512Kx8 MONOLITHIC SRAM

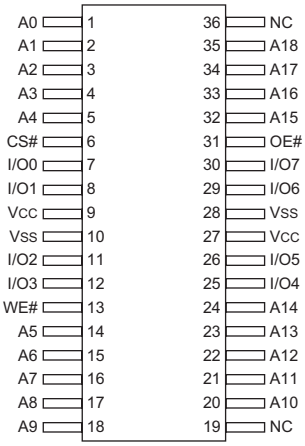
FEATURES

- Access Times 15, 17, 20ns
- Revolutionary, Center Power/Ground Pinout JEDEC Approved
  - 36 lead Ceramic SOJ (Package 100)
  - 36 lead Ceramic Flat Pack (Package 226)
- Evolutionary, Corner Power/Ground Pinout JEDEC Approved
  - 32 pin Ceramic DIP (Package 300)
  - 32 lead Ceramic SOJ (Package 101)
  - 32 lead Ceramic Thinpack™ Flat Pack (Package 321)
- 32 pin, Rectangular Ceramic Leadless Chip Carrier (Package 601)
- Low Power CMOS
- Low Voltage Operation
  - 3.3V ± 10% Power Supply
- Commercial, Industrial and Military Temperature Range
- TTL Compatible Inputs and Outputs
- Fully Static Operation:
  - No clock or refresh required
- Three State Output

* This product is subject to change without notice.

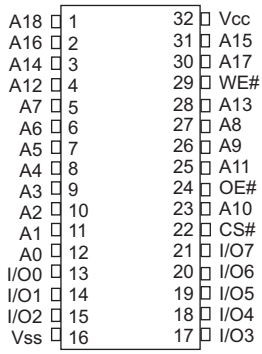
REVOLUTIONARY PINOUT

36 FLAT PACK
36 CSOJ
TOP VIEW

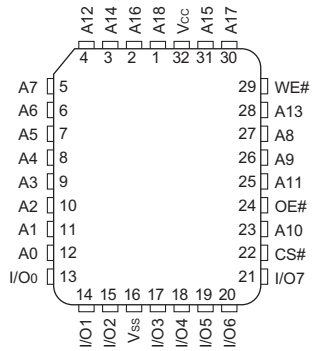


EVOLUTIONARY PINOUT

32 DIP
32 CSOJ (DE)
32 FLAT PACK (FF)
TOP VIEW



32 CLCC
TOP VIEW



PIN DESCRIPTION

A0-18	Address Inputs
I/O 0-7	Data Input/Output
CS#	Chip Select
OE#	Output Enable
WE#	Write Enable
Vcc	Power Supply
Vss	Ground

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Operating Temperature	T_A	-55	+125	°C
Storage Temperature	T_{STG}	-65	+150	°C
Signal Voltage Range to GND	V_G	-0.5	4.6	V
Junction Temperature	T_J		150	°C
Supply Voltage	V_{CC}	-0.5	4.6	V

TRUTH TABLE

CS#	OE#	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	Acvive

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	Conditions	Max	Unit
Input capacitance	C_{IN}	V_{IN} = 0 V, f = 1.0 MHz	12	pF
Output capacitance	C_{OUT}	V_{OUT} = 0 V, f = 1.0 MHz	12	pF

This parameter is guaranteed by design but not tested.

DC CHARACTERISTICS - CMOS COMPATIBLE

V_{CC} = 5.0V, GND = 0V, -55°C ≤ T_A ≤ 125°C

Parameter	Symbol	Conditions	Min	Max	Unit
Input Leakage Current	I_{LI}	V_{CC} = 3.6, V_{IN} = GND to V_{CC}		10	µA
Output Leakage Current	I_{LO}	CS# = V_{IH}, OE# = V_{IH}, V_{OUT} = GND to V_{CC}		10	µA
Operating Supply Current	I_{CC}	CS# = V_{IH}, OE# = V_{IH}, f = 5MHz, V_{CC} = 3.6		100	mA
Standby Current	I_{SS}	CS# = V_{IH}, OE# = V_{IH}, f = 5MHz, V_{CC} = 3.6		50	mA
Output Low Voltage	V_{OL}	I_{OL} = 4.0mA		0.4	V
Output High Voltage	V_{OH}	I_{OH} = -4.0mA	2.4		V

AC CHARACTERISTICS

V_{CC} = 5.0V, GND = 0V, -55°C ≤ T_A ≤ 125°C

Parameter Read Cycle	Symbol	-15		-17		-20		Unit
		Min	Max	Min	Max	Min	Max	
Read Cycle Time	t_{RC}	15		17		20		ns
Address Access Time	t_{AA}		15		17		20	ns
Output Hold from Address Change	t_{OH}	0		0		0		ns
Chip Select Access Time	t_{ACS}		15		17		20	ns
Output Enable to Output Valid	t_{OE}		8		8		10	ns
Chip Select to Output in Low Z	t_{CLZ1}	1		1		1		ns
Output Enable to Output in Low Z	t_{OLZ1}	0		0		0		ns
Chip Disable to Output in High Z	t_{CHZ1}		8		8		10	ns
Output Disable to Output in High Z	t_{OHZ1}		8		8		10	ns

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

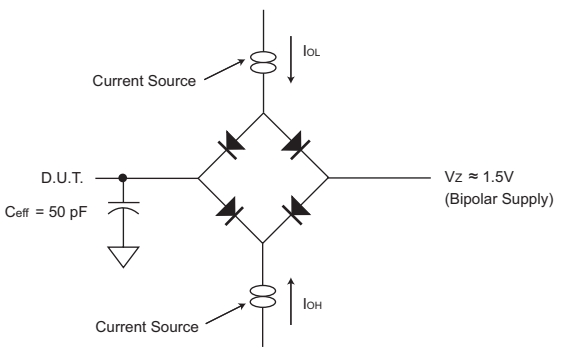
AC CHARACTERISTICS

V_{CC} = 5.0V, GND = 0V, -55°C ≤ T_A ≤ 125°C

Parameter Write Cycle	Symbol	-15		-17		-20		Unit
		Min	Max	Min	Max	Min	Max	
Write Cycle Time	t_{WC}	15		17		20		ns
Chip Select to End of Write	t_{CW}	12		12		14		ns
Address Valid to End of Write	t_{AW}	12		12		14		ns
Data Valid to End of Write	t_{DW}	9		9		10		ns
Write Pulse Width	t_{WP}	12		14		14		ns
Address Setup Time	t_{AS}	0		0		0		ns
Address Hold Time	t_{AH}	0		0		0		ns
Output Active from End of Write	t_{OW1}	2		3		3		ns
Write Enable to Output in High Z	t_{WHZ1}		8		8		9	ns
Data Hold Time	t_{DH}	0		0		0		ns

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

AC TEST CIRCUIT

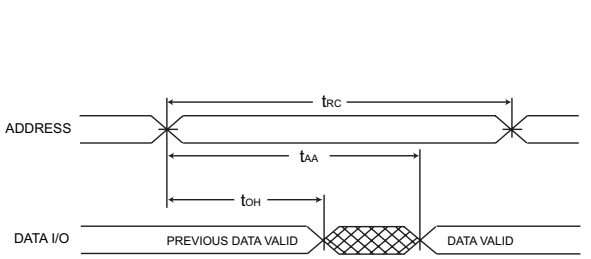


AC TEST CONDITIONS

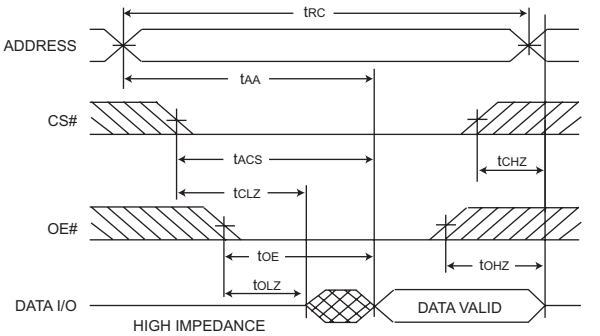
Parameter	Typ	Unit
Input Pulse Levels	V_{IL} = 0, V_{IH} = 2.5	V
Input Rise and Fall	5	ns
Input and Output Reference Level	1.5	V
Output Timing Reference Level	1.5	V

Notes:
V_Z is programmable from -2V to +7V.
I_{OL} & I_{OH} programmable from 0 to 16mA.
Tester Impedance Z0 = 75Ω.
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.

TIMING WAVEFORM - READ CYCLE

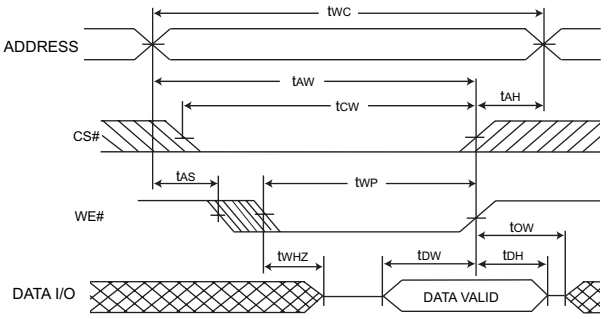


READ CYCLE 1 (CS# = OE# = V_{IL}, WE# = V_{IH})



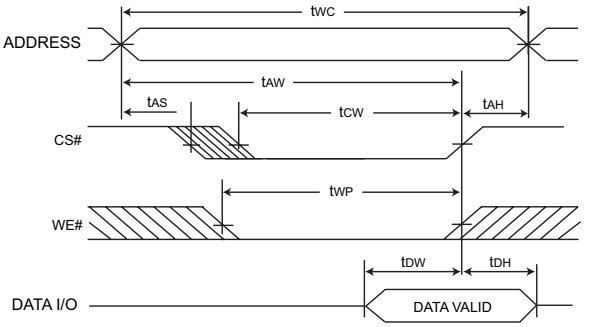
READ CYCLE 2 (WE# = V_{IH})

WRITE CYCLE - WE# CONTROLLED



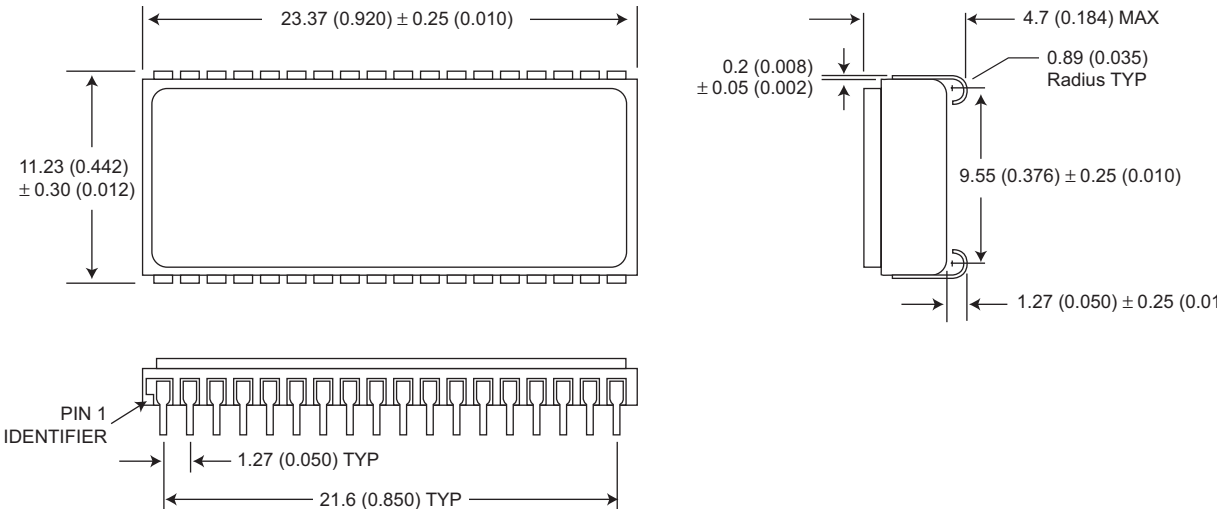
WRITE CYCLE 1, WE# CONTROLLED

WRITE CYCLE - CS# CONTROLLED



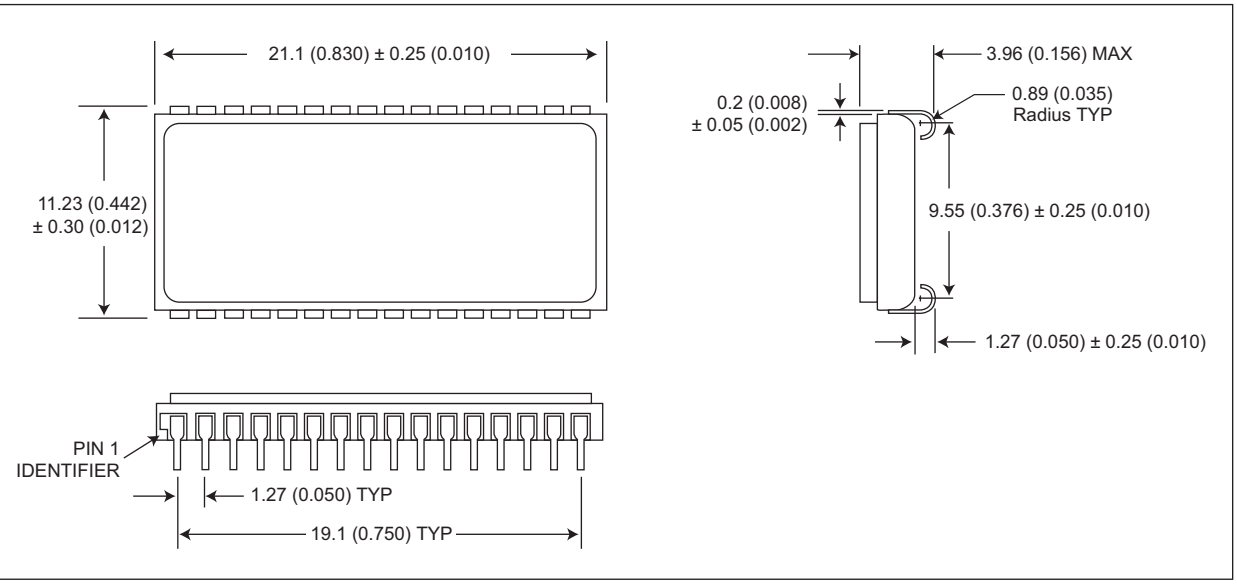
WRITE CYCLE 2, CS# CONTROLLED

PACKAGE 100: 36 LEAD, CERAMIC SOJ



ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

PACKAGE 101: 32 LEAD, CERAMIC SOJ



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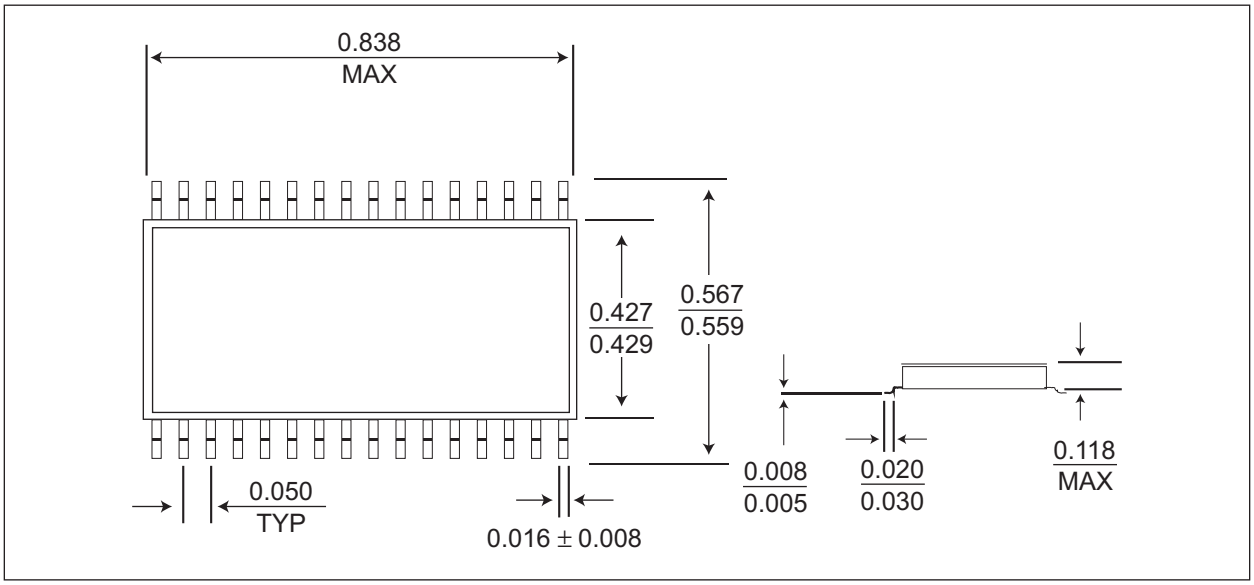
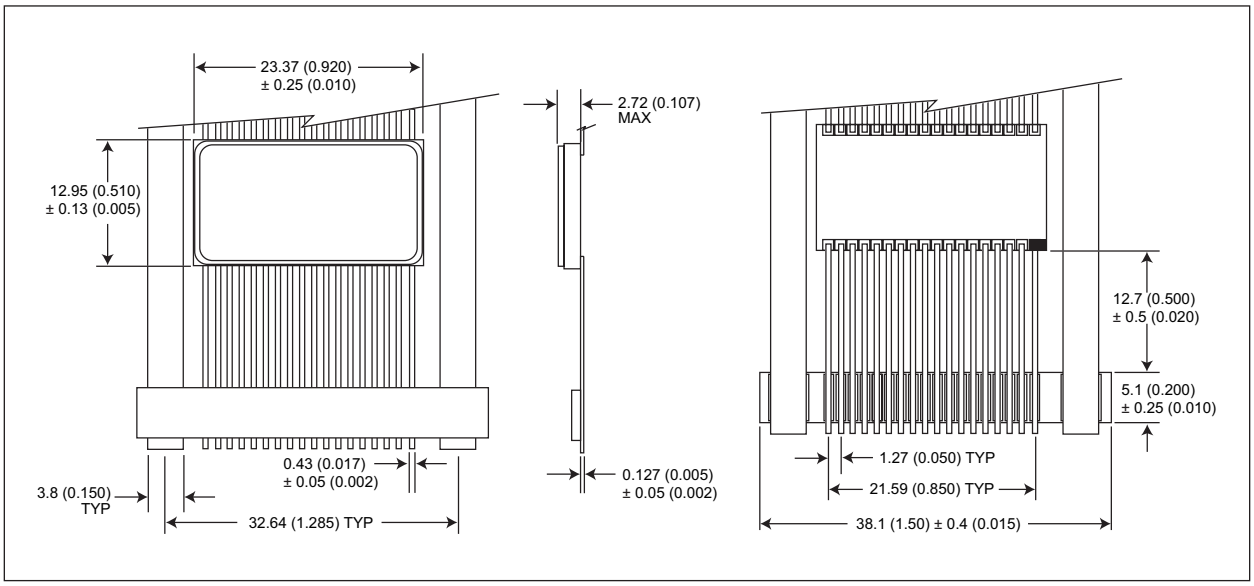
PACKAGE 321: 32 PIN CERAMIC THINPACK™ FLATPACK



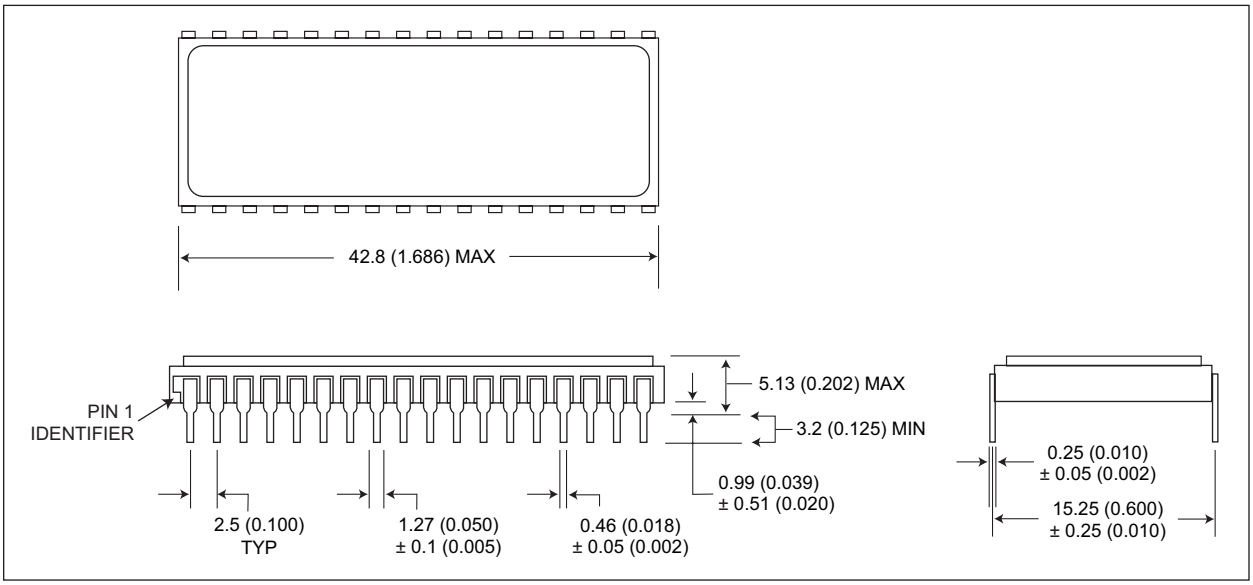
ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

PACKAGE 226: 36 LEAD, CERAMIC FLAT PACK



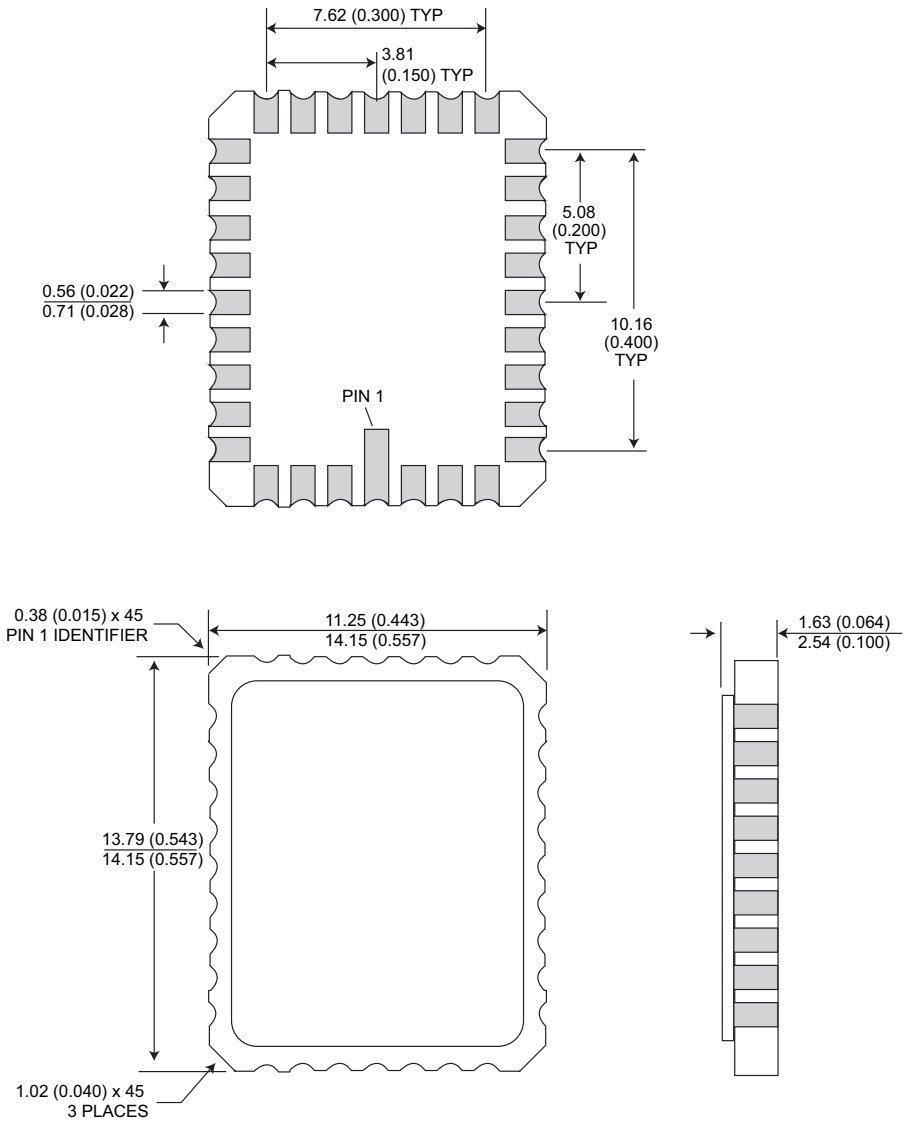
ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

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 512K 8 V - XXX X X X

WHITE ELECTRONIC DESIGNS CORP.

MONOLITHIC

SRAM

ORGANIZATION, 512K x 8

LOW VOLTAGE SUPPLY 3.3V ± 10%

ACCESS TIME (ns)

PACKAGE:

C = 32 pin Ceramic 0.600" DIP (Package 300)
CL = 32 pin Rectangular Ceramic Leadless Chip Carrier (Package 601)
DE = 32 Lead Ceramic SOJ (Package 101) Evolutionary
DJ = 36 Lead Ceramic SOJ (Package 100)
F = 36 Lead Ceramic Flat Pack (Package 226)
FF = 32 Lead Ceramic Thinpack™ Flat Pack (Package 321)

DEVICE GRADE:

M = Military Screened	$-55°C \leq T_A \leq 125°C$
I = Industrial	$-40°C \leq T_A \leq 85°C$
C = Commercial	$0°C \leq T_A \leq 70°C$

LEAD FINISH:

Blank = Gold plated leads
A = Solder dip leads