

**DESCRIPTION**

The LX5208 is an eighteen-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 LX5208 requires a meager 60 $\mu$ A of supply current while offering only 3.5pF 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 LX5208 consumes only 800 $\mu$ 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 LX5208 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 LX5208 sinks up to 200mA of current making it compatible with today's fast active negation drivers.

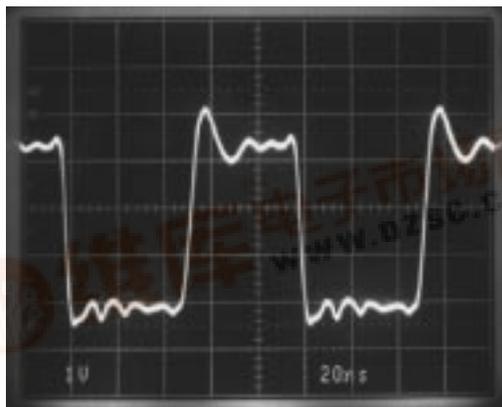
The LX5208 is a superior, pin-for-pin replacement for a variety of industry products such as the UC5601, UC5602, UC5608, and UC5609.

**KEY FEATURES**

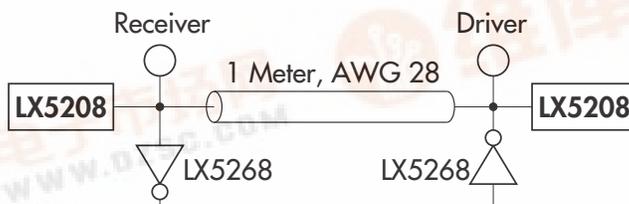
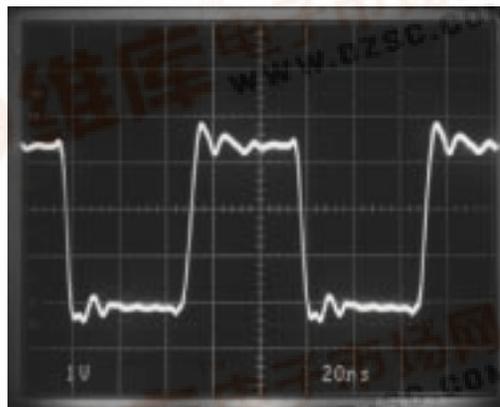
- 3.5pF OUTPUT CAPACITANCE DURING DISCONNECT
- 60 $\mu$ A SUPPLY CURRENT IN DISCONNECT MODE
- 800 $\mu$ A SUPPLY CURRENT DURING NORMAL OPERATION
- 200mA SINK CURRENT FOR ACTIVE NEGATION
- LOGIC COMMAND DISCONNECTS ALL TERMINATION LINES
- CURRENT LIMIT AND THERMAL PROTECTION
- COMPATIBLE WITH SCSI 1, 2 AND 3 STANDARDS
- CONSULT FACTORY FOR APPLICATION TEST REPORT: **5208TR**

**PRODUCT HIGHLIGHT**

RECEIVING WAVEFORM - 10MHZ



DRIVING WAVEFORM - 10MHZ



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

**PACKAGE ORDER INFO**

$T_A$ (°C)	DWP Plastic SOWB 28-pin, Power
0 to 70	<b>LX5208CDWP</b>

Note: All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number. (i.e. LX5208CDWPT)



# LX5208

## 18-LINE LOW CAPACITANCE, $\mu$ POWER SCSI TERMINATOR

### PRODUCTION DATA SHEET

#### ABSOLUTE MAXIMUM RATINGS (Note 1)

TermPwr Voltage .....	+7V
Signal Line Voltage .....	0V to +7V
Regulator Output Current .....	1.2A
Operating Junction Temperature	
Plastic (DWP Package) .....	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

##### DWP PACKAGE:

THERMAL RESISTANCE-JUNCTION TO LEADS, $\theta_{jL}$	18°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, $\theta_{jA}$	40°C/W

Junction Temperature Calculation:  $T_j = T_A + (P_D \times \theta_{jA})$ .

The  $\theta_{jA}$  numbers are guidelines for the thermal performance of the device/pc-board system. All of the above assume no ambient airflow.

#### PACKAGE PIN OUTS

DISCONNECT	<input type="checkbox"/>	1	28	<input type="checkbox"/>	GND
T1	<input type="checkbox"/>	2	27	<input type="checkbox"/>	T18
T2	<input type="checkbox"/>	3	26	<input type="checkbox"/>	T17
T3	<input type="checkbox"/>	4	25	<input type="checkbox"/>	T16
T4	<input type="checkbox"/>	5	24	<input type="checkbox"/>	T15
T5	<input type="checkbox"/>	6	23	<input type="checkbox"/>	T14
HEAT SINK	<input type="checkbox"/>	7	22	<input type="checkbox"/>	HEAT SINK
HEAT SINK	<input type="checkbox"/>	8	21	<input type="checkbox"/>	HEAT SINK
HEAT SINK	<input type="checkbox"/>	9	20	<input type="checkbox"/>	HEAT SINK
T6	<input type="checkbox"/>	10	19	<input type="checkbox"/>	T13
T7	<input type="checkbox"/>	11	18	<input type="checkbox"/>	T12
T8	<input type="checkbox"/>	12	17	<input type="checkbox"/>	T11
T9	<input type="checkbox"/>	13	16	<input type="checkbox"/>	T10
V <sub>TERM</sub>	<input type="checkbox"/>	14	15	<input type="checkbox"/>	REG OUT

DWP PACKAGE  
(Top View)

#### POWER UP / POWER DOWN FUNCTION TABLE

Disconnect	Outputs	Quiescent Current
L	Enabled	800 $\mu$ A
H	HI Z	60 $\mu$ A
Open	HI Z	60 $\mu$ A

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## 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 Capacitance on REGOUT		4.7			$\mu$ F
Operating Virtual Junction Temperature Range LX5208C		0		70	$^{\circ}$ C

Note 2. Range over which the device is functional.

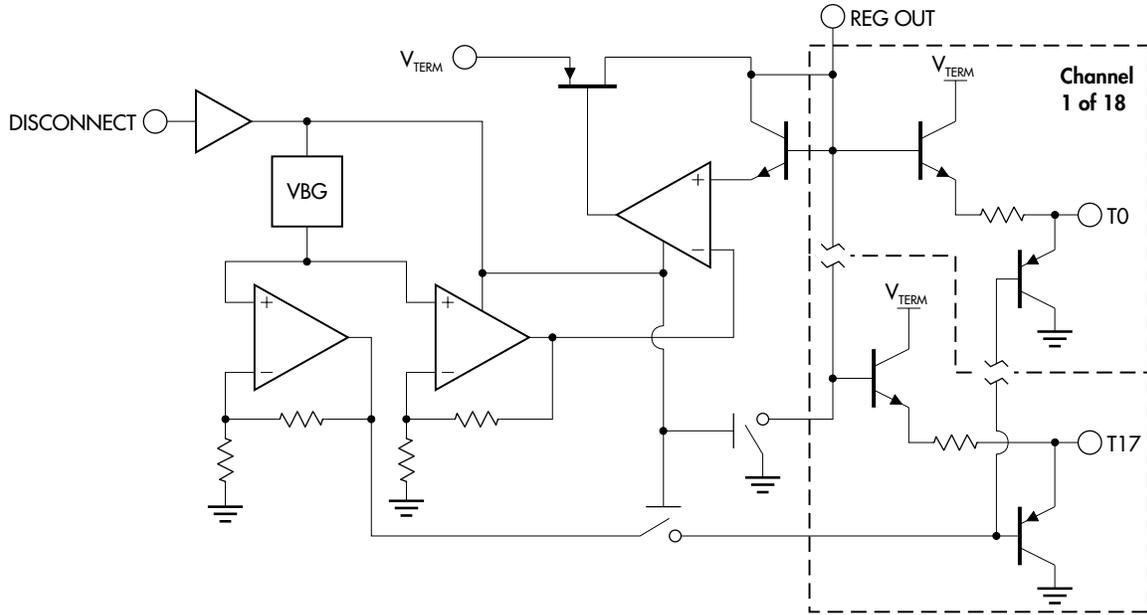
## ELECTRICAL CHARACTERISTICS

(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	LX5208			Units
			Min.	Typ.	Max.	
<b>Supply Current Section</b>						
TermPwr Supply Current		All term lines = Open		0.8	1.5	mA
		All term lines = 0.5V		390	430	mA
Power Down Mode		Disconnect = Open		60	100	$\mu$ A
<b>Output Section (Terminator Lines)</b>						
Terminator Impedance		$I_{TERM} = -5\text{mA to } -15\text{mA}$	100	110	120	$\Omega$
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		3.5		pF
Sink Current		$V_{OUT} = 4\text{V}$	58	70		mA
<b>Regulator Section</b>						
Regulator Output Voltage				3.6		V
Line Regulation		$V_{TERM} = 4\text{V to } 6\text{V}$		10	20	mV
Load Regulation		$I_{REG} = 0 \text{ to } -100\text{mA}$		20	50	mV
Drop Out Voltage		$I_{REG} = -100\text{mA}$		0.45	1.0	V
Short Circuit Current		$V_{REG} = 0\text{V}$		-700	-1000	mA
Thermal Shutdown				150		$^{\circ}$ C
<b>Disconnect Section</b>						
Disconnect Threshold			0.8		2.0	V
Input Current		Disconnect = 0V			40	$\mu$ A

#### BLOCK DIAGRAM

FIGURE 1 — LX5208 BLOCK DIAGRAM



#### APPLICATION SCHEMATIC

FIGURE 2 — 8/16-BIT SCSI SYSTEM APPLICATION

