

DESCRIPTION

The LX5211 is a nine-line active terminator for the SCSI parallel bus. The SCSI standard recommends active termination at both ends of the SCSI bus.

During disconnect mode, the LX5211 requires a meager 500nA of supply current while offering only 2.5pF of output capacitance. To enter this low-power mode, the disconnect pin can be left open (floating) or driven low, 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 LX5211

consumes only 600 μ A of current, which is the lowest enabled supply current of any terminator available on the market today. Linfinity's proprietary BiCMOS low dropout regulator architecture enables this unique and very efficient operating characteristic.

The LX5211 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 LX5211 sinks up to 30mA of current, making it compatible with today's fast active negation drivers.

The LX5211 is a stable, pin-for-pin replacement for a variety of industry products, such as the UCC5606.

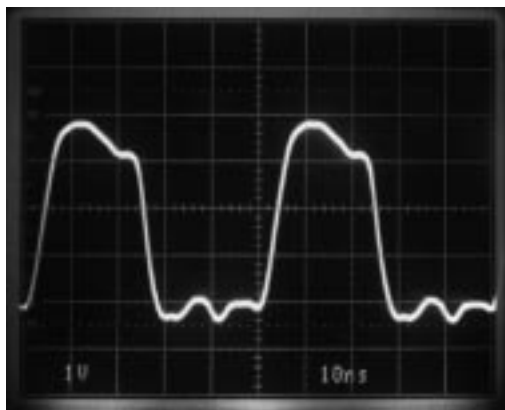
KEY FEATURES

- 2.5pF OUTPUT CAPACITANCE DURING DISCONNECT
- 500nA SUPPLY CURRENT IN DISCONNECT MODE
- 600 μ A SUPPLY CURRENT DURING NORMAL OPERATION
- 30mA SINK CURRENT FOR ACTIVE NEGATION
- LOGIC COMMAND DISCONNECTS ALL TERMINATION LINES
- CURRENT LIMIT AND THERMAL PROTECTION
- COMPATIBLE WITH SCSI 1, 2, 3, AND ULTRA SCSI STANDARDS
- HOT SWAP COMPATIBLE
- CONSULT FACTORY FOR APPLICATION TEST REPORT: 5211TR
- EVALUATION BOARD AVAILABLE: REQUEST LXE9005 EVALUATION KIT

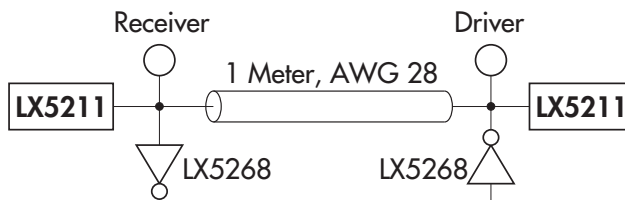
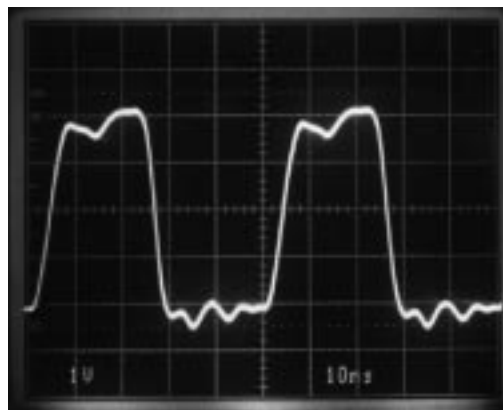
IMPORTANT: For the most current data, consult Linfinity's web site: <http://www.linfinity.com>.

PRODUCT HIGHLIGHT

RECEIVING WAVEFORM - 20MHZ



DRIVING WAVEFORM - 20MHZ



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)	PWP	DP
0 to 70	Plastic TSSOP 24-pin, Power	Plastic SOIC 16-pin, Power
	LX5211CPWP	LX5211CDP

Note: All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number. (i.e. LX5211CDPT)

ABSOLUTE MAXIMUM RATINGS (Note 1)

TermPwr Voltage	+7V
Signal Line Voltage	0V to +7V
Regulator Output Current	0.4A
Operating Junction Temperature	
Plastic (PWP, 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

PWP PACKAGE:

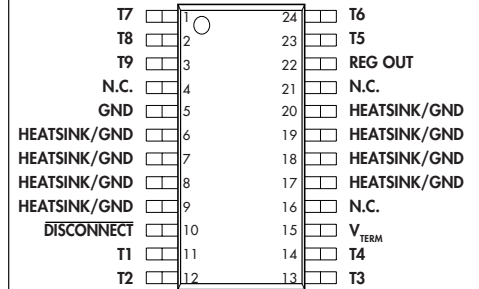
THERMAL RESISTANCE-JUNCTION TO LEADS, θ_{jL}	27°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{jA}	100°C/W

DP PACKAGE:

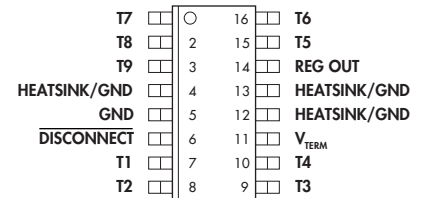
THERMAL RESISTANCE-JUNCTION TO LEADS, θ_{jL}	20°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{jA}	50°C/W

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



PWP PACKAGE
(Top View)



DP PACKAGE
(Top View)

POWER UP / POWER DOWN FUNCTION TABLE

DISCONNECT	Outputs	Quiescent Current
L	HI Z	0.5 μ A
H	Enabled	600 μ A
Open	HI Z	0.5 μ A

9-LINE LOW CAPACITANCE, μ POWER SCSI TERMINATOR

PRODUCTION DATA SHEET

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			μ F
Operating Virtual Junction Temperature Range					
LX5211C		0		125	$^{\circ}$ C

Note 2. Range over which the device is functional.

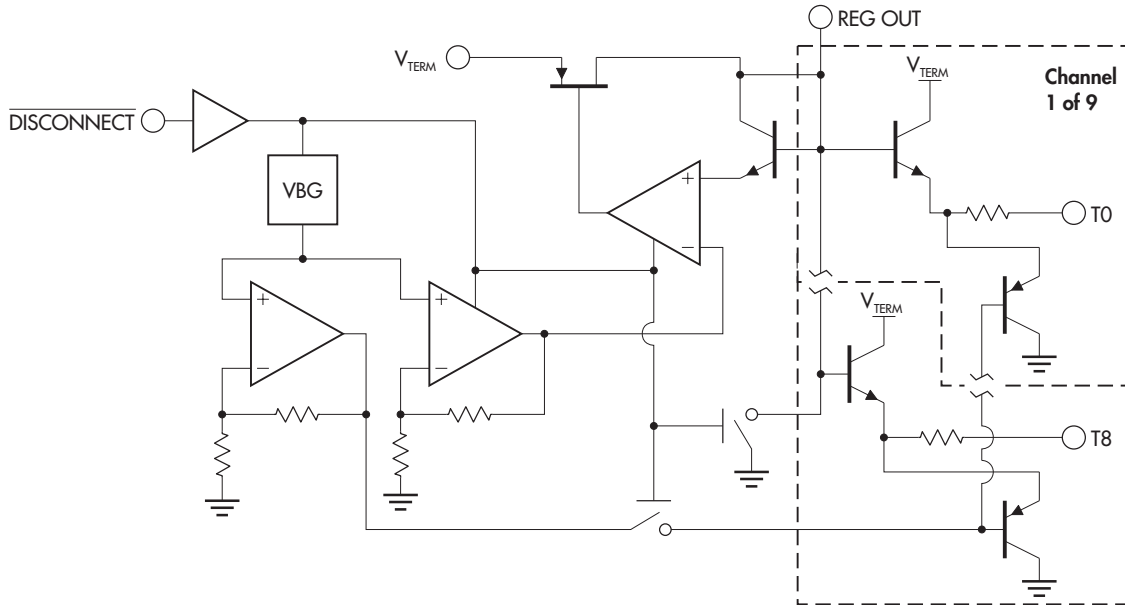
ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, these specifications apply over the operating ambient temperature range of $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$. 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	LX5211			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	210	mA
Power Down Mode		DISCONNECT = Open		0.5	1	μ A
Output Section (Terminator Lines)						
Terminator Impedance		$I_{TERM} = -5\text{mA to } -15\text{mA}, T_A = 25^{\circ}\text{C}$	104	110	116	Ω
		$I_{TERM} = -5\text{mA to } -15\text{mA}$	100	110	120	Ω
Terminator Output High Voltage			2.7	2.9		V
Max. Output Current		$V_{OUT} = 0.5\text{V}, T_A = 25^{\circ}\text{C}$	-20.3	-21.8	-23	mA
		$V_{OUT} = 0.5\text{V}, 0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$	-19.0	-21.8	-23	mA
		$V_{OUT} = 0.5\text{V}, V_{TERM} = 4\text{V}, T_A = 25^{\circ}\text{C}$	-19.5	-21.8	-23	mA
		$V_{OUT} = 0.5\text{V}, V_{TERM} = 4\text{V}, 0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$	-18.0	-21.8	-23	mA
Output Leakage		DISCONNECT = Open, $V_{TERM} = 0\text{V to } 5.25\text{V}$		10	400	nA
Output Capacitance		DISCONNECT = Open		2.5		pF
Sink Current		$V_{OUT} = 4\text{V}$	20	30		mA
Regulator Section						
Regulator Output Voltage				3.6		V
Line Regulation		$V_{TERM} = 4\text{V to } 6\text{V}$		10	20	mV
Load Regulation		$I_{REG} = 0\text{ to } -50\text{mA}$		20	50	mV
Drop Out Voltage		$I_{REG} = -50\text{mA}$		0.7	1.0	V
Short Circuit Current		$V_{REG} = 0\text{V}$		-200	-350	mA
Thermal Shutdown				150		$^{\circ}$ C
Disconnect Section						
DISCONNECT Threshold			0.8		2.0	V
Input Current		DISCONNECT = 0V			40	μ A

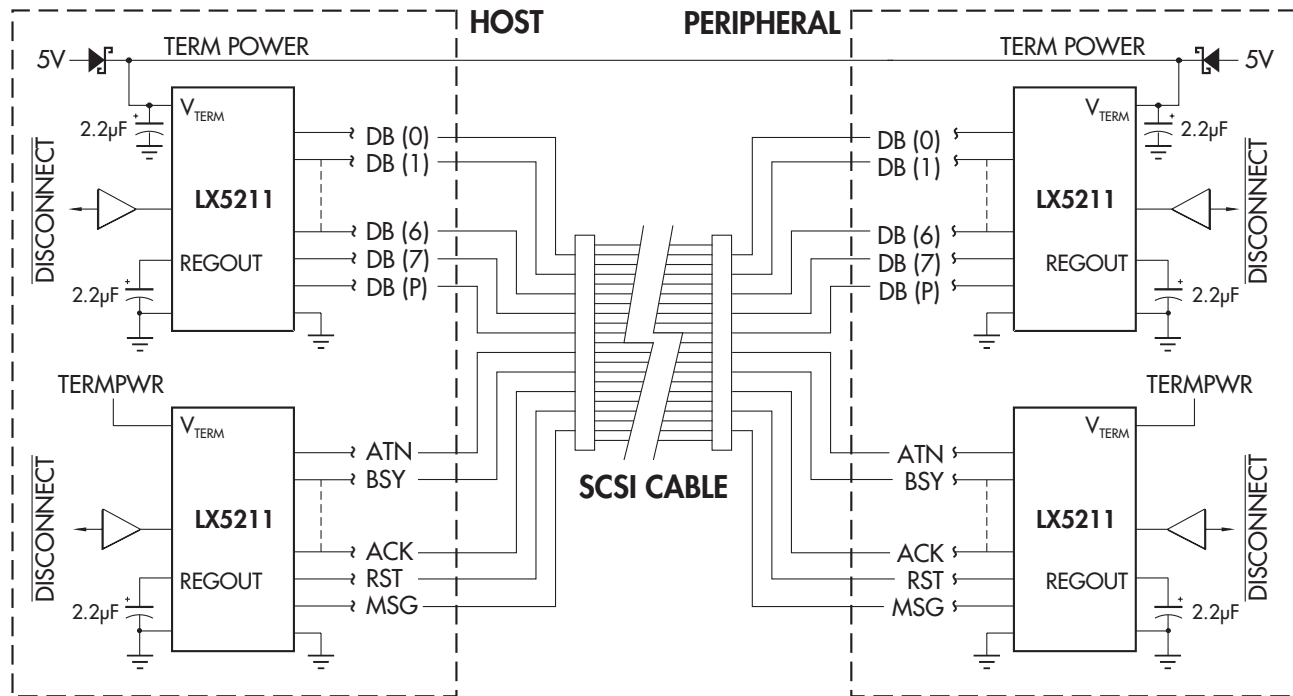
BLOCK DIAGRAM

FIGURE 1 — LX5211 BLOCK DIAGRAM



APPLICATION SCHEMATIC

FIGURE 2 — 8-BIT SCSI SYSTEM APPLICATION



Note: Add third LX5211 for 16-bit SCSI

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