128Kx8 3.3V MONOLITHIC SRAM

*PRELIMINARY**

FEATURES

- Access Times 15, 17, 20, 25, 35ns
- Revolutionary, Center Power/Ground Pinout JEDEC Approved
  - 32 lead Ceramic SOJ (Package 101)
  - 32 lead Ceramic Flat Pack (Package 220)**
- Evolutionary, Corner Power/Ground Pinout JEDEC Approved
  - 32 pin Ceramic DIP (Package 300)
- 32 pin, Rectangular Ceramic Leadless Chip Carrier (Package 601)
- MIL-STD-883 Compliant Devices Available
- Commercial, Industrial and Military Temperature Range
- 3.3 Volt Power Supply
- Low Power CMOS
- TTL Compatible Inputs and Outputs

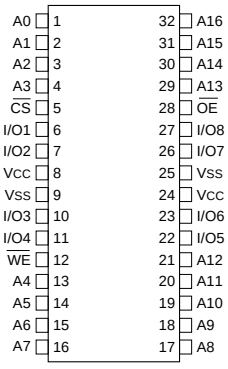
* *This data sheet describes a product under development, not fully characterized, and is subject to change without notice.*

** *Package under developement.*

REVOLUTIONARY PINOUT

32 CSOJ (DR)
32 FLATPACK (FR)**

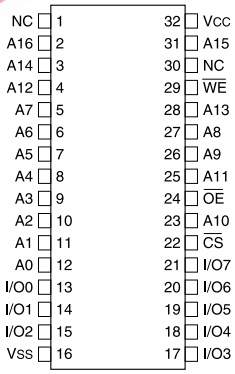
TOP VIEW



EVOLUTIONARY PINOUT

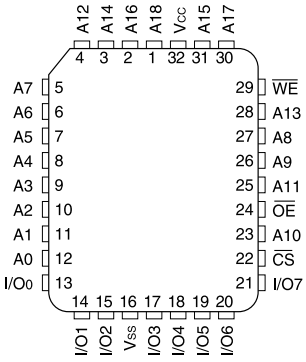
32 DIP (C)

TOP VIEW



32 CLCC

TOP VIEW



PIN DESCRIPTION

A_{0-16}	Address Inputs
I/O_{0-7}	Data Input/Outputs
$\overline{CS}$	Chip Select
$\overline{OE}$	Output Enable
$\overline{WE}$	Write Enable
V_{CC}	+3.3V Power
V_{SS}	Ground
NC	Not Connected

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Operating Temperature	T_A	-55	+125	°C
Storage Temperature	T_{STG}	-65	+150	°C
Signal Voltage Relative to GND	V_G	-0.5	Vcc+0.5	V
Junction Temperature	T_J		150	°C
Supply Voltage	V_{CC}	-0.5	5.5	V

TRUTH TABLE

$\overline{CS}$	$\overline{OE}$	$\overline{WE}$	Mode	Data I/O	Power
H	X	X	Standby	High Z	Standby
L	L	H	Read	Data Out	Active
L	X	L	Write	Data In	Active
L	H	H	Out Disable	High Z	Active

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	3.0	3.6	V
Input High Voltage	V_{IH}	2.2	V_{CC} + 0.3	V
Input Low Voltage	V_{IL}	-0.3	+0.8	V
Operating Temp. (Mil.)	T_A	-55	+125	°C

CAPACITANCE

(T_A = +25°C)

Parameter	Symbol	Condition	Max	Unit
Input capacitance	C_{IN}	V_{IN} = 0V, f = 1.0MHz	20	pF
Output capacitance	C_{OUT}	V_{OUT} = 0V, f = 1.0MHz	20	pF

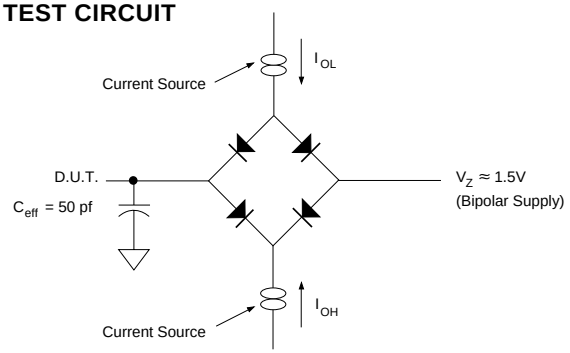
This parameter is guaranteed by design but not tested.

DC CHARACTERISTICS

(V_{CC} = 3.3V ±0.3V, V_{SS} = 0V, T_A = -55°C to +125°C)

Parameter	Sym	Conditions	Min	Max	Units
Input Leakage Current	I_{LI}	V_{CC} = 3.3, V_{IN} = GND to V_{CC}		10	µA
Output Leakage Current	I_{LO}	$\overline{CS}$ = V_{IH}, $\overline{OE}$ = V_{IH}, V_{OUT} = GND to V_{CC}		10	µA
Operating Supply Current (x 32 Mode)	I_{CC}	$\overline{CS}$ = V_{IL}, $\overline{OE}$ = V_{IH}, f = 5MHz, V_{CC} = 3.3		120	mA
Standby Current	I_{SB}	$\overline{CS}$ = V_{IH}, $\overline{OE}$ = V_{IH}, f = 5MHz, V_{CC} = 3.3		8	mA
Output Low Voltage	V_{OL}	I_{OL} = 8mA		0.4	V
Output High Voltage	V_{OH}	I_{OH} = -4.0mA	2.4		V

AC TEST CIRCUIT



AC TEST CONDITIONS

Parameter	Typ	Unit
Input Pulse Levels	V_{IL} = 0, V_{IH} = 2.5	V
Input Rise and Fall	5	ns
Input and Output Reference Level	1.5	V
Output Timing Reference Level	1.5	V

NOTES:
V_Z is programmable from -2V to +7V.
I_{OL} & I_{OH} programmable from 0 to 16mA.
Tester Impedance Z_0 = 75 Ω.
V_Z is typically the midpoint of V_{OH} and V_{OL}.
I_{OL} & I_{OH} are adjusted to simulate a typical resistive load circuit.
ATE tester includes jig capacitance.

AC CHARACTERISTICS

(V_{CC} = 3.3V, T_A = -55°C to +125°C)

Parameter	Symbol	-15		-17		-20		-25		-35		Units
Read Cycle		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Read Cycle Time	t_{RC}	15		17		20		25		35		ns
Address Access Time	t_{AA}		15		17		20		25		35	ns
Output Hold from Address Change	t_{OH}	0		0		0		0		0		ns
Chip Select Access Time	t_{ACS}		15		17		20		25		35	ns
Output Enable to Output Valid	t_{OE}		10		11		12		15		20	ns
Chip Select to Output in Low Z	t_{CLZ}[1]	5		5		5		5		5		ns
Output Enable to Output in Low Z	t_{OLZ}[1]	5		5		5		5		5		ns
Chip Disable to Output in High Z	t_{CHZ}[1]		8		9		10		12		15	ns
Output Disable to Output in High Z	t_{OHZ}[1]		8		9		10		12		15	ns

1. This parameter is guaranteed by design but not tested.

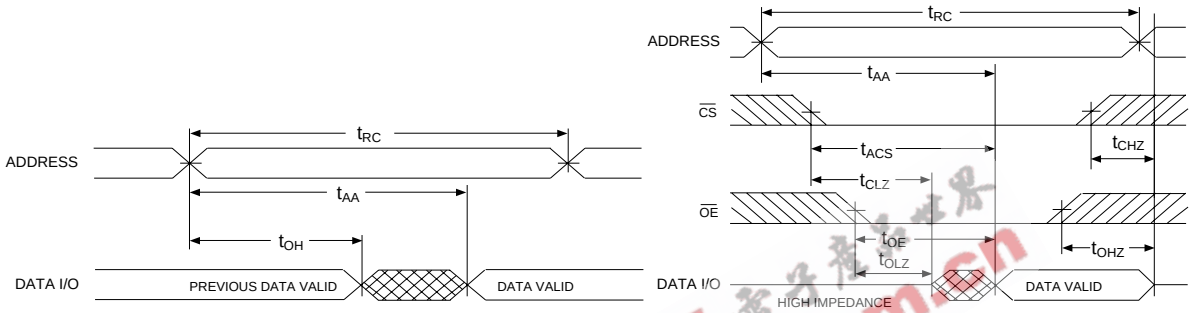
AC CHARACTERISTICS

(V_{CC} = 3.3V, T_A = -55°C to +125°C)

Parameter	Symbol	-15		-17		-20		-25		-35		Units
Write Cycle		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Write Cycle Time	t_{WC}	15		17		20		25		35		ns
Chip Select to End of Write	t_{CW}	13		14		15		20		30		ns
Address Valid to End of Write	t_{AW}	13		14		15		20		30		ns
Data Valid to End of Write	t_{DW}	10		11		12		15		18		ns
Write Pulse Width	t_{WP}	13		14		15		20		30		ns
Address Setup Time	t_{AS}	0		0		0		0		0		ns
Address Hold Time	t_{AH}	0		0		0		0		0		ns
Output Active from End of Write	t_{OW}[1]	5		5		5		5		5		ns
Write Enable to Output in High Z	t_{WHZ}[1]		8		9		10		10		15	ns
Data Hold Time	t_{DH}	0		0		0		0		0		ns

1. This parameter is guaranteed by design but not tested.

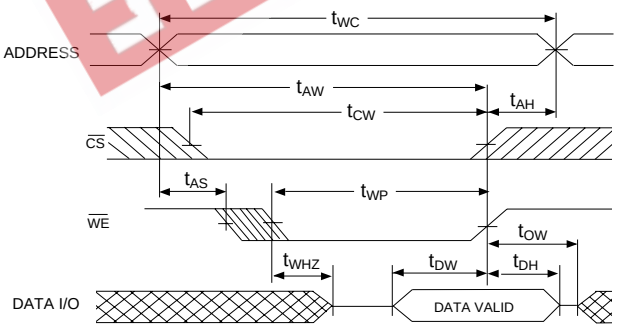
TIMING WAVEFORM - READ CYCLE



READ CYCLE 1 ($\overline{CS}$ = $\overline{OE}$ = V_{IL}, $\overline{WE}$ = V_{IH})

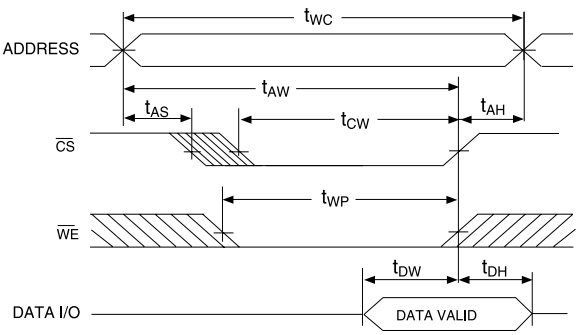
READ CYCLE 2 ($\overline{WE}$ = V_{IH})

WRITE CYCLE - $\overline{WE}$ CONTROLLED



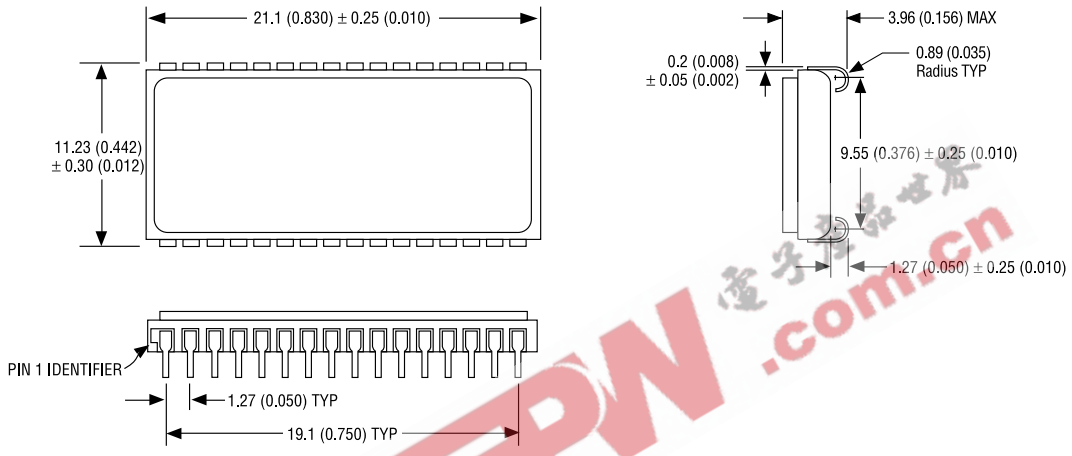
WRITE CYCLE 1, $\overline{WE}$ CONTROLLED

WRITE CYCLE - $\overline{CS}$ CONTROLLED



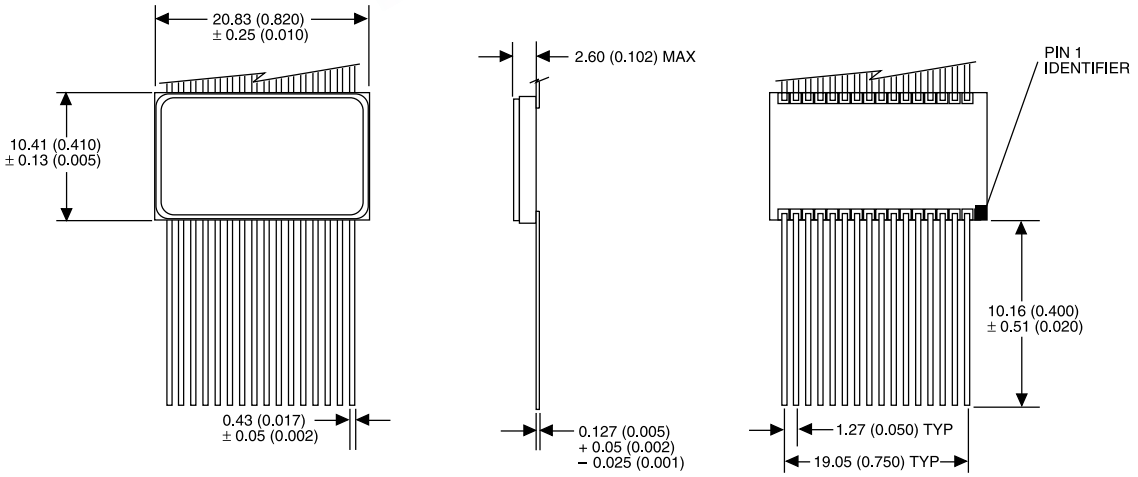
WRITE CYCLE 2, $\overline{CS}$ CONTROLLED

PACKAGE 101: 32 LEAD, CERAMIC SOJ



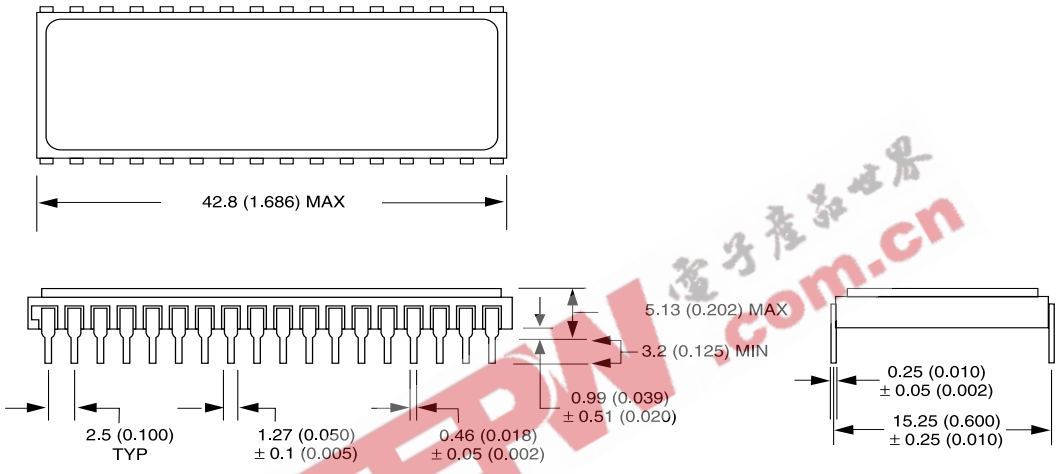
ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

PACKAGE 220: 32 LEAD, CERAMIC FLAT PACK



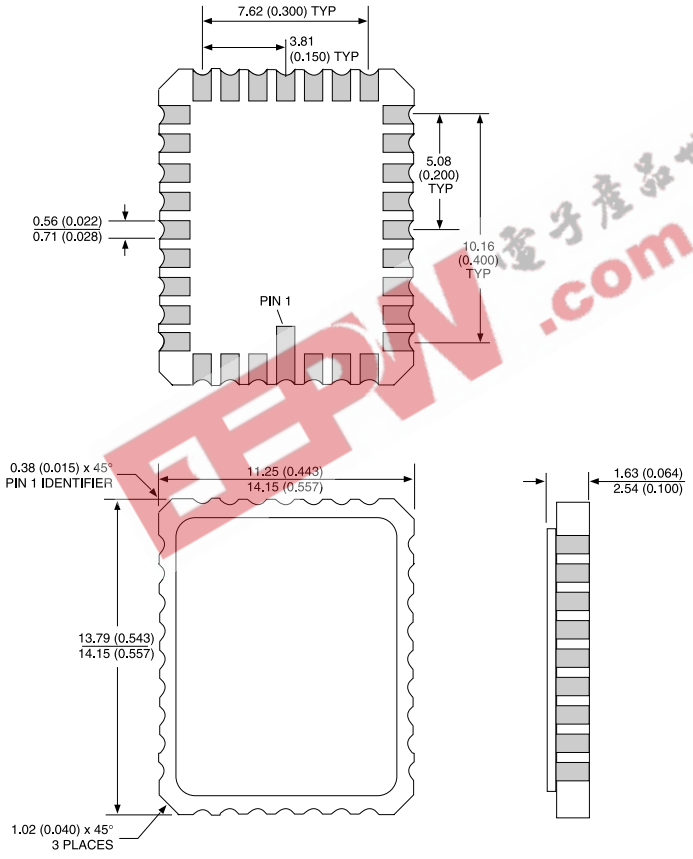
ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

PACKAGE 300: 32 PIN, CERAMIC DIP, SINGLE CAVITY SIDE BRAZED



ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

PACKAGE 601: 32 PIN, RECTANGULAR CERAMIC LEADLESS CHIP CARRIER



ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

ORDERING INFORMATION

W M S 128K8 V - XXX X X X

LEAD FINISH:
- Blank = Gold plated leads
- A = Solder dip leads

DEVICE GRADE:
- M = Military Screened -55°C to +125°C
- I = Industrial -40°C to +85°C
- C = Commercial 0°C to +70°C

PACKAGE:
- C = 32 Pin Ceramic .600" DIP (Package 300)
- CL = 32 Pin Rectangular Ceramic Leadless Chip Carrier (Package 601)
- DR = 32 Lead Ceramic SOJ (Package 101) Revolutionary
- FR = 32 Lead Ceramic Flat Pack (Package 220**) Revolutionary

ACCESS TIME (ns)

IMPROVEMENT MARK:
- Low Voltage Supply 3.3V ± 10%

ORGANIZATION, 128K x 8

SRAM

MONOLITHIC

WHITE ELECTRONIC DESIGNS CORP.

** *Package under developement.*