High Temperature Static RAM, 4 Megabit (256K X 16)

FEATURES

- Operation to 200°C
- Single 2.7V ~ 5.5V power supply
- Asynchronous Operation
- Low power consumption
- All outputs TTL compatible
- Completely static memory
- Tri-state output
- Popular 50-pin PGA footprint

APPLICATIONS

- High temperature Digital System applications
- Downhole applications
- Avionics
- Automotive applications

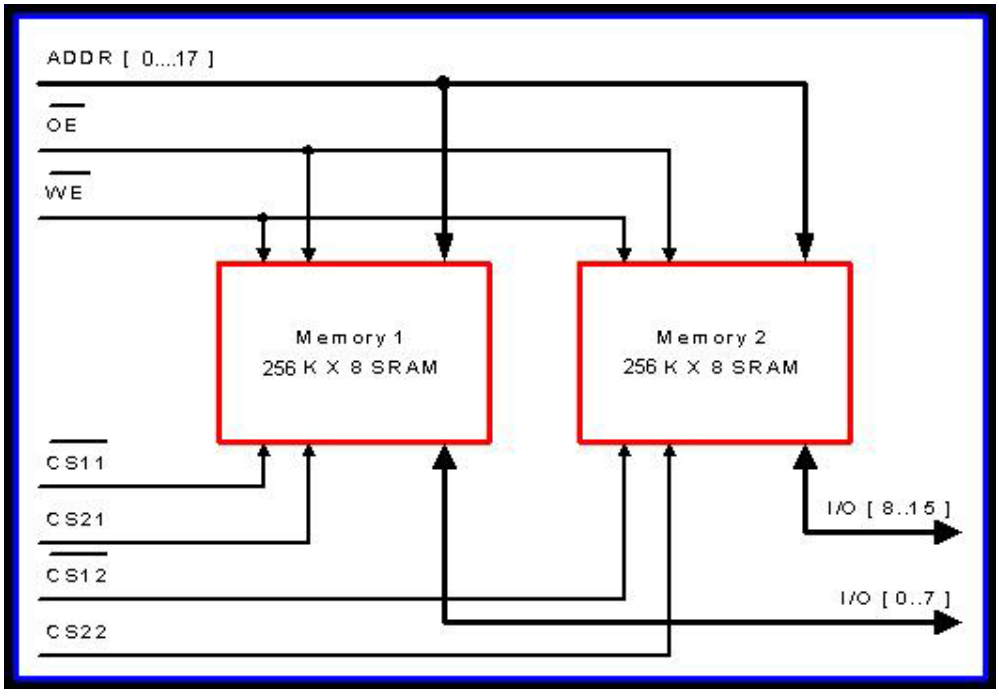
DESCRIPTION

The TX5305 is a CMOS static RAM organized as 262,144 x 16-bit words. The device is packaged in a proprietary 50-pin ceramic PGA package employing the 5 x 10 pin footprint with a pitch of 0.1 inch. Powered by a single 2.7V ~ 5 V supply, the unit offers low standby power dissipation and is suitable for battery backup systems. Output lines are tri-stated; power consumption can be minimized through use of the data retention mode.

The TX5305 is composed of two individual SRAM modules, each with 256K x 8-bit memory. Each module has private enable/select lines permitting store/ access of either 8-bit or 16-bit data.

The TX5305 operates from a single power supply of 2.7V ~ 5.5V and all inputs and outputs are fully TTL compatible. The Tx5305 is designed for use in systems operating in very high temperature environments.

TX5305 FUNCTIONAL BLOCK DIAGRAM



TX5305 – Specifications

ABSOLUTE MAXIMUM RATINGS*

Parameter	Symbol	Value	Unit
Supply Voltage relative to V_{ss}	V_{cc}	-0.5 to + 5.5	V
Voltage on any pin relative to V_{ss}	V_T	-0.5 to Vcc + 0.5	V
Operating Temperature Range	T_{opr}	0 to + 200	˚C
Storage Temperature Range	T_{stg}	-55 to + 200	˚C
DC Output Current	I_{out}	50	mA

*Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to the absolute maximum rating conditions for extended period may affect device reliability.

RECOMMENDED DC OPERATING CONDITIONS

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{cc}	2.7	5.5	V
Ground Voltage	V_{ss}	0.0	0.0	V
Input High Voltage	V_{IH}	2.4	V_{CC} + 0.2	V
Input Low Voltage	V_{IL}	-0.2	0.6	V

DC ELECTRICAL CHARACTERISTICS

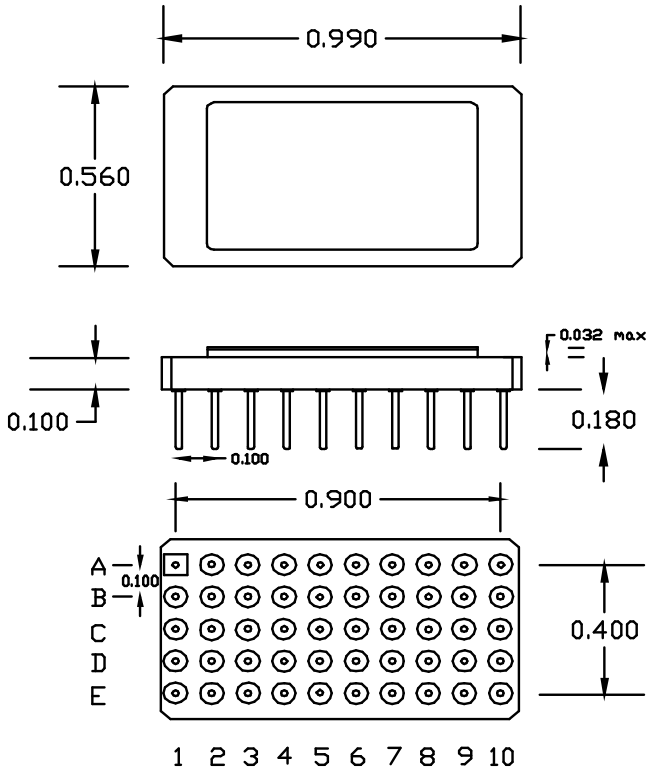
Parameter	Symbol	Value (typ)	Unit
Input Leakage Current, $V_{CC} \geqq V_{IN} \geqq V_{SS}$	I_{LI}	2.0	µA
Output Leakage Current	I_{LO}	2.0	µA
Operating Supply Current	I_{CC}	60	mA
Standby Supply Current	I_{SB1}	1.0	mA
Data Retention Supply Current, V_{cc} = 3.0	I_{DR}	0.2	µA
V_{cc} = 2.0	I_{DR}	0.2	µA
Output Voltage Low	V_{OL}	0.4	V
Output Voltage High	V_{OH}	2.4	V
V_{CC} for data retention	V_{DR}	1.5	V
Chip deselect to data retention time	t_{CDR}	0	ns
Read Cycle Time	t_{RC}	70	ns
Write Cycle Time	t_{WC}	70	ns
Input Capacitance	C_{IN}	6	pF
Input/Output Capacitance	$C_{I/O}$	8	pF

TX5305 PACKAGE INFORMATION

TRUTH TABLE **For 256K x 16 bit operation**

Mode	CS21/CS22	CS11/CS12	*WE	*OE	I/O Pin	Supply Current
Not Selected	L	X	X	X	High-Z	Standby
Not Selected	X	H	X	X	High-Z	Standby
Output Disable	H	L	H	H	High-Z	Active
Read	H	L	H	L	Data Output	Active
Write	H	L	L	X	Data Input	Active

H = High Voltage, L = Low Voltage, X = Don't Care



TOP VIEW

SIDE VIEW

BOTTOM VIEW

TX5305 PACKAGE PIN INFORMATION

	A	B	C	D	E
1	N.C.	A17	N.C.	N.C.	$\overline{CE12}$
2	Vss	N.C.	N.C.	CS22	Vcc
3	N.C.	A16	$\overline{WE}$	CS21	A15
4	A14	A12	A7	A8	A13
5	A6	A5	$\overline{OE}$	A11	A9
6	A4	A3	A2	$\overline{CE11}$	A10
7	A1	A0	I/O13	I/O12	I/O11
8	I/O10	I/O9	I/O8	I/O15	I/O14
9	Vss	I/O1	I/O3	I/O5	Vcc
10	I/O0	I/O2	I/O4	I/O6	I/O7

WARNING! Static Sensitive Device.

The TX5305 is a hybrid network that includes several sensitive components. These components can be damaged or destroyed by discharge of static electricity. The discharge of static electricity is commonly referred to as Electrostatic Discharge (ESD).

The TX5305 can be protected from ESD by the following common procedures used with discrete semiconductors, namely:

1. Always store units in closed conductive containers
2. All personnel that handle units must wear static dissipative outer garments and must be electrically grounded
3. Always use a grounded soldering iron when making electrical connections
4. Worktables must have grounded dissipative covering.

ESD can cause subtle problems that have longer term, damaging affect.