

25Ω Octal Bidirectional Transceiver With 3-State Inputs and Outputs

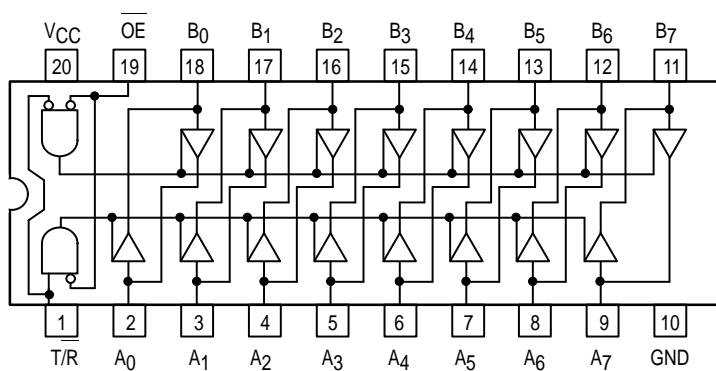
The MC74F2245 is designed for asynchronous communication between data buses. The device transmits data from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction control (DIR) input. The output enable (OE) input disables the device so the buses are effectively isolated.

Both A and B outputs can sink up to 12mA; 25Ω resistors are included in the lower output circuit to reduce overshoot and undershoot.

The MC74F2245 is characterized for operation from 0°C to 70°C.

- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Package Options Include Plastic SOIC (DW-Suffix) and Plastic SSOP (SD-Suffix)

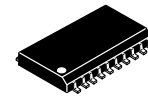
CONNECTION DIAGRAM (TOP VIEW)



MC74F2245

**25Ω OCTAL BIDIRECTIONAL
TRANSCEIVER WITH 3-STATE
INPUTS AND OUTPUTS**

FAST™ SCHOTTKY TTL



DW SUFFIX
PLASTIC SOIC
CASE 751D-04



SD SUFFIX*
PLASTIC SSOP
CASE 940C-03

**Thermal Mounting Techniques are Recommended. Please refer to Motorola Application Note AN1567/D.*

GUARANTEED OPERATING RANGES

Symbol	Parameter	Min	Typ	Max	Unit
VCC	Supply Voltage	4.5	5.0	5.5	V
T _A	Operating Ambient Temperature Range	0	25	70	°C
I _{OH}	Output Current — High			-3.0	mA
I _{OL}	Output Current — Low			12	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

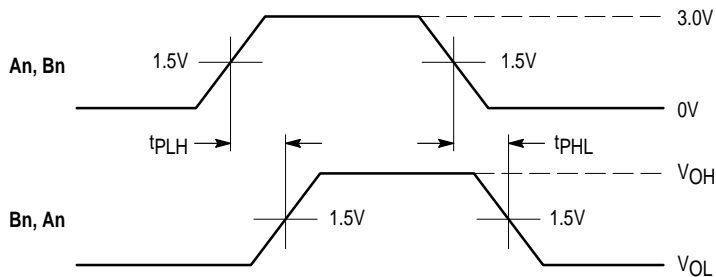
Symbol	Parameter	Limits			Unit	Test Conditions	
		Min	Typ	Max			
V _{IH}	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage	
V _{IL}	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage	
V _{IK}	Input Clamp Diode Voltage			-1.2	V	I _{IN} = -18 mA	V _{CC} = MIN
V _{OH}	Output HIGH Voltage, Outputs	2.5			V	I _{OH} = -1.0 mA	V _{CC} = 4.50 V
		2.4	3.0		V	I _{OH} = -3.0 mA	V _{CC} = 4.50 V
		2.7	3.2		V	I _{OH} = -3.0 mA	V _{CC} = 4.75 V
V _{OL}	Output LOW Voltage, Outputs		0.2	0.5	V	I _{OL} = 1 mA	V _{CC} = MIN
V _{OL}	Output LOW Voltage, Outputs		0.5	0.75	V	I _{OL} = 12 mA	V _{CC} = MIN
I _{OZH} + I _{IH}	Output Off Current HIGH			70	μA	V _{OUT} = 2.7 V	V _{CC} = MAX
I _{OZL} + I _{IL}	Output Off Current LOW			-650	mA	V _{OUT} = 0.5 V	V _{CC} = MAX
I _{IH}	Input HIGH Current	OE, T/R Inputs		20	μA	V _{IN} = 2.7 V	V _{CC} = MAX
		OE, T/R Inputs		100	μA	V _{IN} = 7.0 V	
		A _n , B _n Inputs		1.0	mA	V _{IN} = 5.5 V	
I _{IL}	Input LOW Current	T/R Input		-0.8	mA	V _{IN} = 0.5 V	V _{CC} = MAX
		OE Input		-1.2	mA		
I _{OS}	Output Short Circuit Current (Note 2)	A _n Outputs	-60	-150	mA	V _{OUT} = GND	V _{CC} = MAX
		B _n Outputs	-100	-225	mA	V _{OUT} = GND	V _{CC} = MAX
I _{CCH}	Power Supply Current HIGH			90	mA	V _{CC} = MAX, Outputs HIGH	
I _{CCL}	Power Supply Current LOW			120	mA	V _{CC} = MAX, Outputs LOW	
I _{CCZ}	Power Supply Current OFF			110	mA	V _{CC} = MAX, Outputs OFF	

NOTES:

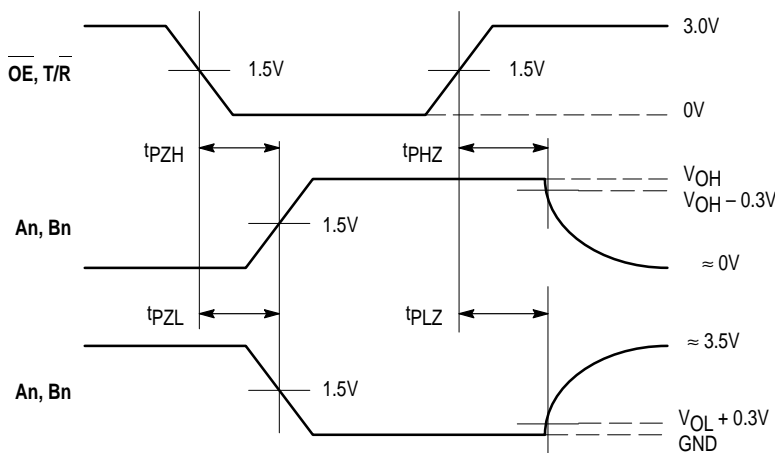
1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
2. Not more than one output should be shorted at a time.

AC CHARACTERISTICS

Symbol	Parameter	T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF		T _A = 0°C to +70°C V _{CC} = 5.0 V ± 10% C _L = 50 pF		Unit
		Min	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay A _n to B _n or B _n to A _n	2.5 2.5	6.0 6.6	2.5 2.5	7.0 7.1	ns
t _{PZH} t _{PZL}	Output Enable Time	3.0 3.5	7.3 10.6	3.0 3.5	8.5 12.0	ns
t _{PHZ} t _{PLZ}	Output Disable Time	2.5 2.0	6.5 6.5	2.5 2.0	7.5 7.5	ns

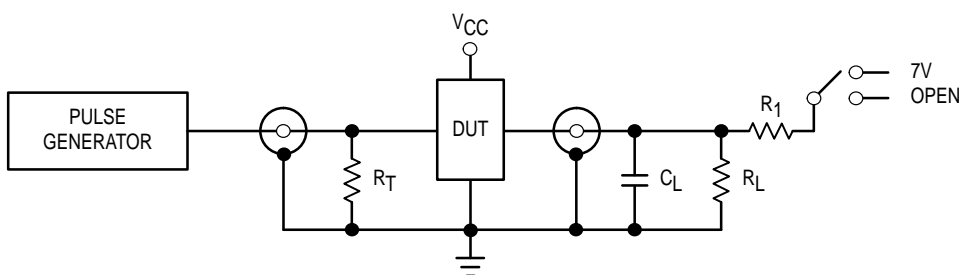


WAVEFORM 1 – PROPAGATION DELAYS
 $t_R = t_F = 2.5\text{ns}$, 10% to 90%; $f = 1\text{MHz}$; $t_W = 500\text{ns}$



WAVEFORM 2 – OUTPUT ENABLE AND DISABLE TIMES
 $t_R = t_F = 2.5\text{ns}$, 10% to 90%; $f = 1\text{MHz}$; $t_W = 500\text{ns}$

Figure 1. AC Waveforms



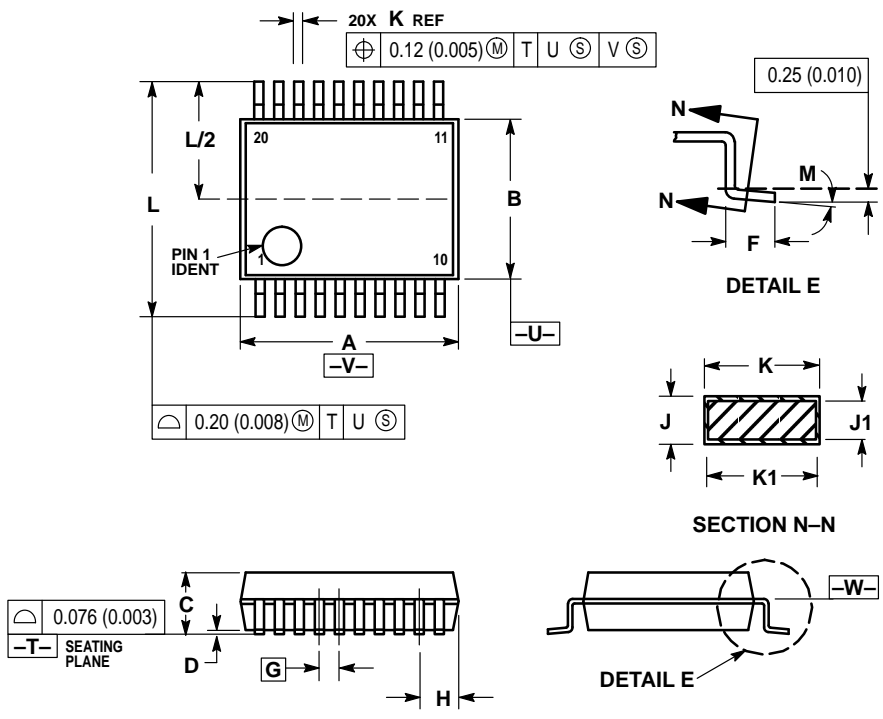
TEST	SWITCH
t_{PLH} , t_{PHL}	Open
t_{PZL} , t_{PLZ}	7V
t_{PZH} , t_{PHZ}	Open

$C_L = 50\text{pF}$ or equivalent (Includes jig and probe capacitance)
 $R_L = R_1 = 500\Omega$ or equivalent
 $R_T = Z_{OUT}$ of pulse generator (typically 50Ω)

Figure 2. Test Circuit

OUTLINE DIMENSIONS

SD SUFFIX
 PLASTIC SSOP PACKAGE
 CASE 940C-03
 ISSUE B



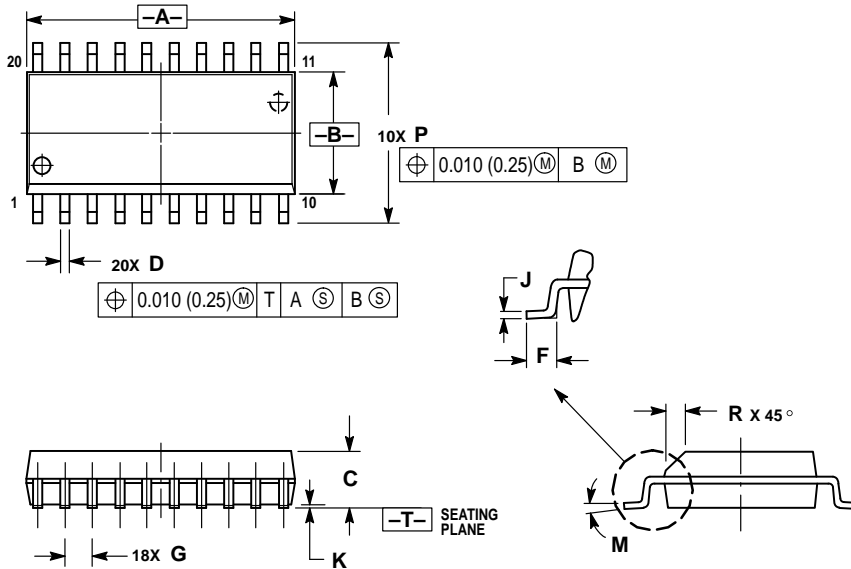
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION/INTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.13 (0.005) TOTAL IN EXCESS OF K DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR INTRUSION SHALL NOT REDUCE DIMENSION K BY MORE THAN 0.07 (0.002) AT LEAST MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	7.07	7.33	0.278	0.288
B	5.20	5.38	0.205	0.212
C	1.73	1.99	0.068	0.078
D	0.05	0.21	0.002	0.008
F	0.63	0.95	0.024	0.037
G	0.65 BSC		0.026 BSC	
H	0.59	0.75	0.023	0.030
J	0.09	0.20	0.003	0.008
J1	0.09	0.16	0.003	0.006
K	0.25	0.38	0.010	0.015
K1	0.25	0.33	0.010	0.013
L	7.65	7.90	0.301	0.311
M	0°	8°	0°	8°

OUTLINE DIMENSIONS

DW SUFFIX
 PLASTIC SOIC PACKAGE
 CASE 751D-04
 ISSUE E



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.150 (0.006) PER SIDE.
 5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.13 (0.005) TOTAL IN EXCESS OF D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.65	12.95	0.499	0.510
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC		0.050 BSC	
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

How to reach us:

USA/EUROPE: Motorola Literature Distribution;
 P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, Toshikatsu Otsuki,
 6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-3521-8315

MFAX: RMFAX0@email.sps.mot.com -TOUCHTONE (602) 244-6609
 INTERNET: <http://Design-NET.com>

HONG KONG: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

