MOTOROLA

MC3245

QUAD TTL TO MOS DRIVER

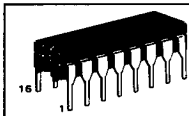
This high-speed driver is intended as a clock (high-level) driver for 22-pin and 18-pin dynamic NMOS RAMs and CCD memories. It is designed to operate on nominal +5 V and +12 V power supplies.

The channel control logic is organized so that all four drivers may be deactivated for STANDBY operation, or single driver may be activated for READ/WRITE operation or all four drivers may be activated for REFRESH operation.

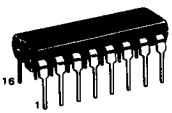
- Control Logic Optimized for Use in MOS RAM Systems
- Output Voltages Compatible with Many Popular MOS RAMs
- TTL and DTL Compatible Inputs — High-Speed Switching
- Interchangeable with Intel 3245

GATE-CONTROLLED FOUR-CHANNEL MOS CLOCK DRIVERS

SILICON MONOLITHIC INTEGRATED CIRCUIT

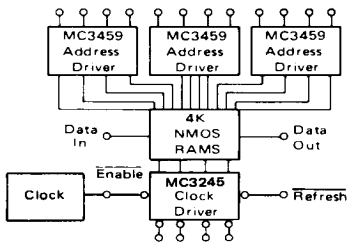


L SUFFIX
CERAMIC PACKAGE
CASE 620

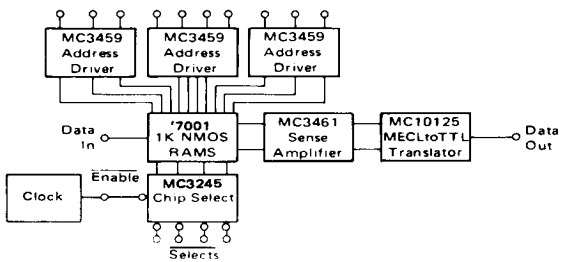


P SUFFIX
PLASTIC PACKAGE
CASE 648

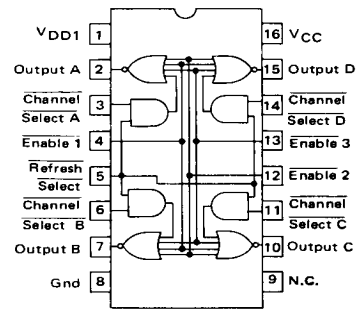
TYPICAL APPLICATION WITH 4K NMOS RAM IN TTL SYSTEM



TYPICAL APPLICATION WITH '7001 RAM AND TTL SYSTEMS



PIN CONNECTIONS



TRUTH TABLE

Inputs					Output
Control			Address		
Enable 1	Enable 2	Enable 3	Channel Select	Refresh Select	
H	I	I	I	I	L
I	H	I	I	I	L
I	I	H	I	I	L
I	I	I	H	H	L
L	L	L	L	I	H
L	L	L	I	L	H

H = High Logic State
L = Low Logic State
I = Irrelevant

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Power Supply Voltages	V_{CC} V_{DD}	-0.5 to +7.0 -0.5 to +14	Vdc Vdc
Output Voltage	V_O	-1.0 to V_{DD} +1.0	Vdc
Input Voltage	V_I	-1.0 to V_{DD}	Vdc
Operating Ambient Temperature Range	T_A	0 to +75	°C
Storage Temperature Range	T_{stg}	-65 to +150	°C
Junction Temperature Ceramic Package Plastic Package	T_J	 175 150	°C

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RECOMMENDED OPERATING CONDITIONS

Characteristic	Symbol	Min	Typ	Max	Unit
Power Supply Voltages	V_{CC} V_{DD}	4.75 11.4	5.0 12	5.25 12.6	Vdc Vdc
Operating Ambient Temperature Range	T_A	0	–	75	°C

ELECTRICAL CHARACTERISTICS (Unless otherwise noted, these specifications apply over recommended power supply and temperature conditions. Typical values measured at T_A = 25°C.)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage – High Logic State (V_{IL} = 0.8 V, I_{OH} = -1.0 mA)	V_{OH}	V_{DD} - 0.5	–	–	Vdc
Output Clamp Voltage – High Logic State (I_{OH} = 5.0 mA, V_{IL} = 0 V)	V_{OHC}	–	–	V_{DD} + 1.0	Vdc
Output Voltage – Low Logic State (V_{IH} = 2.0 V, I_{OL} = 5.0 mA)	V_{OL}	–	–	0.45	Vdc
Output Clamp Voltage – Low Logic State (V_{IH} = 5.0 V, I_{OL} -5.0 mA)	V_{OLC}	-1.0	–	–	Vdc
Input Voltage – High Logic State	V_{IH}	2.0	–	–	Vdc
Input Voltage – Low Logic State	V_{IL}	–	–	0.8	Vdc
Input Clamp Voltage (I_{IK} = -5.0 mA)	V_{IK}	–	–	-1.0	Vdc
Input Current – High Logic State (V_I = 5.0 V) Channel Select Inputs Refresh Select and Enable Inputs	I_{IH}	 – –	 – –	 10 40	μA
Input Current – Low Logic State (V_{IL} = 0.45 V) Channel Select Inputs Refresh Select and Enable Inputs	I_{IL}	 – –	 – –	 -0.25 -1.0	mA
Power Supply Current – Output High Logic State (V_{CC} = 5.25 V, V_{IL} = 0 V, I_{OH} = 0 mA, V_{DD} = 12.6 V)	I_{CCH} I_{DDH}	– –	23 19	30 26	mA
Power Supply Current – Output Low Logic State (V_{CC} = 5.25, V_{IH} = 5.0 V, I_{OL} = 0 mA, V_{DD} = 12.6 V)	I_{CCL} I_{DDL}	– –	29 12	39 15	mA

SWITCHING CHARACTERISTICS (Unless otherwise noted, these specifications apply over recommended power supply and temperature conditions. Typical values measured at +25°C.)

Characteristic	Symbol	Min (1)	Typ (2)	Max (3)	Unit
Delay Time					ns
Output High to Low Level (R_S = 0 Ω)	t_{DHL}	3.0	7.0	–	
Output Low to High Level (R_S = 0 Ω)	t_{DLH}	5.0	11	–	
Transition Time					ns
Output High to Low Level (R_S = 20 Ω)	t_{THL}	5.0	17	25	
Output Low to High Level (R_S = 20 Ω)	t_{TLH}	10	17	25	
Propagation Delay Time					ns
Output High to Low Level (R_S = 0 Ω)	t_{PHL}	–	18	32	
Output Low to High Level (R_S = 0 Ω)	t_{PLH1}	–	20	32	
(R_S = 20 Ω)	t_{PLH2}	–	27	38	

(1) C_L = 150 pF
(2) C_L = 200 pF
(3) C_L = 250 pF

CAPACITANCE* (Unless otherwise specified, T_A = +25°C, f = 1.0 MHz, V_I = 2.0 V, and V_{CC} = 0 V.)

Characteristic	Symbol	Min	Typ	Max	Unit
Input Capacitance $\overline{\text{Channel Select}}$ Inputs	$C_{in}(\overline{CS})$	–	5.0	8.0	pF
Input Capacitance $\overline{\text{Refresh}}$ or $\overline{\text{Enable}}$ Inputs	$C_{in}(\overline{E})$	–	8.0	12	pF

*Periodically sampled, but not 100% tested.

FIGURE 1 – SWITCHING TEST WAVEFORMS

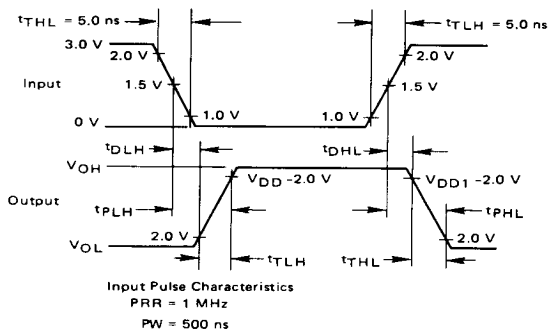

FIGURE 2 – SWITCHING TEST CIRCUIT