

# 54F74F212

## 144-Bit Random Access Memory With 3-State Outputs

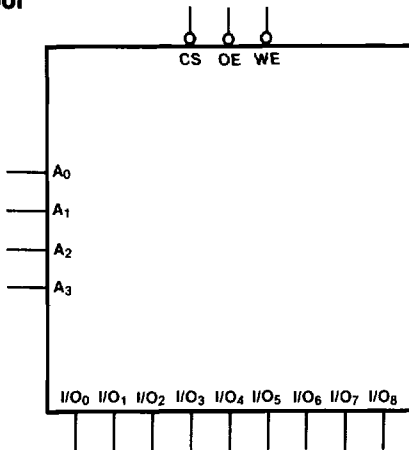
### Description

The 'F212 is a high-speed 144-bit Random Access Memory (RAM) organized as 16 words by 9-bit array. Address inputs are buffered to minimize loading and are fully decoded on chip. The output buffers are active only in the Read mode when Chip Select ( $\overline{CS}$ ) and Output Enable ( $\overline{OE}$ ) are LOW, and Write Enable ( $\overline{WE}$ ) is HIGH; otherwise, the outputs are in the high-impedance state.

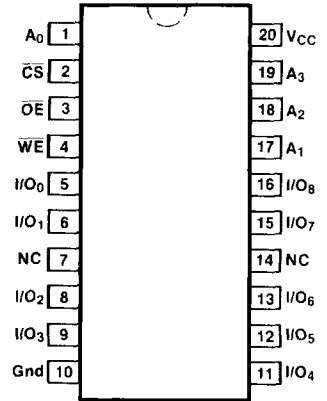
- 3-State Outputs for Bus Applications
- Buffered Inputs for Minimum Loading
- Address Decoding on Chip
- Address Access Time 15 ns Typ
- Chip Select Access Time 8 ns Typ
- Supply Current 80 mA Typ

Ordering Code: See Section 5

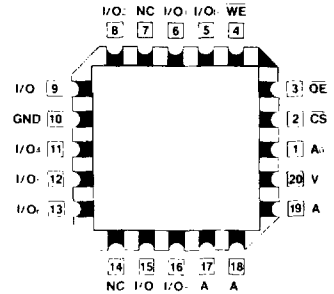
### Logic Symbol



### Connection Diagrams



Pin Assignment  
for DIP and SOIC

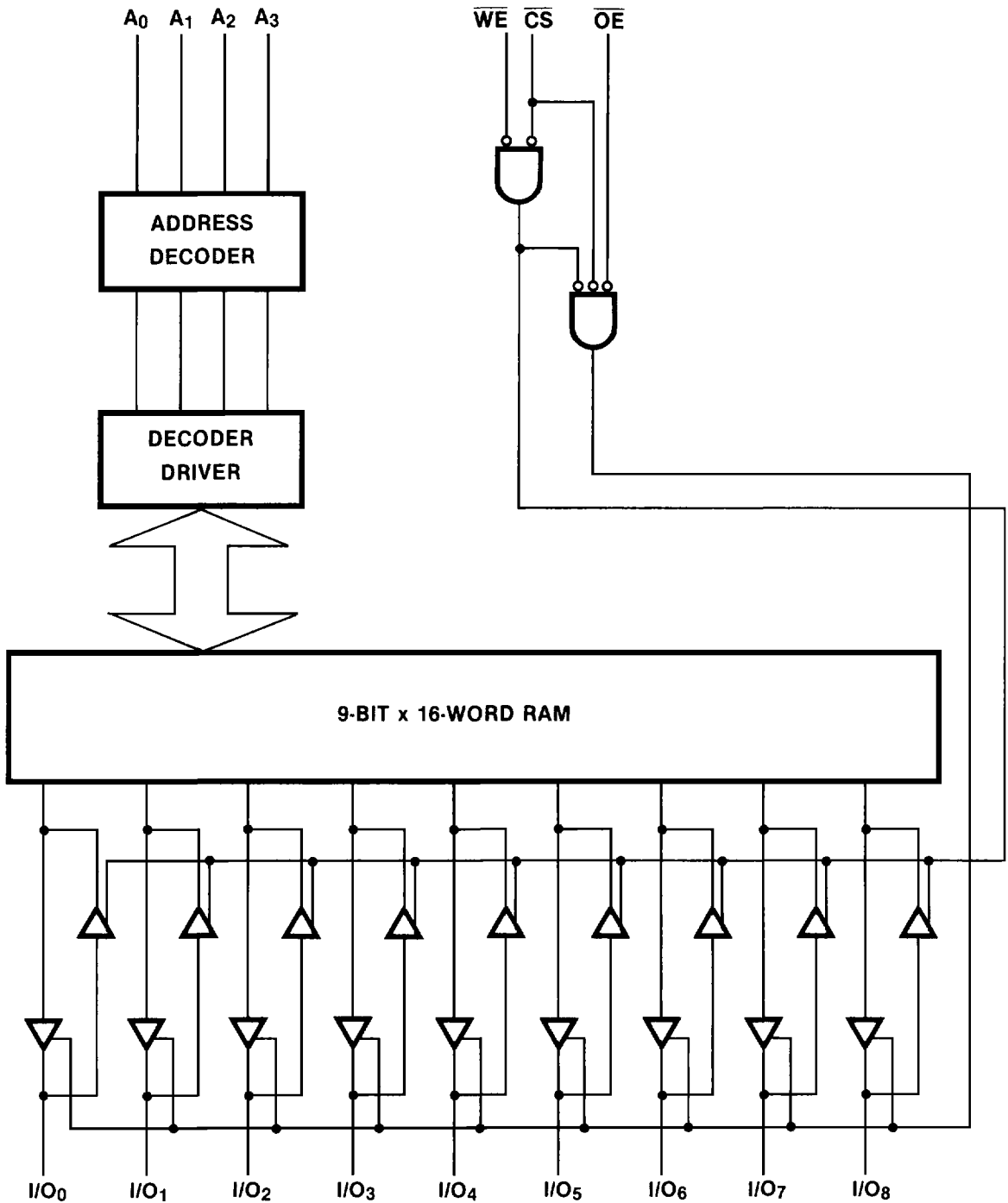


Pin Assignment  
for LCC and PCC

Input Loading/Fan-Out: See Section 3 for U.L. definitions

Pin Names	Description	54F74F(U.L.) HIGH/LOW
$\overline{CS}$	Chip Select	0.5/.75
$\overline{OE}$	Output Enable	0.5/.375
$\overline{WE}$	Write Enable	0.5/.375
$A_n$	Address Inputs	0.5/.375
$I/O_0-I/O_8$	Parallel Data Inputs or 3-State Parallel Outputs	1.75/0.406 75/15 (12.5)

Block Diagram



4

## Function Table

Inputs			Operation	Output
$\overline{CS}$	$\overline{OE}$	$\overline{WE}$		
H	X	X	Inhibit	High Impedance
L	X	L	Write	High Impedance
L	H	H	Read	High Impedance
L	L	H	Read	Read Addressed Memory Location

H = HIGH Voltage Level

L = LOW Voltage Level

X = Immaterial

## DC Characteristics over Operating Temperature Range (unless otherwise specified)

Symbol	Parameter	54F/74F			Units	Conditions
		Min	Typ	Max		
$I_{CC}$	Power Supply Current		80	120	mA	$V_{CC} = \text{Max}$

## AC Characteristics: See Section 3 for waveforms and load configurations

Symbol	Parameter	54F/74F		54F		74F		Units	Fig. No.
		$T_A = +25^\circ\text{C}$ $V_{CC} = +5.0\text{V}$ $C_L = 50\text{pF}$		$T_A, V_{CC} = \text{Mil}$ $C_L = 50\text{pF}$		$T_A, V_{CC} = \text{Com}$ $C_L = 50\text{pF}$			
		Min	Typ Max	Min	Max	Min	Max		
$t_{PLH}$ $t_{PHL}$	Propagation Delay $A_n$ to $O_n$		21.0 28.0					ns	3-1 3-10
$t_{PZH}$ $t_{PZL}$	Enable Time $\overline{CS}$ to $O_n$		13.0 13.0					ns	3-1, 3-12 3-13
$t_{PHZ}$ $t_{PLZ}$	Disable Time $\overline{CS}$ to $O_n$		11.0 11.0					ns	3-1, 3-12 3-13
$t_{PZH}$ $t_{PZL}$	Enable Time $\overline{OE}$ to $O_n$		13.0 13.0					ns	3-1, 3-12 3-13
$t_{PHZ}$ $t_{PLZ}$	Disable Time $\overline{OE}$ to $O_n$		11.0 11.0					ns	3-1, 3-12 3-13
$t_{PZH}$ $t_{PZL}$	Enable Time $\overline{WE}$ to $O_n$		16.0 16.0					ns	3-1, 3-12 3-13
$t_{PHZ}$ $t_{PLZ}$	Disable Time $\overline{WE}$ to $O_n$		13.0 13.0					ns	3-1, 3-12 3-13

**AC Operating Requirements:** See Section 3 for waveforms

Symbol	Parameter	54F/74F	54F	74F	Units	Fig. No.
		$T_A = +25^\circ\text{C}$ $V_{CC} = +5.0\text{ V}$	$T_A, V_{CC} =$ Mil	$T_A, V_{CC} =$ Com		
		Min Typ Max	Min Max	Min Max		
$t_s(\text{H})$ $t_s(\text{L})$	Setup Time, HIGH or LOW $A_n$ to $\overline{\text{WE}}$	0 0			ns	3-16
$t_h(\text{H})$ $t_h(\text{L})$	Hold Time, HIGH or LOW $A_n$ to $\overline{\text{WE}}$	0 0				
$t_s(\text{H})$ $t_s(\text{L})$	Setup Time, HIGH or LOW I/O to $\overline{\text{WE}}$	5.0 5.0			ns	3-14
$t_h(\text{H})$ $t_h(\text{L})$	Hold Time, HIGH or LOW I/O to $\overline{\text{WE}}$	0 0				
$t_s(\text{L})$	Setup Time, LOW $\overline{\text{CS}}$ to $\overline{\text{WE}}$	5.0			ns	3-14
$t_w(\text{L})$	$\overline{\text{WE}}$ Pulse Width, LOW	5.0			ns	3-16