

- **Single-Ended Driver for Request Line With Improved Characteristics**
- **Single-Ended Receiver for ACKNOWLEDGE Line With Improved Characteristics**
- **Controlled Driver Rise and Fall Times**
10 ns Typ
- **High Receiver Input Hysteresis**
600 mV Typ
- **Receiver Input Noise Pulse Filter**
2.5 ns Max
- **Request and Acknowledge Meet ANSI X3.131-1986 (SCSI)**
- **Packaged in Thin Shrink-Small-Outline Package With 25-mil Pin Pitches**
- **Designed to Operate at 5 Million Transfers Per Second**
- **Power Up/Down Glitch Protection**
- **High Impedance With $V_{CC} = 0$ V**

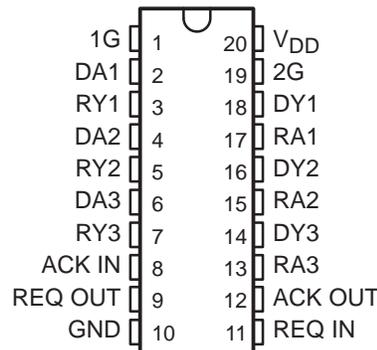
description

The SN75C08 is an input/output SCSI buffer with eight channels. One channel, REQ (request), is an open-drain driver that includes controlled rise and fall times to reduce crosstalk and RF emissions on the SCSI bus. The device also has one channel, ACK (acknowledge), that is a receiver that typically exhibits 600 mV of hysteresis and a 2.5-ns pulse filter to reject noise for bus reflections and/or other sources. The remaining channels offer TTL inputs and 4-mA 3-state outputs.

The enhancement to standard CMOS I/Os provides fewer data errors and higher data throughput with less noise emissions. The switching speeds of the SN75C08 are sufficient to transfer data over the data bus at five million transfers per second. This device is available in the space efficient shrink-small-outline package (SSOP) with 25-mil pin pitch.

The SN75C08 is characterized for operation from 0°C to 70°C.

**DB PACKAGE
(TOP VIEW)**



Function Tables

DRIVER 1 TO 3

INPUTS		OUTPUT
1G	DA	DY
H	H	H
H	L	L
L	H	Z
L	L	Z

RECEIVER 1 TO 3

INPUTS		OUTPUT
2G	DA	RY
H	H	Z
H	L	Z
L	H	H
L	L	L

ACKNOWLEDGE

INPUTS		OUTPUT
1G	ACK IN	ACK OUT
H	H	Z
H	L	Z
L	H	H
L	L	L

REQUEST

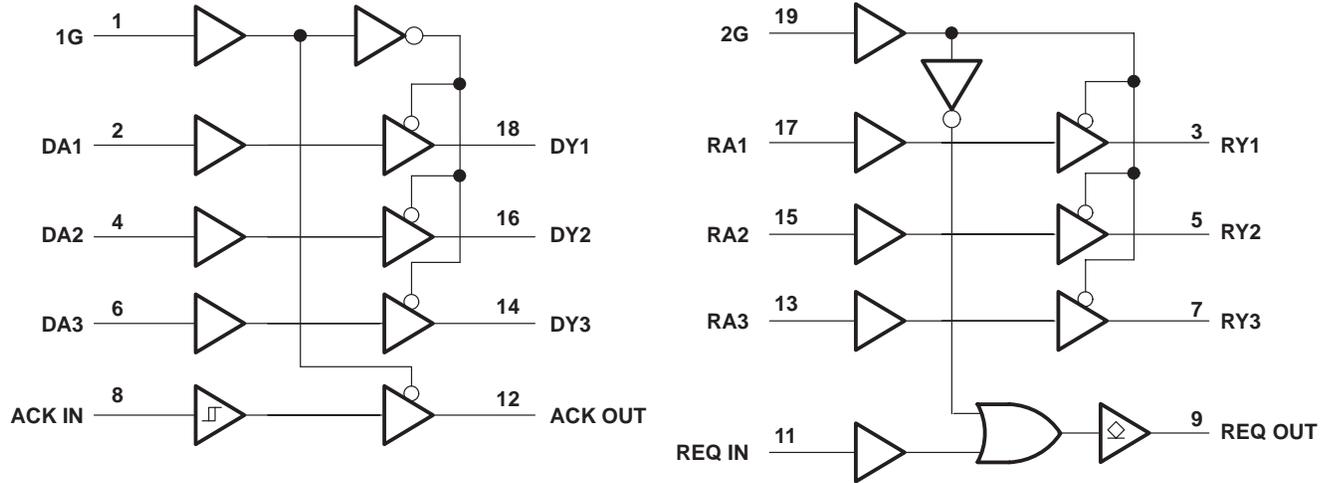
INPUTS		OUTPUT
2G	REQ IN	REQ OUT
H	H	H
H	L	L
L	H	H
L	L	H

H = high level, L = low level,
Z = high impedance

SN75C08 SCSI INPUT/OUTPUT BUFFER

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functional block diagram



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage range, V_{CC}	-0.5 V to 6 V
Input voltage range V_I	-0.5 V to $V_{CC} + 0.5$ V
Output voltage range, V_O	-0.5 V to $V_{CC} + 0.5$ V
Input clamp current, I_I ($V_I < 0$ or $V_I > V_{CC}$)	± 20 mA
Output clamp current, ($V_O < 0$ or $V_O > V_{CC}$)	± 20 mA
Continuous total dissipation	See Dissipation Rating Table
Operating free-air temperature range	0°C to 70°C
Storage temperature range	-65°C to 150°C
Lead temperature 1,6 mm from case for 10 seconds	260°C

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

DISSIPATION RATING TABLE

PACKAGE	POWER DISSIPATION $T_A \leq 25^\circ\text{C}$	DERATING FACTOR ABOVE $T_A \geq 25^\circ\text{C}$
DB	612 mW	4.9 mW/°C

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	4.75	5	5.25	V
High-level dc input voltage, V_{IH}	1G, 2G, DA, REQ IN, RA			2
Low-level dc input voltage, V_{IL}	1G, 2G, DA, REQ IN, RA			0.8
Input voltage, V_I	1G, 2G, DA, REQ IN, RA			0
Output voltage, V_O	DY, RY, ACK OUT			V_{CC}
High-level output current, I_{OH}	DY, RY, ACK OUT			4
	REQ OUT			
Low-level output current, I_{OL}	DY, RY, ACK OUT			4
	REQ OUT			
Operating free-air temperature, T_A	0		70	°C

ACK electrical characteristics over recommended ranges of supply voltage and operating free-air temperature

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{T+}	Positive-going threshold voltage			1.7		V
V_{T-}	Negative-going threshold voltage			1.1		V
V_{hys}	Input hysteresis ($V_{T+} - V_{T-}$)			0.6		V
V_{OH}	High-level output voltage	$I_{OH} = -4 \text{ mA}$, $V_I = 2 \text{ V}$	3.7			μA
V_{OL}	Low-level output voltage	$I_{OL} = 4 \text{ mA}$, $V_I = 0.8 \text{ V}$			0.5	V
I_I	Input current	$V_I = 0 \text{ V to } V_{CC}$			± 1	μA
I_{OZ}	Output current disabled	$V_O = 0 \text{ V to } V_{CC}$			± 5	μA

ACK switching characteristics over recommended ranges of supply voltage and operating free-air temperature, $C_L = 50 \text{ pF}$ (see Figure 1)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PHL}	Propagation delay time, high-to-low-level output	S1 and S2 open		13	22	ns
t_{PLH}	Propagation delay time, low-to-high-level output	S1 and S2 open		8	15	ns
t_{PZH}	Enable time (of a 3-state output) to high level	$R_L = 1 \text{ k}\Omega$, S1 closed		7	14	ns
t_{PZL}	Enable time (of a 3-state output) to low level	$R_L = 1 \text{ k}\Omega$, S2 closed		10	18	ns
t_{PHZ}	Disable time (of a 3-state output) from high level	$R_L = 1 \text{ k}\Omega$, S1 closed		7	14	ns
t_{PLZ}	Disable time (of a 3-state output) from low level	$R_L = 1 \text{ k}\Omega$, S2 closed		7	14	ns

REQ electrical characteristics over recommended operating free-air temperature range

PARAMETER		TEST CONDITIONS	MIN	MAX	UNIT
V_{OL}	Low-level output voltage	$I_{OL} = 48 \text{ mA}$		0.5	V
V_T	Input threshold voltage		1.3		V
I_I	Input current	$V_I = 0 \text{ V to } V_{CC}$		± 1	μA
I_{OZ}	Output current disabled	$V_O = 0 \text{ V to } V_{CC}$		± 5	μA

REQ switching characteristics over recommended ranges of supply voltage and operating free-air temperature (see Figure 2)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PHL}	Propagation delay time, high-to-low-level output	$C_L = 15 \text{ pF}$		15	25	ns
t_{PLH}	Propagation delay time, low-to-high-level output			17	30	
t_{PHL}	Propagation delay time, high-to-low-level output	$C_L = 200 \text{ pF}$		15	25	ns
t_{PLH}	Propagation delay time, low-to-high-level output			23	30	

SN75C08

SCSI INPUT/OUTPUT BUFFER

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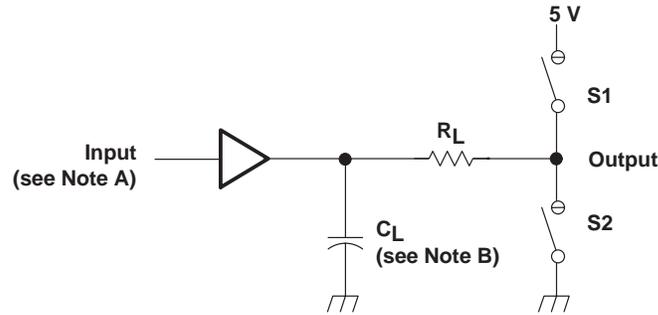
driver 1 to 3 and receiver 1 to 3 electrical characteristics over recommended ranges of supply voltage and operating free-air temperature

PARAMETER		TEST CONDITIONS	MIN	MAX	UNIT
V_{OH}	High-level output voltage	$I_{OH} = -4 \text{ mA}$, $V_I = 2 \text{ V}$	3.7		V
V_{OL}	Low-level output voltage	$I_{OL} = 4 \text{ mA}$, $V_I = 0.8 \text{ V}$		0.5	V
V_T	Input threshold voltage		1.3		V
I_I	Input current	$V_I = 0 \text{ V to } V_{CC}$		± 1	μA
I_{OZ}	Output current disabled	$V_O = 0 \text{ V to } V_{CC}$		± 5	μA

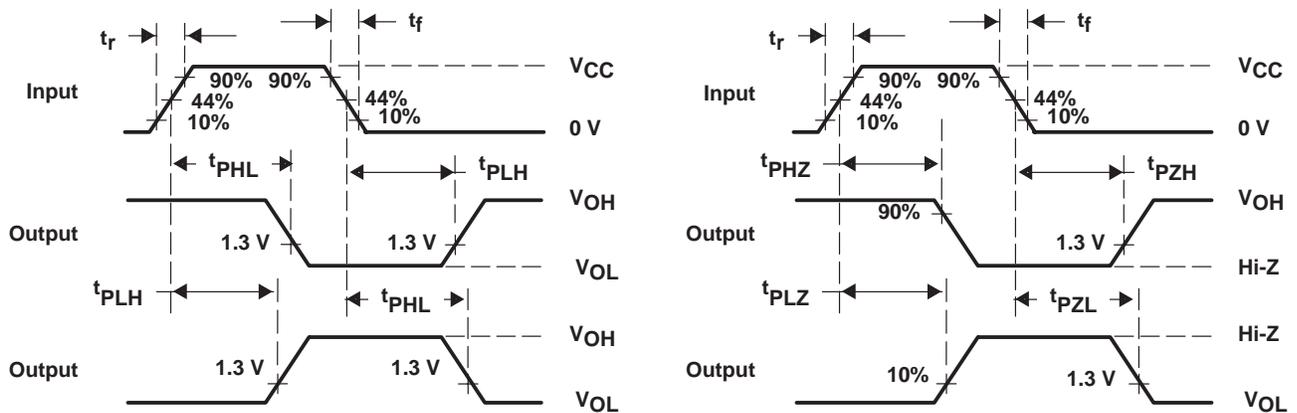
driver 1 to 3 and receiver 1 to 3 switching characteristics over recommended ranges of supply voltage and operating free-air temperature range, $C_L = 50 \text{ pF}$ (see Figure 1)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PHL}	Propagation delay time, high-to-low-level output	S1 and S2 open		13		ns
t_{PLH}	Propagation delay time, low-to-high-level output	S1 and S2 open		8		ns
t_{PZH}	Enable time (of a 3-state output) to high level	$R_L = 1 \text{ k}\Omega$, S1 closed		7		ns
t_{PZL}	Enable time (of a 3-state output) to low level	$R_L = 1 \text{ k}\Omega$, S2 closed		10		ns
t_{PHZ}	Disable time (of a 3-state output) from high level	$R_L = 1 \text{ k}\Omega$, S1 closed		7		ns
t_{PLZ}	Disable time (of a 3-state output) from low level	$R_L = 1 \text{ k}\Omega$, S2 closed		7		ns

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

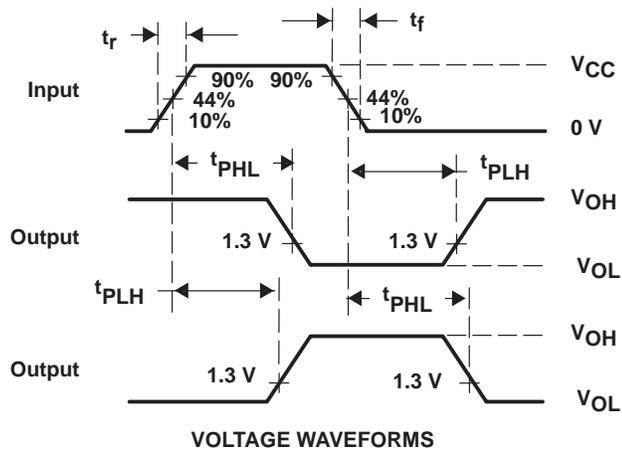
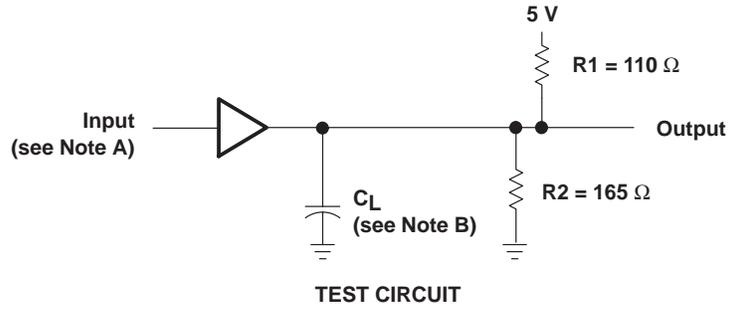
- NOTES: A. The input pulse is supplied by a generator having the following characteristics: $PRR \leq 1 \text{ MHz}$, 50% duty cycle, $t_r \leq 6 \text{ ns}$, $t_f \leq \text{ns}$, $Z_0 = 50 \Omega$.
 B. C_L includes probe and jig capacitance.

Figure 1. ACK, Driver 1 to 3 and Receiver 1 to 3 Test Circuit and Voltage Waveforms

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PARAMETER MEASUREMENT INFORMATION



- NOTES: A. The input pulse is supplied by a generator having the following characteristics: $PRR \leq 1 \text{ MHz}$, 50% duty cycle, $t_r \leq 6 \text{ ns}$, $t_f \leq \text{ns}$, $Z_o = 50 \Omega$.
B. C_L includes probe and jig capacitance.

Figure 2. REQ Output Enable and Disable Time Test Circuit and Voltage Waveforms

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