

DS8642 Quad Transceiver

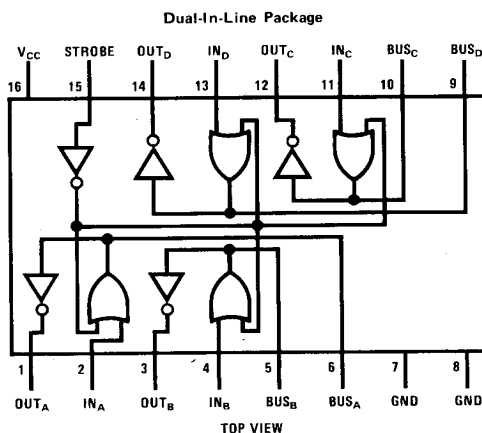
General Description

The DS8642 is a quad transceiver designed for bus organized data transmission systems terminated by 50Ω impedance. The bus can be terminated at one or both ends. It has four bus drivers with a common strobe gate and four bus receivers. Bus driver outputs can be "OR-tied" with up to 19 other drivers and with up to 20 bus receiver loads. The bus loading is $2k$ when $V_{CC} = 0V$.

Features

- 100 mA Drive Capability
- Four separate driver/receiver pairs
- Open collector driver output allows wire-OR connection
- 50Ω line termination
- Completely TTL compatible on driver and disable inputs, and receiver outputs

Logic and Connection Diagram



Order Number DS8642J
or DS8642N
See NS Package J16A or N16A

Absolute Maximum Ratings (Note 1)

Operating Conditions

Supply Voltage	7V
Input Voltage	5.5V
Output Voltage	5.5V
Storage Temperature Range	-65°C to +150°C
Maximum Power Dissipation* at 25°C	
Cavity Package	1433 mW
Molded Package	1362 mW
Lead Temperature (Soldering, 10 seconds)	300°C

	MIN	MAX	UNITS
Supply Voltage, V_{CC}	4.75	5.25	V
Temperature, T_A	0	+70	°C

*Derate cavity package 9.6 mW/°C above 25°C; derate molded package 10.9 mW/°C above 25°C.

Electrical Characteristics (Notes 2 and 3)

PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
DISABLE/DRIVER INPUT						
V_{IH}	Logical "1" Input Voltage	$V_{CC} = \text{Min}$	2			V
V_{IL}	Logical "0" Input Voltage	$V_{CC} = \text{Min}$			0.8	V
I_{IL}	Logical "0" Input Current	$V_{CC} = \text{Max}, V_{IN} = 0.4\text{V}$		-0.9	-1.6	mA
I_{IH}	Logical "1" Input Current	$V_{CC} = \text{Max}$			40	μA
		$V_{IN} = 5.5\text{V}$			1	mA
V_{CD}	Input Clamp Voltage	$I_{IN} = -12\text{ mA}$		-0.8	-1.5	V
RECEIVER INPUT/BUS OUTPUT						
V_{IHB}	Logical "1" Input Voltage	$V_{CC} = \text{Max}$	3.1			V
V_{ILB}	Logical "0" Input Voltage	$V_{CC} = \text{Min}$			1.4	V
V_{CDB}	Input Clamp Diode	$I_{IN} = -50\text{ mA}$		-1.0	-1.5	V
I_{IHB}	Logical "1" Input Current	$V_{CC} = \text{Max}, V_{INB} = V_{CC}$		180	450	μA
I_{ILB}	Logical "0" Input Current	$V_{CC} = \text{Max}, V_{IN} = 0.4\text{V}$			-40	μA
V_{OLB}	Logical "0" Output Voltage	$V_{CC} = \text{Min}, I_{OUT} = 100\text{ mA}$		0.4	0.8	V
I_{OL}	Logical "0" Output Current	$V_{CC} = \text{Min}, V_{OL} = 0.8\text{V}$	100			mA
I_{OHB}	Power "OFF" Bus Current	$V_{CC} = 0\text{V}, V_{INB} = 5.25\text{V}$		1.7	2.65	mA
RECEIVER OUTPUT						
V_{OH}	Logical "1" Output Voltage	$V_{CC} = \text{Min}, I_{OUT} = -1\text{ mA}$	2.4	3.2		V
I_{OH}	Logical "1" Output Current	$V_{CC} = \text{Min}, V_{OUT} = 5.5\text{V}$			100	μA
I_{OS}	Output Short Circuit Current	$V_{CC} = \text{Min}, V_{OUT} = 0\text{V}, (\text{Note } 4)$	-10	-28	-55	mA
V_{OL}	Logical "0" Output Voltage	$V_{CC} = \text{Min}, I_{OUT} = 16\text{ mA}$		0.3	0.45	V
I_{CC}	Supply Current	$V_{CC} = \text{Max}$		49	64	mA

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2: Unless otherwise specified min/max limits apply across the 0°C to +70°C range for the DS8642. All typicals are given for $V_{CC} = 5\text{V}$ and $T_A = 25^\circ\text{C}$.

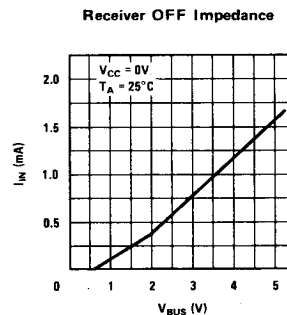
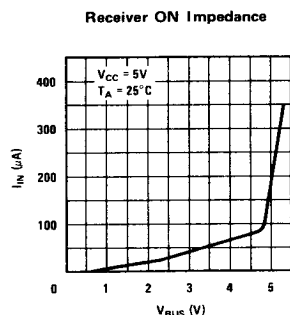
Note 3: All currents into device pins shown as positive, out of device pins as negative, all voltages referenced to ground unless otherwise noted. All values shown as max or min on absolute value basis.

Note 4: Only one output at a time should be shorted.

Switching Characteristics $T_A = 25^\circ\text{C}$, nominal power supplies unless otherwise noted

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
t_{pd0}	Propagation Delay to a Logical "0" From Data Input to Receiver Output		34	50	ns
t_{pd1}	Propagation Delay to a Logical "1" From Data Input to Receiver Output		25	50	ns
t_{pd0}	Propagation Delay to a Logical "0" From Strobe Input to Receiver Output		38	55	ns
t_{pd1}	Propagation Delay to a Logical "1" From Strobe Input to Receiver Output		25	55	ns

Typical Performance Characteristics



AC Test Circuit and Switching Time Waveforms

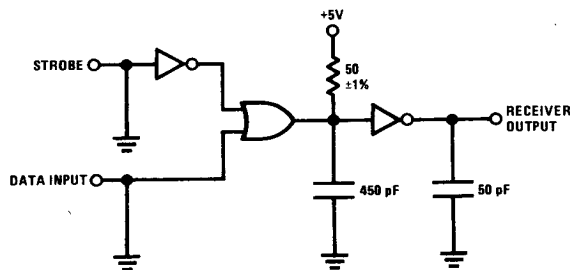
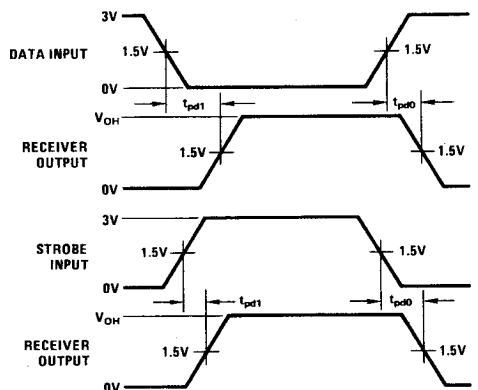


FIGURE 1.



$f = 5\text{ MHz}$
Pulse Width = 100 ns
 $t_r = t_f \approx 5\text{ ns}$