outputs	Quiescent Current
L	Enabled	600µA
H	HI Z	60µA
Open	HI Z	60µA

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RECOMMENDED OPERATING CONDITIONS (Note 2)

Parameter	Symbol	Recommended Operating Conditions			Units
		Min.	Typ.	Max.	
TermPwr Voltage	V_{TERM}	4		5.25	V
Signal Line Voltage		0		5	V
Disconnect Input Voltage		0		V_{TERM}	V
Output Capacitor on REGOUT		2.2			µF
Operating Virtual Junction Temperature Range					
LX5203C		0		125	°C

Note 2. Range over which the device is functional.

ELECTRICAL CHARACTERISTICS

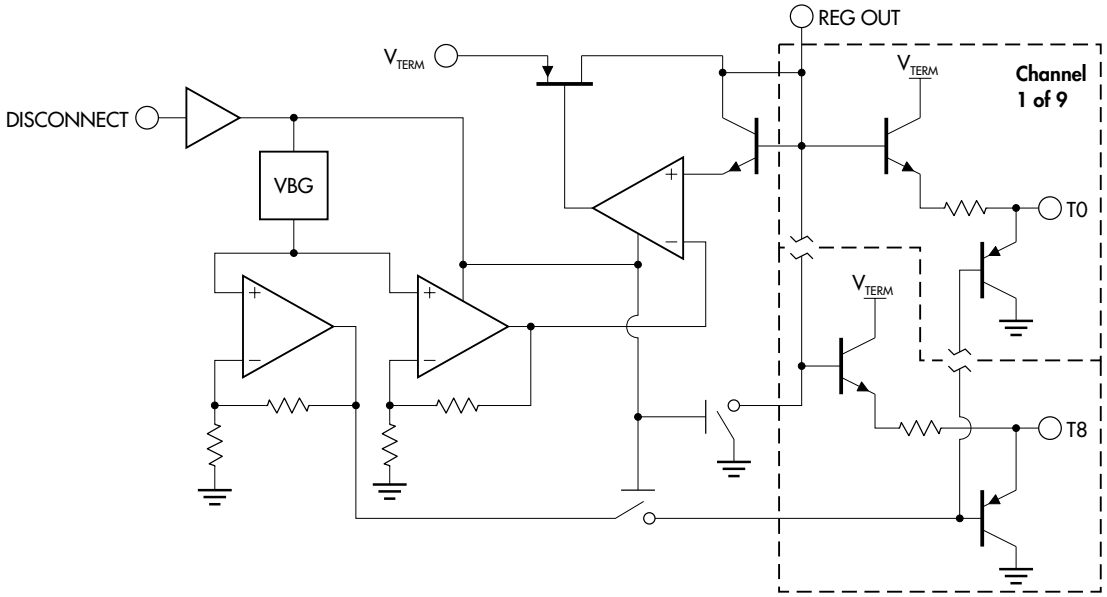
(Unless otherwise specified, these specifications apply over the operating ambient temperature range of $0°C \le T_A \le 70°C$. TermPwr = 4.75V, Disconnect = 0V. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

Parameter	Symbol	Test Conditions	LX5203			Units
			Min.	Typ.	Max.	
Supply Current Section						
TermPwr Supply Current		All term lines = Open		0.6	1.2	mA
		All term lines = 0.5V		194	208	mA
Power Down Mode		Disconnect = Open		60	100	µA
Output Section (Terminator Lines)						
Terminator Impedance		I_{TERM} = -5mA to -15mA, T_A = 25°C	104	110	116	Ω
		I_{TERM} = -5mA to -15mA	100	110	120	Ω
Terminator Output High Voltage			2.7	2.9		V
Max. Output Current		V_{OUT} = 0.5V, T_A = 25°C	-20.3	-21.8	-23	mA
		V_{OUT} = 0.5V, $0°C \le T_A \le 70°C$	-19.0	-21.8	-23	mA
		V_{OUT} = 0.5V, V_{TERM} = 4V, T_A = 25°C	-19.5	-21.8	-23	mA
		V_{OUT} = 0.5V, V_{TERM} = 4V, $0°C \le T_A \le 70°C$	-18.0	-21.8	-23	mA
Output Leakage		Disconnect = Open, V_{TERM} = 0V to 5.25V		10	400	nA
Output Capacitance		Disconnect = Open		6		pF
Sink Current		V_{OUT} = 4V	20	30		mA
Regulator Section						
Regulator Output Voltage				3.6		V
Line Regulation		V_{TERM} = 4V to 6V		10	20	mV
Load Regulation		I_{REG} = 0 to -50mA		20	50	mV
Drop Out Voltage		I_{REG} = -50mA		0.7	1.0	V
Short Circuit Current		V_{REG} = 0V		-200	-350	mA
Thermal Shutdown				150		°C
Disconnect Section						
Disconnect Threshold			0.8		2.0	V
Input Current		Disconnect = 0V			40	µA

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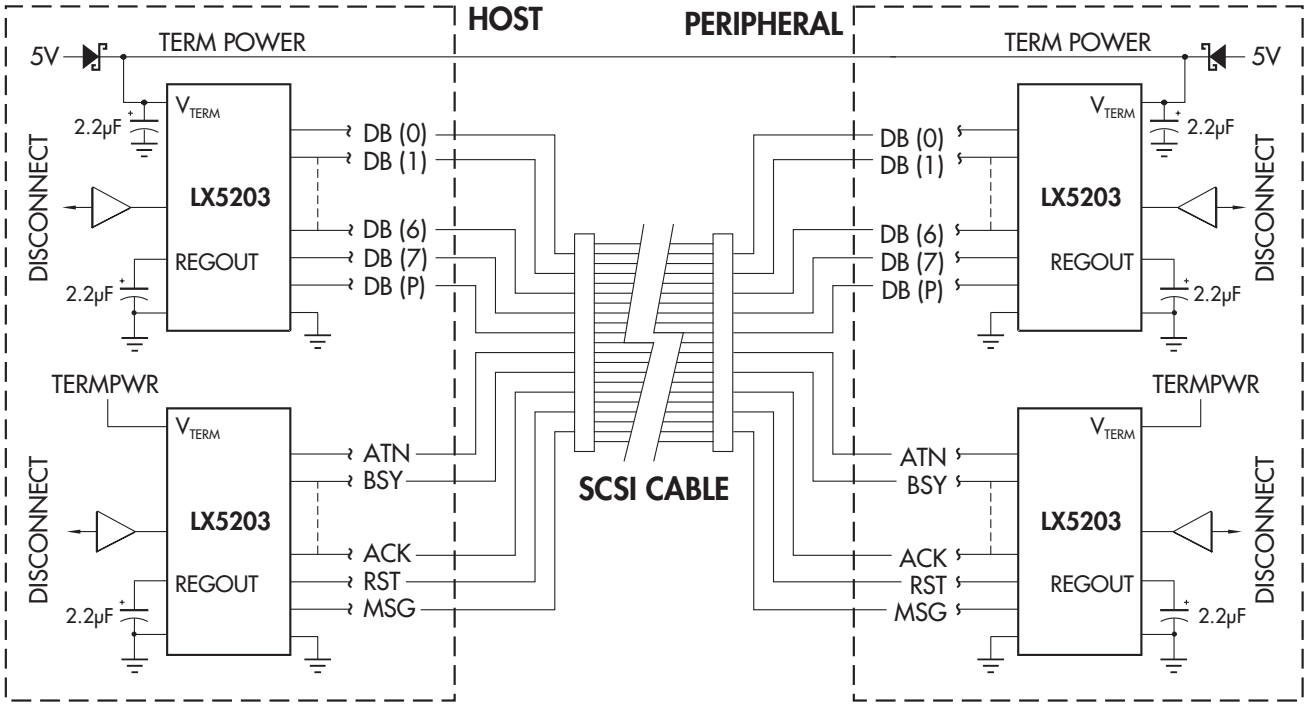
BLOCK DIAGRAM

FIGURE 1 — LX5203 BLOCK DIAGRAM



APPLICATION SCHEMATIC

FIGURE 2 — 8-BIT SCSI SYSTEM APPLICATION



Note: Add third LX5203 for 16-bit SCSI

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