

# 93438 ✓

## ISOPLANAR SCHOTTKY TTL MEMORY

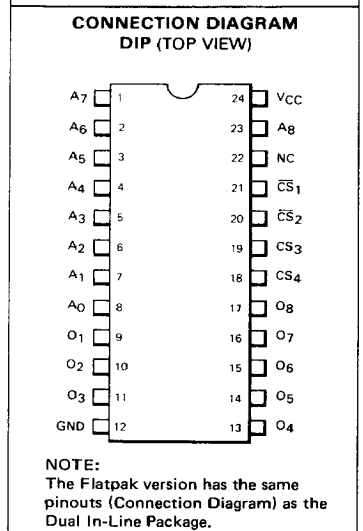
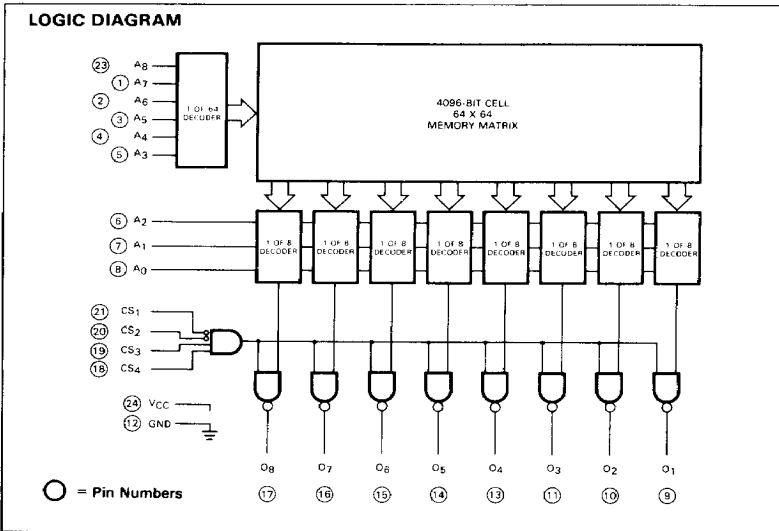
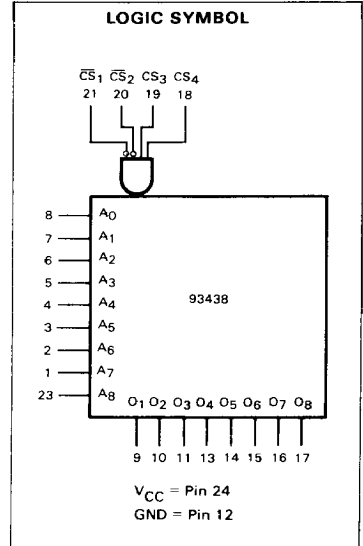
### 512×8-BIT PROGRAMMABLE READ ONLY MEMORY

**DESCRIPTION** – The 93438 is a fully decoded 4096-bit field Programmable ROM organized 512 words by eight bits per word. The 93438 has uncommitted collector outputs. The device is enabled when  $\overline{CS}_1$  and  $\overline{CS}_2$  are LOW and  $CS_3$  and  $CS_4$  are HIGH. The 93438 is supplied with all bits stored as logic "1"s and may be programmed to logic "0"s by following the field programming procedure.

- FULL MIL AND COMMERCIAL RANGES
- FIELD PROGRAMMABLE
- ORGANIZATION - 512 WORDS X 8 BITS
- UNCOMMITTED COLLECTORS
- FULLY DECODED – ON-CHIP ADDRESS DECODER AND BUFFER
- CHIP SELECT INPUTS PROVIDE EASY MEMORY EXPANSION
- WIRED-OR CAPABILITY
- STANDARD 24-PIN DUAL IN-LINE PACKAGE
- NICHROME FUSE LINKS FOR HIGH RELIABILITY

#### PIN NAMES

$A_0 - A_8$	Address Inputs
$\overline{CS}_1, \overline{CS}_2, CS_3, CS_4$	Chip Select Inputs
$O_1 - O_8$	Data Outputs



# FAIRCHILD ISOPLANAR SCHOTTKY TTL MEMORY • 93438

## ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to +150°C
Temperature (Ambient) Under Bias	-55°C to +125°C
V <sub>CC</sub>	-0.5 V to +7.0 V
Input Voltage	-0.5 V to +5.5 V
Current into Output Terminal	100 mA
Output Voltages	-0.5 V to 4.0 V

## GUARANTEED OPERATING RANGES

PART NUMBERS	SUPPLY VOLTAGE (V <sub>CC</sub> )			AMBIENT TEMPERATURE
	MIN	TYP	MAX	
93438XC	4.75 V	5.0 V	5.25 V	0°C to +75°C
93438XM	4.50 V	5.0 V	5.50 V	-55°C to +125°C

X = package type, F for Flatpak, D for Ceramic Dip, P for Plastic Dip. See Packaging Information Section for packages available on this product.

**FUNCTIONAL DESCRIPTION** – The 93438 is a bipolar field Programmable Read Only Memory (PROM) organized 512 words by eight bits per word. Open collector outputs are provided on the 93438 for use in wired-OR systems. Chip Select follows the logic equation:  $\overline{CS}_1 \cdot \overline{CS}_2 \cdot CS_3 \cdot CS_4 = CS$ ; i.e., if  $\overline{CS}_1$  and  $\overline{CS}_2$  are both active LOW and  $CS_3$  and  $CS_4$  are both active HIGH, all eight outputs are enabled; for any other condition all eight outputs are disabled.

The read function is identical to that of a conventional bipolar ROM. That is, a binary address is applied to the A<sub>0</sub> through A<sub>g</sub> inputs, the chip is selected, and data is valid at the outputs after t<sub>AA</sub> nanoseconds.

Programming (selectively opening nichrome fuse links) is accomplished by following the procedure in Chapter 6, page 6-14.

## DC CHARACTERISTICS: Over guaranteed operating ranges unless otherwise note.

SYMBOL	CHARACTERISTIC	LIMITS			UNITS	CONDITIONS
		MIN	TYP (Note 1)	MAX		
I <sub>CEX</sub>	Output Leakage Current			50	μA	V <sub>CC</sub> = MAX, V <sub>CEX</sub> = 4.0 V, 0°C to +75°C Address any HIGH Output
I <sub>CEX</sub>	Output Leakage Current			100	μA	V <sub>CC</sub> = MAX, V <sub>CEX</sub> = 4.0 V, -55°C to +125°C Address any HIGH Output
V <sub>OL</sub>	Output LOW Voltage		0.30	0.45	V	V <sub>CC</sub> = MIN, I <sub>OL</sub> = 16 mA A <sub>0</sub> = +10.8 V, A <sub>1</sub> – A <sub>8</sub> = HIGH
V <sub>IH</sub>	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage for All Inputs
V <sub>IL</sub>	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage for All Inputs
I <sub>F</sub>	Input LOW Current I <sub>FA</sub> (Address Inputs) I <sub>FCS</sub> (Chip Select Inputs)		-160 -160	-250 -250	μA μA	V <sub>CC</sub> = MAX, V <sub>F</sub> = 0.45 V
I <sub>R</sub>	Input HIGH Current I <sub>RA</sub> (Address Inputs) I <sub>RCS</sub> (Chip Select Input)			40 40	μA μA	V <sub>CC</sub> = MAX, V <sub>R</sub> = 2.4 V
I <sub>CC</sub>	Power Supply Current		130	175	mA	V <sub>CC</sub> = MAX, Outputs Open Inputs Grounded and Chip Selected
C <sub>O</sub>	Output Capacitance		7		pF	V <sub>CC</sub> = 5.0 V, V <sub>O</sub> = 4.0 V, f = 1.0 MHz
C <sub>IN</sub>	Input Capacitance		4		pF	V <sub>CC</sub> = 5.0 V, V <sub>O</sub> = 4.0 V, f = 1.0 MHz
V <sub>C</sub>	Input Clamp Diode Voltage			-1.2	V	V <sub>CC</sub> = MIN, I <sub>A</sub> = -18 mA

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**AC CHARACTERISTICS:**  $T_A = 0^\circ\text{C}$  to  $+75^\circ\text{C}$ ,  $V_{CC} = 5.0\text{ V} \pm 5\%$

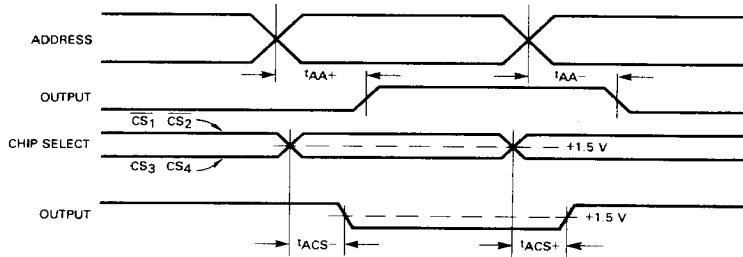
SYMBOL	CHARACTERISTIC	LIMITS			UNITS	CONDITIONS
		MIN	TYP (Note 1)	MAX		
$t_{AA-}$ $t_{AA+}$	Address to Output Access Time		35	55	ns	See Figure 1
			35	55	ns	
$t_{ACS-}$ $t_{ACS+}$	Chip Select Access Time		15	25	ns	
			15	25	ns	

**AC CHARACTERISTICS:**  $T_A = -55^\circ\text{C}$  to  $+125^\circ\text{C}$ ,  $V_{CC} = 5.0\text{ V} \pm 10\%$

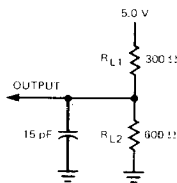
SYMBOL	CHARACTERISTIC	LIMITS			UNITS	CONDITIONS
		MIN	TYP (Note 1)	MAX		
$t_{AA-}$ $t_{AA+}$	Address to Output Access Time		35	70	ns	See Figure 1
			35	70	ns	
$t_{ACS-}$ $t_{ACS+}$	Chip Select Access Time		15	30	ns	
			15	30	ns	

Note (1): Typical values are at  $V_{CC} = 5.0\text{ V}$ ,  $+25^\circ\text{C}$  and max loading.

**AC WAVEFORM**



**AC TEST OUTPUT LOAD**



15 mA Load

**Fig. 1**

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