April 1990
Edition 1.0

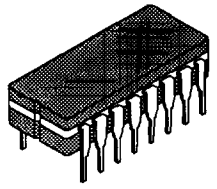
FUJITSU

PRODUCT PROFILE

MB4313
Read/Write Bus Driver/Receiver

DESCRIPTION

The Fujitsu MB4313 is designed as a driver/receiver to be used as an interface between a magnetic disk drive and a control unit. The MB4313 transfers the read-out signal from the disk head to the control unit, and the write signal from the control unit to the disk head.



DIP-16C-C02

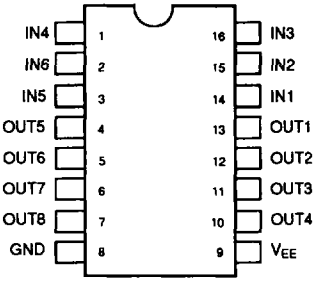
FEATURES

- ECL compatible input signals
- Propagation delay time 12 ns maximum
- Rise/Fall time 8 ns maximum
- Single –5.2 V supply

RECOMMENDED OPERATING CONDITIONS

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Input Voltage Pins 1,3,14,16	T_A=0°C	V_{IN}	–1.87		–0.86	V
	T_A=25°C		–0.85		–0.81	V
	T_A=70°C		–1.825		–0.7	V
Input Current Pins 2,15		I_{IN}			13	mA
Output Current Pins 4,5,12,13		I_{OUT}			5	mA
Supply Voltage		V_{EE}	–5.46	–5.2	–4.94	V
Operating Temperature		T_A	0		+70	°C

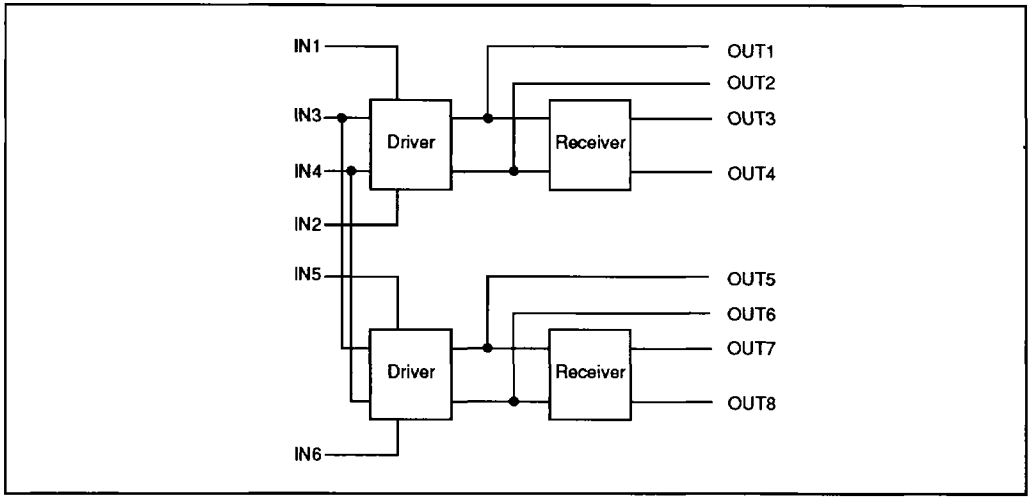
Pin Assignment
(Top View)



Note: Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operation sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

BLOCK DIAGRAM



6

ELECTRICAL CHARACTERISTICS

(V_{EE} = −5.2V±5% at T_A = 0 to 70 °C, unless otherwise noted.)

DC CHARACTERISTICS

(Deviation : ± 2%)

Parameter	Conditions	Symbol	Value at T_A = 25±2°C			Value at T_A = 0 to 70°C			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	$V_{IN1}=V_{IN5}=V_{Hmin}$, $V_{IN3}=V_{Hmax}$, $V_{in4}=V_{Hmin}$	V_{01H}				−10			mV
		V_{05H}				−10			mV
		V_{03H}		−0.8		−1.0		−0.6	V
		V_{07H}		−0.8		−1.0		−0.6	V
	$V_{IN1}=V_{IN5}=V_{Hmin}$, $V_{IN3}=V_{Lmin}$, $V_{in4}=V_{Hmax}$	V_{02H}				−10			mV
		V_{06H}				−10			mV
		V_{04H}		−0.8		−1.0		−0.6	V
		V_{08H}		−0.8		−1.0		−0.6	V
	$V_{IN1}=V_{IN4}=V_{Lmax}$, $V_{IN5}=V_{IN3}=V_{Hmin}$	V_{01L}		−0.51		−0.7		−0.4	V
		V_{03L}		−1.32		−1.6		−1.0	V
	$V_{IN1}=V_{IN3}=V_{Lmax}$, $V_{IN5}=V_{IN4}=V_{Hmin}$	V_{02L}		−0.51		−0.7		−0.4	V
		V_{04L}		−1.32		−1.6		−1.0	V
	$V_{IN1}=V_{IN3}=V_{Hmin}$, $V_{IN5}=V_{IN4}=V_{Lmax}$	V_{05L}		−0.51		−0.7		−0.4	V
		V_{07L}		−1.32		−1.6		−1.0	V
	$V_{IN1}=V_{IN4}=V_{Hmax}$, $V_{in5}=V_{IN3}=V_{Lmax}$	V_{06L}		−0.51		−0.7		−0.4	V
		V_{08L}		−1.32		−1.6		−1.0	V

DC CHARACTERISTICS (Continued)

Parameter	Conditions	Symbol	Value at T_A = 25±2°C			Value at T_A = 0 to 70°C			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Current	$V_{IN1}=V_{Hmax}$	I_{IN1}		20				100	μA
Input Current	$V_{IN5}=V_{Hmax}$	I_{IN5}		20				100	μA
	$V_{IN3}=V_{Hmax}$, $V_{IN1}=V_{IN4}=V_{Lmin}$	I_{IN3}		20				400	μA
	$V_{IN4}=V_{Hmax}$ $V_{IN1}=V_{IN4}=V_{Lmin}$	I_{IN4}		20				400	μA
	R=430Ω±2%	I_{IN2}, I_{IN6}		10.1		8.5		12.1	mA
Supply Current	$V_{IN1}=V_{IN5}=V_{Hmax}$, $V_{IN3}=V_{Hmax}$, $V_{IN4}=V_{Lmax}$	I_{EE}		72				110	mA

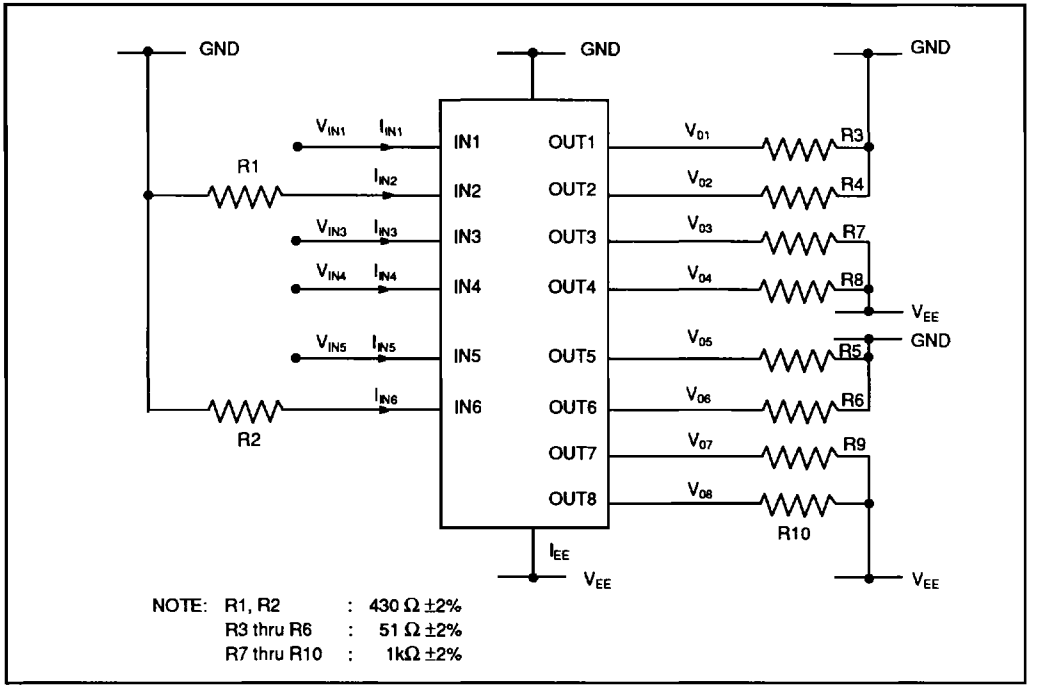
AC CHARACTERISTICS

(Deviation : ± 2%)

Parameter	Conditions	Symbol	Value at T_A = 25±2°C			Value at T_A = 0 to 70°C			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Propagation Delay Time	$V_{IN1}=V_{IN5}=5_{Lmax}$, $V_{IN3}=-1.29V$, $V_{IN4}=V_{INA}$, Output Timing: $V_{02}, V_{04}, V_{06}, V_{08}$ as V_{OUTC}. $V_{01}, V_{03}, V_{05}, V_{07}$ as V_{OUTC}.	t_{d1}						12	ns
		t_{d2}						12	ns
		t_{d3}						12	ns
		t_{d4}						12	ns
Rise Time		t_{r1}						8	ns
		t_{r2}						8	ns
Fall Time		t_{f1}						8	ns
		t_{f2}						8	ns

6

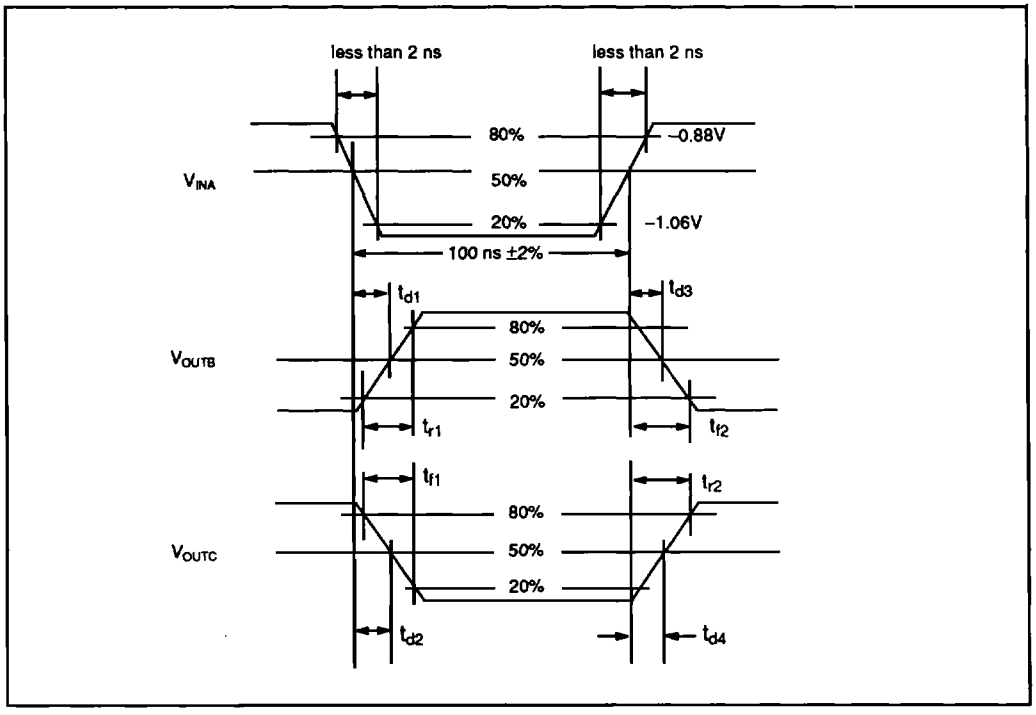
Test Circuit Example



NOTE: R1, R2 : 430 Ω ±2%
R3 thru R6 : 51 Ω ±2%
R7 thru R10 : 1kΩ ±2%

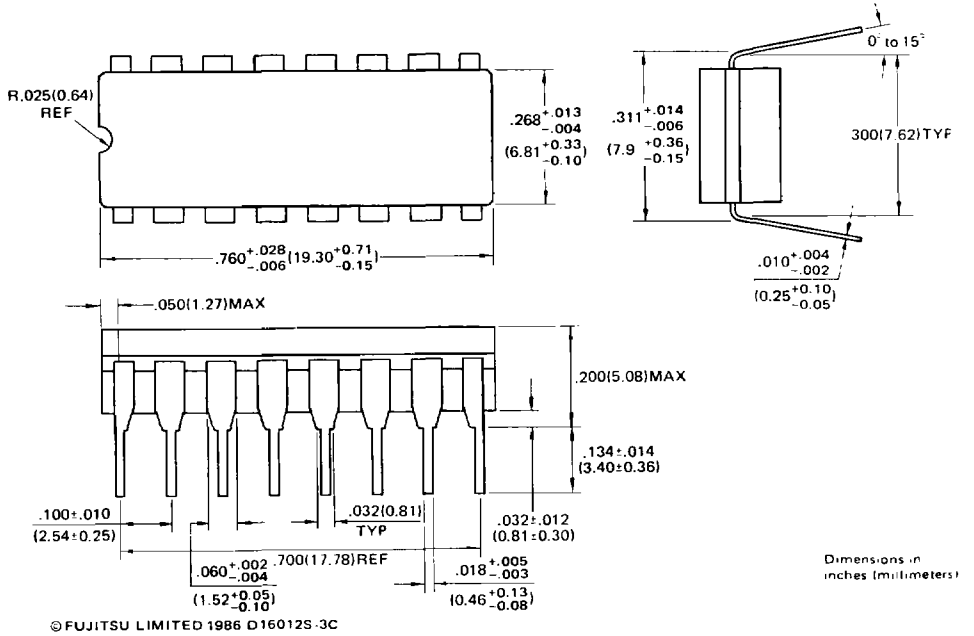
Test Temperature	Test Voltage				
T_A (°C)	V_{Hmax} (V)	V_{Hmin} (V)	V_{Lmax} (V)	V_{Lmin} (V)	V_{TH} (V)
0	–0.86	–1.155	–1.49	–1.87	–1.32
25	–0.81	–1.105	–1.475	–1.85	–1.29
70	–0.7	–1.035	–1.44	–1.825	–1.22

TIMING CHART



PACKAGE DIMENSIONS

16-LEAD CERAMIC (CERDIP) DUAL IN-LINE PACKAGE
(DIP-16C-C02)



6