

# 1024-BIT ECL RAM (1024 × 1)

# 10415/10415A/10415B

## DESCRIPTION

The 10415 device is a 1024-word by 1-bit, fully encoded ECL Read/Write Random Access Memory designed for high speed scratch pad, control, and buffer storage applications. The device also includes full address decoding on-chip, separate data in and noninverting data out lines, an active LOW chip select.

- **Address access times:**
  - 10415: 20ns max
  - 10415A: 15ns max
  - 10415B: 10ns max
- **Low power dissipation of 0.7mW/bit typical**
- **Blanked outputs**

## FEATURES

- **Organization: 1024 words × 1 bit**
- **Fully compatible with 10K ECL families**
- **Operating temperature: 0°C to +75°C**

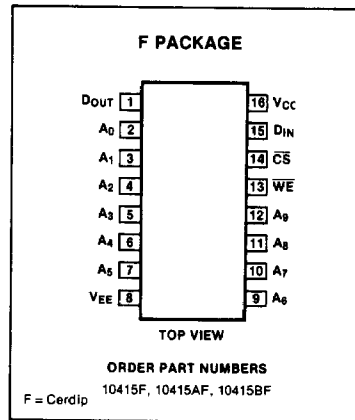
## APPLICATIONS

- **Buffer memory**
- **Scratch pad memory**
- **Writeable microcode store**

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNIT
V <sub>EE</sub> Supply voltage	- 7	Vdc
V <sub>O</sub> Output voltage	+ 0.5 to V <sub>EE</sub>	Vdc
I <sub>O</sub> Output current	- 30	mA
T <sub>A</sub> Operating	0 to + 75	°C
T <sub>stg</sub> Storage	- 55 to + 150	°C

## PIN CONFIGURATION

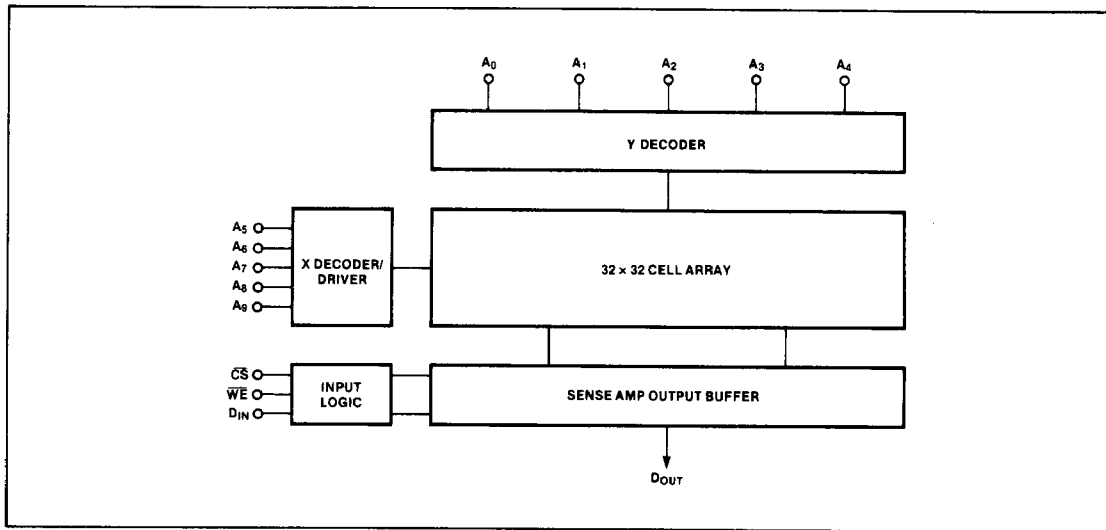


## TRUTH TABLE

INPUTS			OUTPUT	MODE
CS	WE	DI		
H	X	X	L	Disable
L	H	X	D <sub>OUT</sub>	Read
L	L	H	L	Write 1
L	L	L	L	Write 0

H = HIGH voltage level  
L = LOW voltage level  
X = Don't care

## BLOCK DIAGRAM



**1024-BIT ECL RAM (1024 × 1)**

**10415/10415A/10415B**

**DC ELECTRICAL CHARACTERISTICS**  $V_{CC} = 0V, V_{EE} = -5.25V \pm 5\%$ , Output load  $50\Omega$  to  $-2V, 0^\circ C \leq T_A \leq 75^\circ C$

PARAMETER	TEST CONDITIONS	0°C		+25°C		+75°C		UNIT
		Min	Max	Min	Max	Min	Max	
$V_{IH}$ Input voltage HIGH			-0.840		-0.810		-0.720	V
$V_{IL}$ Input voltage LOW		-1.870		-1.850		-1.830		
$V_{IHA}$ Threshold HIGH		-1.145		-1.105		-1.045		
$V_{ILA}$ Threshold LOW			-1.490		-1.475		-1.450	
$V_{OH}$ Output voltage HIGH	$V_{IH} = \text{MAX}$	-1.0	-0.840	-0.960	-0.810	-0.900	-0.720	V
$V_{OL}$ Output voltage LOW	$V_{IL} = \text{MIN}$	-1.870	-1.665	-1.850	-1.650	-1.830	-1.625	
$V_{OHA}$ Threshold HIGH	$V_{IHA}$	-1.020		-0.980		-0.900		
$V_{OLA}$ Threshold LOW	$V_{ILA}$		-1.645		-1.630		-1.605	
$I_{IH}$ Input current HIGH	$V_{IH} = \text{MAX}$		220		220		220	μA
$I_{IL}$ Input current LOW	$V_{IL} = \text{MIN}$	-6		-6		-6		
$I_{IL}$ Input current CS	$V_{IL} = \text{MIN}$	10		10		10		
$I_{EE}$ Supply current	$V_{IL} = \text{MIN}$		150		150		150	mA
$C_{IN}$ Capacitance Input					5			pF
$C_{OUT}$ Capacitance Output					5			

NOTES

1. Voltages are defined with respect to ground, pin 16.
2. Unit is in a test socket or mounted in a printed circuit board with transverse air flow >400 ft/min.
3. DC limits apply after thermal equilibrium has been established.
4. For current measurement, maximum is defined as the maximum absolute value.

**AC ELECTRICAL CHARACTERISTICS**  $V_{CC} = 0V, V_{EE} = -5.2V \pm 5\%, 0^\circ C \leq T_A \leq +75^\circ C, R_L = 50\Omega$  to  $-2V$

PARAMETER	10415			10415A			10415B			UNIT
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$T_{AA}$ Address access time			20			15			10	ns
$T_{BD}$ Chip select recovery time			5			5			5	ns
$T_{BS}$ Chip select access time			5			5			5	ns
$T_{WD}$ Write disable time <sup>1</sup>			6			6			6	ns
$T_{WP}$ Write pulse width	12			10			8			ns
$T_{WR}$ Write recovery time <sup>1</sup>		4.5	10		4.5	10		4.5	10	ns
$T_{WHA}$ Address hold time <sup>1</sup>	3	0		3	0		3	0		ns
$T_{WHC}$ Chip select hold time <sup>1</sup>	2	0		2	0		2	0		ns
$T_{WHD}$ Data hold time <sup>1</sup>	2	0		2	0		2	0		ns
$T_{WSA}$ Address setup time <sup>1</sup>	1	0		1	0		1	0		ns
$T_{WSC}$ Chip select setup time <sup>1</sup>	2	0		2	0		2	0		ns
$T_{WSD}$ Data setup time <sup>1</sup>	2	0		2	0		2	0		ns
$t_f$ Output fall time <sup>2</sup>	0.5	2		0.5	2		0.5	2		ns
$t_r$ Output rise time <sup>2</sup>	0.5	2		0.5	2		0.5	2		ns

NOTES

1. To guarantee a write into the slowest bit.
2. The maximum address access time is guaranteed to be the worst case bit in the memory using a pseudo-random testing pattern.
3. AC limits apply after thermal equilibrium has been established.
4. Unit is in a test socket or mounted on a printed circuit board with transverse air flow >400 ft/min.
5. Setup and hold times are guaranteed for  $T_{WP} \geq T_{WY}$  MIN.
6. All propagation measurements to output are measured from 50% of the input pulse to a valid output level ( $V_{IH}$  MIN or  $V_{IL}$  MAX).
7. Typical values are at  $V_{EE} = -5.2V, T_A = 25^\circ C$  and maximum loading.

