DPS8256

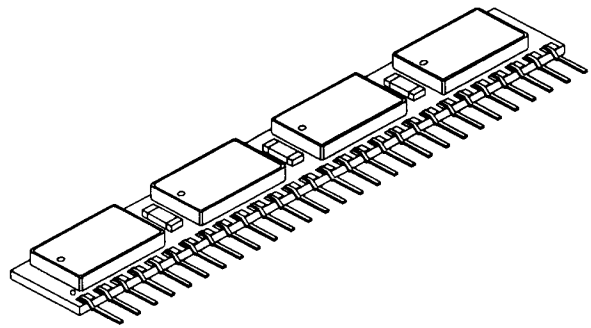
256K X 1 CMOS SRAM MODULE

NOT RECOMMENDED FOR NEW DESIGNS

DESCRIPTION:

The DPS8256 is a 256K X 1 high-speed, low-power static RAM module comprised of four 64K X 1 monolithic SRAM's, and decoupling capacitors surface mounted on a single inline thick film substrate.

The DPS8256 operates from a single +5V supply and all input and output pins are completely TTL-compatible. The DPS8256 is best suited for high speed military computers and signal processing applications.

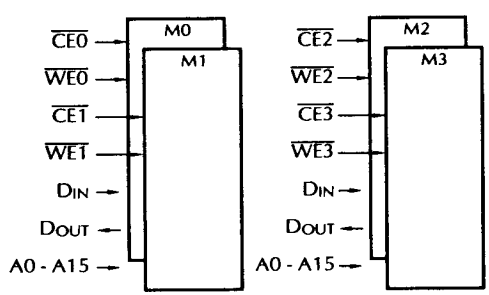


FEATURES:

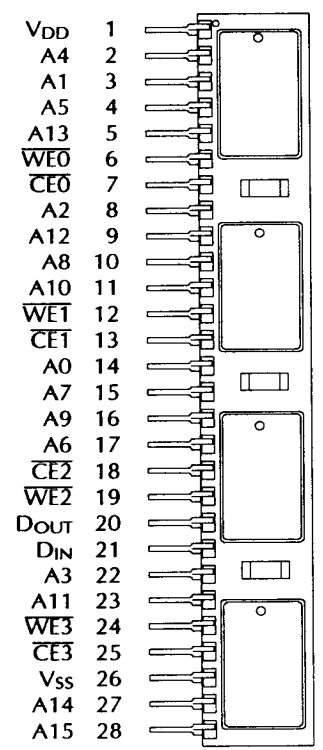
- Access Times: 25, 35, 45, 55ns (max.)
- Low Power Dissipation
- Completely Static Operation - No Clock or Refresh Needed
- Three State Output
- All Inputs and Outputs are TTL-Compatible
- 28-Pin SIP

PIN NAMES	
A0 - A15	Address Inputs
D_{IN}	Data Input
D_{OUT}	Data Output
$\overline{CE0}$ - $\overline{CE3}$	Chip Enables
$\overline{WE0}$ - $\overline{WE3}$	Write Enables
V_{DD}	Power (+5V)
V_{SS}	Ground

FUNCTIONAL BLOCK DIAGRAM



PIN-OUT DIAGRAM



14

RECOMMENDED OPERATING RANGE [1]					
Symbol	Characteristic	Min.	Typ.	Max.	Unit
V_{DD}	Supply Voltage	4.5	5.0	5.5	V
V_{IH}	Input HIGH Voltage	2.2		V_{DD}+0.5	V
V_{IL}	Input LOW Voltage	-0.5[2]		0.8	V

CAPACITANCE [4]: T_A = 25°C, F = 1.0MHz				
Symbol	Parameter	Max.	Unit	Condition
C_{ADR}	Address Input	60	pF	V_{IN} = 0V
C_{CE}	Chip Enable	25		
C_{WE}	Write Enable	25		
$C_{I/O}$	Data Input/Output	70		

ABSOLUTE MAXIMUM RATINGS [3]			
Symbol	Parameter	Value	Unit
T_{STC}	Storage Temperature	-65 to + 150	°C
T_{BIAS}	Temperature Under Bias	-55 to + 125	°C
V_{DD}	Supply Voltage [1]	-0.5 to + 7.0	V
$V_{I/O}$	Input/Output Voltage [1]	-0.5 to V_{DD} + 0.5	V

TRUTH TABLE				
Mode	$\overline{CE}$	$\overline{WE}$	I/O Pin	Supply Current
Not Selected	H	X	HIGH-Z	Standby
Read	L	H	D_{OUT}	Active
Write	L	L	D_{IN}	Active

H=HIGH L=LOW X=Don't Care

DC OPERATING CHARACTERISTICS: Over operating ranges					
Symbol	Characteristics	Test Conditions	LIMITS		Unit
			Min.	Max.	
I_{IN}	Input Leakage Current	V_{IN} = 0V to V_{DD}	-40	+40	µA
I_{OUT}	Output Leakage Current	$V_{I/O}$ = 0V to V_{DD}, $\overline{CE}$ or $\overline{OE}$ = V_{IH}, or $\overline{WE}$ = V_{IL}	-40	+40	µA
I_{CC1}	Operating Power Supply Current	$\overline{CE}$ = V_{IL}, f = 0 Outputs Open		270	mA
I_{CC2}	Dynamic Operating Supply Current	Outputs Open $\overline{CE}$ = V_{IL}, f = max.		335	mA
I_{SB1}	Standby Supply Current (TTL)	$\overline{CE}$ = V_{IH}		220	mA
I_{SB2}	Full Standby Supply Current (CMOS)	$\overline{CE}$ ≥ V_{DD} -0.2V, V_{IN} ≥ V_{DD} -0.2V or V_{IN} ≤ V_{SS} +0.2V		100	mA
V_{OL}	Output Low Voltage	V_{OL} = 8.0mA		0.4	V
V_{OH}	Output High Voltage	V_{OH} = -4.0mA	2.4		V

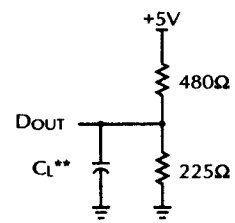
NOTE: Dense-Pac has other specialized suppliers that may provide better A.C. or D.C. Characteristics.

AC TEST CONDITIONS	
Input Pulse Levels	0V to 3.0V
Input Pulse Rise and Fall Times	5ns*
Input and Output Timing Reference Levels	1.5V

* Transient between 0.8V and 2.2V.

Figure 1. Output Load

** Including Probe and Jig Capacitance.



Output Load		
Load	**C_L**	**Parameters Measured**
1	30 pF	except t_{CLZ}, t_{CHZ}, t_{WHZ}, and t_{WLZ}
2	5 pF	t_{CLZ}, t_{CHZ}, t_{WHZ}, and t_{WLZ}

AC OPERATING CONDITIONS AND CHARACTERISTICS - READ CYCLE: Over operating ranges [6]

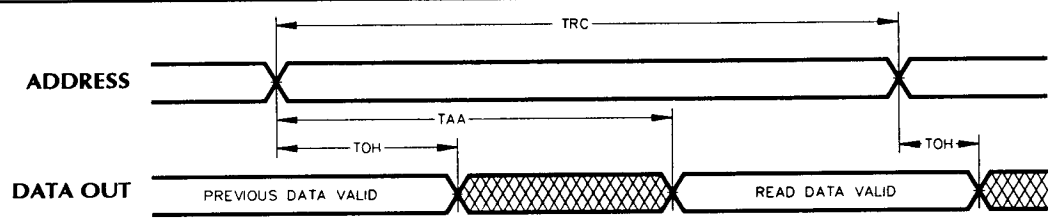
No.	Symbol	Parameter	-25		-35		-45		-55		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	t_{RC}	Read Cycle Time	25		35		45		55		ns
2	t_{AA}	Address Access Time		25		35		45		55	ns
3	t_{CO}	Chip Enable to Output Valid		25		35		45		55	ns
4	t_{OH}	Output Hold for Address Change	5		5		5		5		ns
5	t_{CLZ}	Chip Enable to Output in LOW-Z [4, 5]	5		5		5		5		ns
6	t_{CHZ}	Chip Enable to Output in HIGH-Z [4, 5]		15		20		35		35	ns

AC OPERATING CONDITIONS AND CHARACTERISTICS - WRITE CYCLE: Over operating ranges [7]

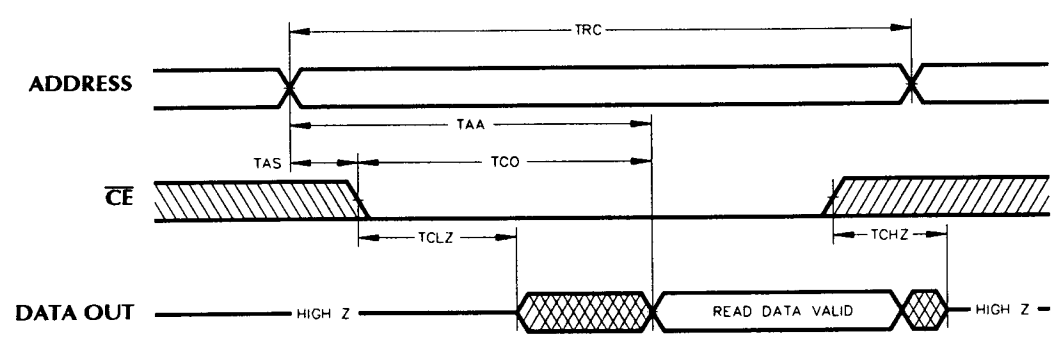
No.	Symbol	Parameter	-25		-35		-45		-55		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
10	t_{WC}	Write Cycle Time	25		35		45		55		ns
11	t_{AW}	Address Valid to End of Write	20		30		40		50		ns
12	t_{CW}	Chip Enable to End of Write	20		30		40		50		ns
13	t_{DW}	Data Valid to End of Write	25		25		25		25		ns
14	t_{DH}	Data Hold Time	0		0		0		0		ns
15	t_{WP}	Write Pulse Width	15		20		25		35		ns
16	t_{AS}	Address Set-up Time***	5		5		5		5		ns
17	t_{AH}	Address Hold Time	5		5		5		5		ns
18	t_{WHZ}	Write Enable to Output in HIGH-Z [4, 5]		20		20		25		25	ns
19	t_{WLZ}	Write Enable to Output in LOW-Z [4, 5]	5		5		5		5		ns

*** Valid for both Read and Write Cycles.

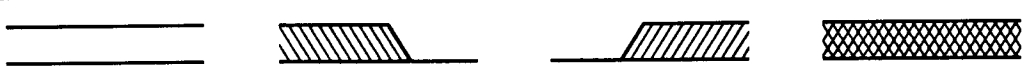
READ CYCLE 1: Address Controlled. $\overline{WE}$ is HIGH. $\overline{CE}$ is LOW.



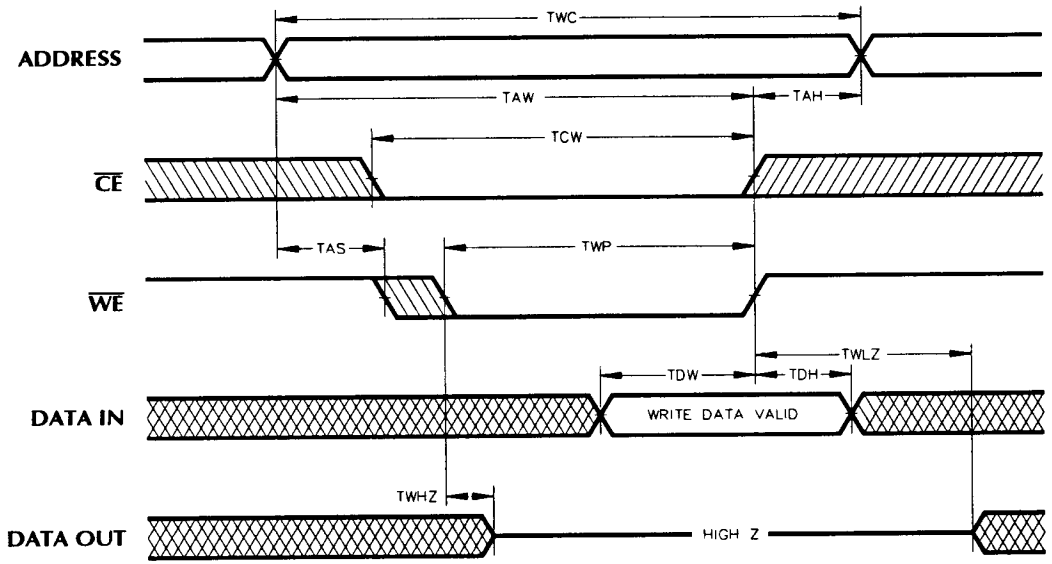
READ CYCLE 2: $\overline{CE}$ Controlled. $\overline{WE}$ is HIGH.



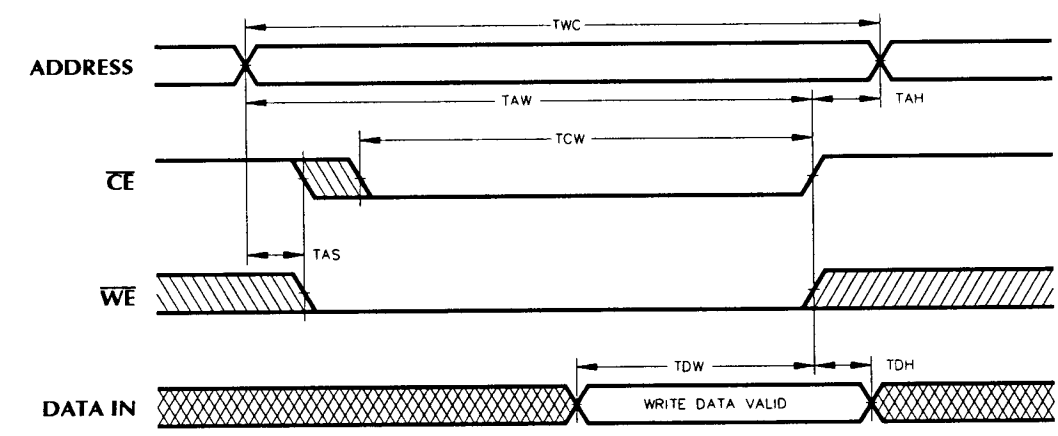
WAVEFORM KEY



WRITE CYCLE 1: $\overline{WE}$ Controlled.



WRITE CYCLE 2: $\overline{CE}$ Controlled.



14

NOT RECOMMENDED FOR NEW DESIGNS

ORDERING INFORMATION

DP S8256 – XX X

PREFIX | DEVICE TYPE | SPEED | GRADE

C	COMMERCIAL	0°C to +70°C
I	INDUSTRIAL	−40°C to +85°C
M	MILITARY	−55°C to +125°C
B *	MIL−PROCESSED	−55°C to +125°C

25	25ns
35	35ns
45	45ns
55	55ns

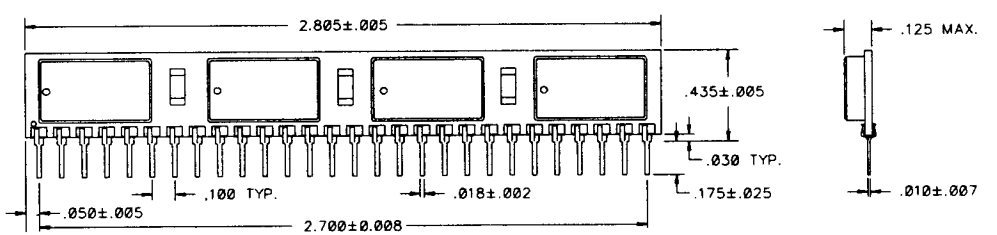
CMOS SRAM 256K X 1 MODULE

* B grade modules built with 883 devices.

NOTES:

1. All voltages are with respect to Vss.
2. -3.0V min. for pulse width less than 20ns (V_{IL} min. = -0.5V at DC level).
3. Stresses greater than those under **ABSOLUTE MAXIMUM RATINGS** may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.
4. This parameter is guaranteed and not 100% tested.
5. Transition is measured at the point of ±500mV from steady state voltage.
6. When $\overline{CE}$ is LOW and $\overline{WE}$ is HIGH, I/O pins are in the output state,and input signals of opposite phase to the outputs must not be applied.
7. The outputs are in a high impedance state when $\overline{WE}$ is LOW.

MECHANICAL DRAWING



Dense-Pac Microsystems, Inc.
7321 Lincoln Way • Garden Grove, California 92641-1428
(714) 898-0007 • (800) 642-4477 (Outside CA) • FAX: (714) 897-1772