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Status	Product Specification
FAST Products	

FAST 74F242, 74F243

Transceivers

74F242 Quad Transceiver, Inverting (3-State)

74F243 Quad Transceiver (3-State)

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F242	4.3ns	31.2mA
74F243	4.0ns	66mA

ORDERING INFORMATION

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 10\%$; $T_A = 0^\circ C$ to $+70^\circ C$
14-Pin Plastic DIP	N74F242N, N74F243N
14-Pin Plastic SO	N74F242D, N74F243D

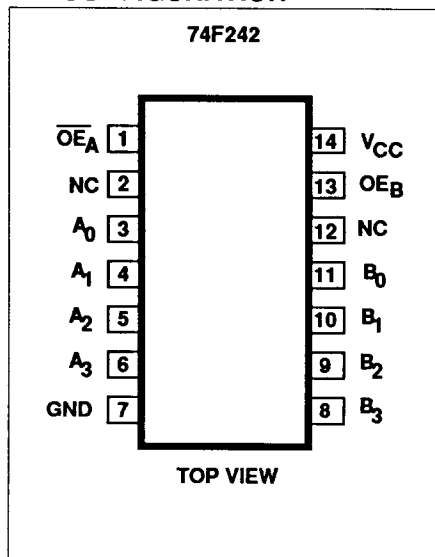
INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	74F(U.L.) HIGH/LOW	LOAD VALUE HIGH/LOW
A_n, B_n	Data inputs ('F242)	3.5/1.67	70 μ A/1.0mA
A_n, B_n	Data inputs ('F243)	3.5/2.67	70 μ A/1.6mA
$\overline{OE}_A$	Output enable input (active Low)	1.0/1.67	20 μ A/1.0mA
OE_B	Output enable input	1.0/1.67	20 μ A/1.0mA
A_n, B_n	Data outputs	750/106.7	15mA/64mA

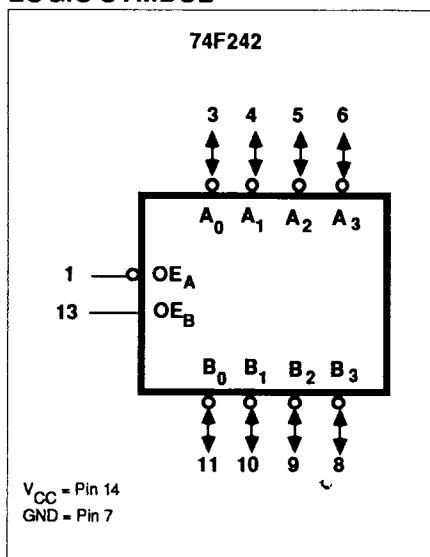
NOTE:

One (1.0) FAST Unit Load is defined as: 20 μ A in the High state and 0.6mA in the Low state.

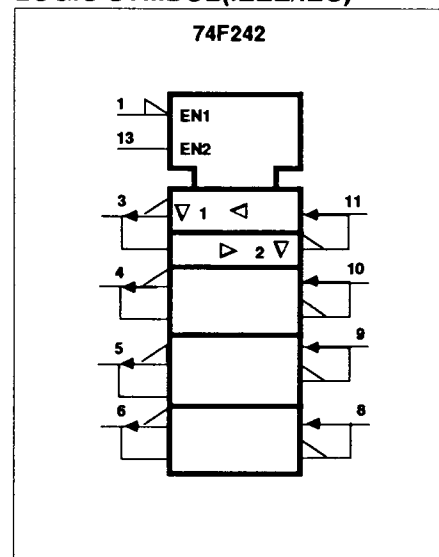
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



Transceivers

FAST 74F242, 74F243

PIN CONFIGURATION

74F243

TOP VIEW

LOGIC SYMBOL

74F243

V_{CC} = Pin 14
GND = Pin 7

LOGIC SYMBOL(IEEE/IEC)

74F243

LOGIC DIAGRAM

74F242

V_{CC} = Pin 14
GND = Pin 7

74F243

FUNCTION TABLE, 74F242

INPUTS		OUTPUTS	
$\overline{OE}_A$	OE_B	A_n	B_n
L	L	INPUT	$B=\overline{A}$
H	L	Z	Z
L	H	a	a
H	H	$A=\overline{B}$	INPUT

FUNCTION TABLE, 74F243

INPUTS		OUTPUTS	
$\overline{OE}_A$	OE_B	A_n	B_n
L	L	INPUT	$B=A$
H	L	Z	Z
L	H	a	a
H	H	$A=B$	INPUT

H = High voltage level
L = Low voltage level
Z = High impedance "off" state
a = This condition is not allowed due to excessive currents

ABSOLUTE MAXIMUM RATINGS (Operation beyond the limits set forth in this table may impair the useful life of the device. Unless otherwise noted these limits are over the operating free-air temperature range.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	-0.5 to +7.0	V
V_{IN}	Input voltage	-0.5 to +7.0	V
I_{IN}	Input current	-30 to +5	mA
V_{OUT}	Voltage applied to output in High output state	-0.5 to + V_{CC}	V
I_{OUT}	Current applied to output in Low output state	128	mA
T_A	Operating free-air temperature range	0 to +70	°C
T_{STG}	Storage temperature	-65 to +150	°C

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RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		Min	Nom	Max	
V_{CC}	Supply voltage	4.5	5.0	5.5	V
V_{IH}	High-level input voltage	2.0			V
V_{IL}	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			-18	mA
I_{OH}	High-level output current			-15	mA
I_{OL}	Low-level output current			64	mA
T_A	Operating free-air temperature range	0		70	°C

DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER		TEST CONDITIONS ¹			LIMITS			UNIT
						Min	Typ ²	Max	
V _{OH}	High-level output voltage		V _{CC} = MIN, V _{IL} = MAX, V _{IH} = MIN	I _{OH} =-3mA	±10%V _{CC}	2.4			V
					±5%V _{CC}	2.7	3.3		V
			V _{CC} = MIN, V _{IL} = MAX, V _{IH} = MIN	I _{OH} =-15mA	±10%V _{CC}	2.0	3.2		V
					±5%V _{CC}	2.0	3.1		V
V _{OL}	Low-level output voltage		V _{CC} = MIN, V _{IL} = MAX, V _{IH} = MIN	I _{OL} =MAX	±10%V _{CC}			0.55	V
					±5%V _{CC}		0.42	0.55	V
V _{IK}	Input clamp voltage		V _{CC} =MIN, I _I = I _{IK}				-0.73	-1.2	V
I _I	Input current at maximum input voltage	A ₀ -A ₃ , B ₀ -B ₃	V _{CC} =MAX, V _I = 5.5V					1	mA
		$\overline{OE}_A$, OE _B	V _{CC} =MAX, V _I = 7.0V					100	μA
I _{IH}	High-level input current	$\overline{OE}_A$, OE _B only	V _{CC} = MAX, V _I = 2.7V					20	μA
I _{IL}	Low-level input current		V _{CC} = MAX, V _I = 0.5V					-1	mA
I _{IH} +I _{OZH}	Off-state output current High-level voltage applied		V _{CC} = MAX, V _O = 2.7V					70	μA
I _{IL} +I _{OZL}	Off-state output current Low-level voltage applied	'F242	V _{CC} = MAX, V _O = 0.5V					-1.0	mA
		'F243						-1.6	mA
I _{OS}	Short-circuit output current ³		V _{CC} = MAX			-100		-225	mA
I _{CC}	Supply current (total)	'F242	I _{CCH}	V _{CC} = MAX			22	35	mA
			I _{CCL}				40	55	mA
			I _{CCZ}				32	45	mA
		'F243	I _{CCH}	V _{CC} = MAX			64	80	mA
			I _{CCL}				64	90	mA
			I _{CCZ}				71	90	mA

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at $V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$.
- Not more than one output should be shorted at a time. For testing I_{OS} , the use of high-speed test apparatus and/or sample-and-hold techniques are preferable in order to minimize internal heating and more accurately reflect operational values. Otherwise, prolonged shorting of a High output may raise the chip temperature well above normal and thereby cause invalid readings in other parameter tests. In any sequence of parameter test, I_{OS} tests should be performed last.

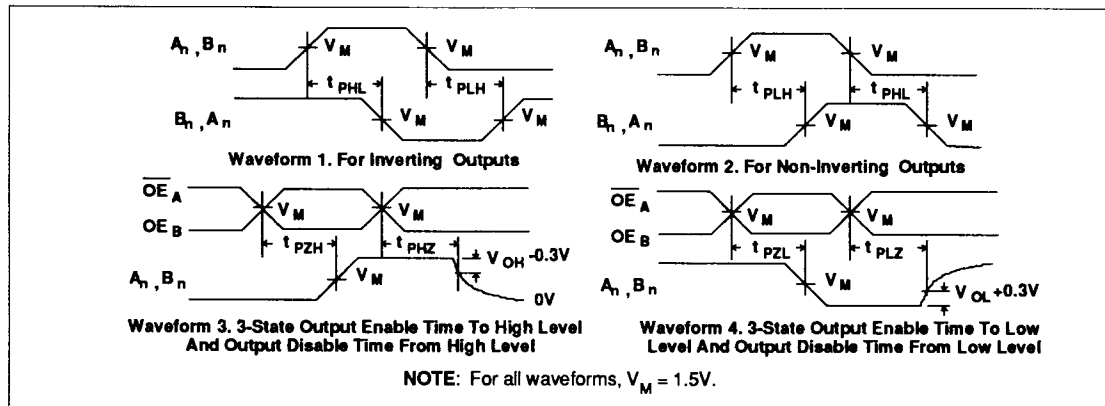
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AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER		TEST CONDITION	LIMITS					UNIT
				$T_A = +25^{\circ}\text{C}$ $V_{CC} = 5\text{V}$ $C_L = 50\text{pF}$ $R_L = 500\Omega$			$T_A = 0^{\circ}\text{C to } +70^{\circ}\text{C}$ $V_{CC} = 5\text{V} \pm 10\%$ $C_L = 50\text{pF}$ $R_L = 500\Omega$		
				Min	Typ	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation delay A_n, B_n to B_n, A_n	74F242	Waveform 1	2.5 2.0	3.5 3.0	6.0 4.5	2.5 2.0	7.0 4.5	ns
t_{PZH} t_{PZL}	Output Enable time to High or Low level		Waveform 3 Waveform 4	3.0 3.5	4.0 6.5	7.0 9.0	3.0 3.5	8.0 10.5	ns
t_{PHZ} t_{PLZ}	Output Disable time from High or Low level		Waveform 3 Waveform 4	3.5 3.5	5.5 6.0	8.5 9.5	3.5 3.5	9.0 11.0	ns
t_{PLH} t_{PHL}	Propagation delay A_n, B_n to B_n, A_n		74F243	Waveform 2	2.5 2.5	4.0 4.0	5.2 5.2	2.0 2.0	6.2 6.5
t_{PZH} t_{PZL}	Output Enable time to High or Low level	Waveform 3 Waveform 4		2.0 2.0	4.5 5.0	5.7 7.5	2.0 2.0	6.7 8.5	ns
t_{PHZ} t_{PLZ}	Output Disable time from High or Low level	Waveform 3 Waveform 4		2.0 2.0	4.0 4.5	6.0 6.0	2.0 2.0	7.0 7.0	ns

AC WAVEFORMS



TEST CIRCUIT AND WAVEFORMS

