



DM54AS2640/DM74AS2640, DM54AS2645/DM74AS2645 TRI-STATE® Bus Transceivers/MOS Drivers

General Description

This family of advanced low power Schottky devices contains 8 pairs of logic elements configured as octal bus transceivers. They are designed to drive the capacitive input characteristics of MOS devices and allow asynchronous bidirectional communications between data buses. Data transmission from the A bus to the B bus or from the B bus to the A bus are selectively controlled by (DIR and \bar{G}) the direction and enable inputs. This enable input is also used to disable the device so that the buses are effectively isolated.

Features

- Bidirectional octal bus transceivers for driving MOS devices
- I/O ports have 25Ω series resistors so no external resistors are required
- Choice of true or inverting logic

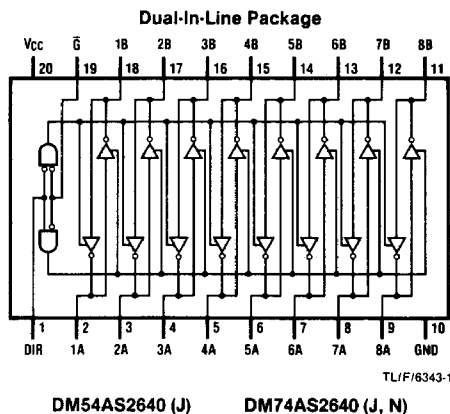
- Advanced oxide isolated, ion-implanted Schottky TTL process
- Switching response specified into $500\Omega/50\text{ pF}$ load
- Switching specifications guaranteed over full temperature and V_{CC} range

Absolute Maximum Ratings (Note 1)

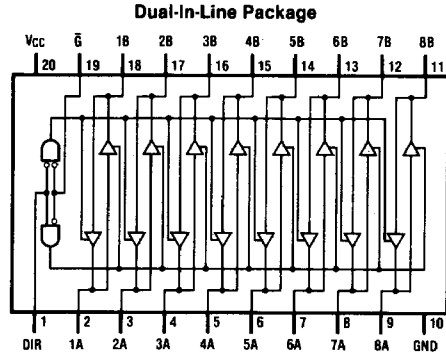
Supply Voltage, V_{CC}	7V
Input Voltage	7V
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10 seconds)	+300°C

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Connection Diagrams



Connection Diagrams (Continued)



TL/F/6343-3

DM54AS2645 (J) DM74AS2645 (J, N)

Function Table

Control Inputs		Operation	
\bar{G}	DIR	AS2640	AS2645
L	L	\bar{B} Data to A Bus	B Data to A Bus
L	H	\bar{A} Data to B Bus	A Data to B Bus
H	X	Hi-Z	Hi-Z

Recommended Operating Conditions

Symbol	Parameter	DM54AS			DM74AS			Units
		Min	Typ	Max	Min	Typ	Max	
V_{CC}	Supply Voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High Level Input Voltage	2			2			V
V_{IL}	Low Level Input Voltage			0.8			0.8	V
T_A	Operating Free Air Temperature	- 55		125	0		70	°C




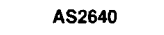
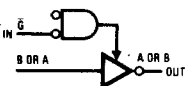

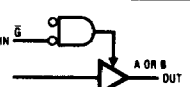
Electrical Characteristics over recommended operating free air temperature range.All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
V_{IK}	Input Clamp Voltage	$V_{CC} = 4.5V$, $I_{IN} = -18\text{ mA}$			-1.2	V	
V_{OH}	High Level Output Voltage	$I_{OH} = -2\text{ mA}$	$V_{CC} - 2$			V	
V_{OL}	Low Level Output Voltage	$V_{CC} = 4.5V$	$I_{OL} = -1\text{ mA}$		0.25	0.4	V
			$I_{OL} = 12\text{ mA}$		0.35	0.7	V
I_I	Input Current at Max Input Voltage	$V_{CC} = 5.5V$, $V_{IN} = 7V$ ($V_{IN} = 5.5V$ for A or B Ports)			0.1	mA	
I_{IH}	High Level Input Current	$V_{CC} = 5.5V$, $V_{IN} = 2.7V$	Control Inputs			20	μA
			A or B Ports			70	
I_{IL}	Low Level Input Current	$V_{CC} = 5.5V$, $V_{IN} = 0.4V$	Control Inputs			-0.5	mA
			A or B Ports			-0.75	
I_O	Output Drive Current	$V_{CC} = 5.5V$, $V_{OUT} = 2.25V$	-50		-150	mA	
I_{CC}	DM54/74AS2640 Supply Current	$V_{CC} = 5.5V$	Outputs High		37	58	mA
			Outputs Low		78	123	mA
			TRI-STATE		51	80	mA
I_{CC}	DM54/74AS2645 Supply Current	$V_{CC} = 5.5V$	Outputs High		58	95	mA
			Outputs Low		95	155	mA
			TRI-STATE		73	119	mA

Switching Characteristics

over recommended operating free air temperature range (Notes 1 and 2)

All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

Symbol	Parameter	Circuit Configuration	DM54AS			DM74AS			Units
			Min	Typ	Max	Min	Typ	Max	
t_{PLH}	Propagation Delay Time, Low to High Level Output		1		9.5	1		7.5	ns
t_{PHL}	Propagation Delay Time, High to Low Level Output		1		7	1		6.5	ns
t_{PZL}	Output Enable Time to Low Level		2		11	2		9	ns
t_{PZH}	Output Enable Time to High Level		2		12	2		10	ns
t_{PLZ}	Output Disable Time from Low Level		1		8	1		7	ns
t_{PHZ}	Output Disable Time from High Level		2		15	2		13	ns
t_{PLH}	Propagation Delay Time, Low to High Level Output		1		12	1		10	ns
t_{PHL}	Propagation Delay Time, High to Low Level Output		1		11	1		9.5	ns
t_{PZL}	Output Enable Time to Low Level		1		13	1		11.5	ns
t_{PZH}	Output Enable Time to High Level		1		13	1		10.5	ns
t_{PLZ}	Output Disable Time from Low Level		1		9	1		8	ns
t_{PHZ}	Output Disable Time from High Level		1		13	1		12	ns

Note 1: See Section 1 for test waveforms and output load.

Note 2: Switching characteristic conditions are $V_{CC} = 4.5V$ to $5.5V$, $R_L = 500\Omega$, $C_L = 50$ pF.