

FEATURES

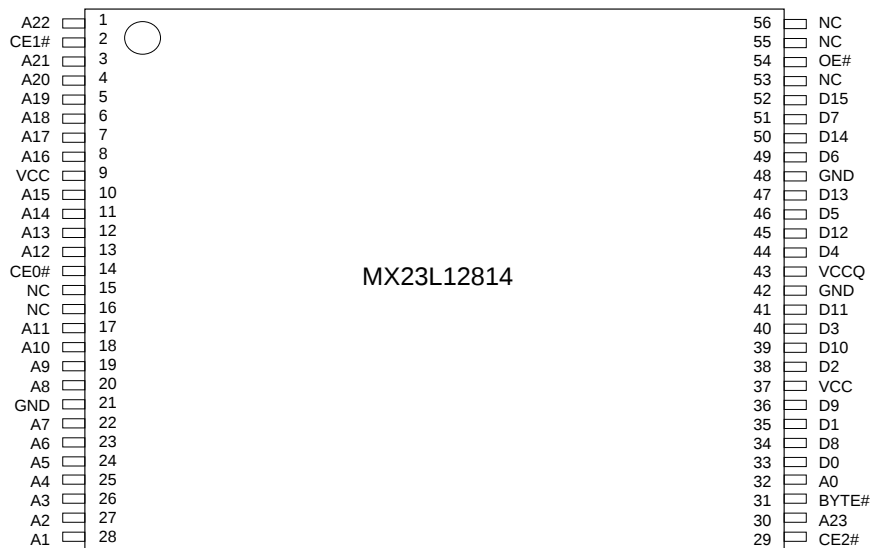
- Bit organization
 - 16Mb x 8 (byte mode)
 - 8Mb x 16 (word mode)
- Fast access time
 - Random access:120/30ns(max.)
- Page size
 - 8 words per page
- Current
 - Operating:50mA
 - Standby:15uA(max.)
- Supply voltage
 - VCC : 2.7 ~ 3.6V
 - VCCQ : 2.7 ~ 3.6V
- Package
 - 56 pin TSOP(14mm x 20mm)
- Temperature
 - -25~85°C

PIN DESCRIPTION

Symbol	Pin Function
A0~A23	Address Inputs, A0 not used in word mode
D0~D15	Data Outputs
CE0#,CE1#,CE2#	Chip Enable Input
OE#	Output Enable Input
BYTE#	Word/Byte mode Selection
VCC	Power Supply Pin
VCCQ	Output VCC Pin
GND	Ground Pin
NC	No Connection

PIN CONFIGURATION

56 Pin TSOP (Top View)



MODE SELECTION

CE#	OE#	BYTE#	D0~D15	D8~D15	Power
Disabled	X	X	High Z	HighZ	Stand-by
Enabled	H	X	High Z	HighZ	Active
Enabled	L	L	D0~D7	HighZ	Active
Enabled	L	H	D0~D7	D8~D15	Active

CHIP ENABLE TRUTH TABLE

CE2#	CE1#	CE0#	DEVICE
L	L	L	Enabled
L	L	H	Disabled
L	H	L	Disabled
L	H	H	Disabled
H	L	L	Enabled
H	L	H	Enabled
H	H	L	Enabled
H	H	H	Disabled

Note: For single-chip applications, CE2#, CE1# can be strapped to GND.

ORDER INFORMATION

Part No.	Speed	Package	Grade	Remark
MX23L12814TC-12	120ns	56 pin TSOP	Commercial	
MX23L12814TC-12G	120ns	56 pin TSOP	Commercial	Pb-free
MX23L12814TI-12	120ns	56 pin TSOP	Industrial	

Note: Industrial grade temperature: -25 ~ 85°C
Commercial grade temperature: 0 ~ 70°C

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings
Voltage on any Pin Relative to VSS	VIN	-0.3V to 3.9V
Ambient Operating Temperature	T _{opr}	-25°C to 85°C
Storage Temperature	T _{stg}	-65°C to 125°C

DC CHARACTERISTICS (Ta = -25°C ~ 85°C, VCC = 2.7V~3.6V)

Item	Symbol	MIN.	MAX.	Conditions
Output High Voltage	VOH	2.4V	-	IOH = -400uA
Output Low Voltage	VOL	-	0.4V	IOL = 1.6mA
Input High Voltage	VIH	2.2V	VCCQ+0.5V	
Input Low Voltage	VIL	-0.5V	0.8V	
Input Leakage Current	ILI	-	5uA	0V, VCC
Output Leakage Current	ILO	-	5uA	0V, VCC
Operating Current	ICC	-	50mA	f=5MHz, CE#=VIL, OE#=VIH all output open
Standby Current (CMOS)	ISTB	-	15uA	CE#>VCC-0.2V
Input Capacitance	CIN	-	10pF	Ta = 25°C, f = 1MHZ
Output Capacitance	COUT	-	10pF	Ta = 25°C, f = 1MHZ

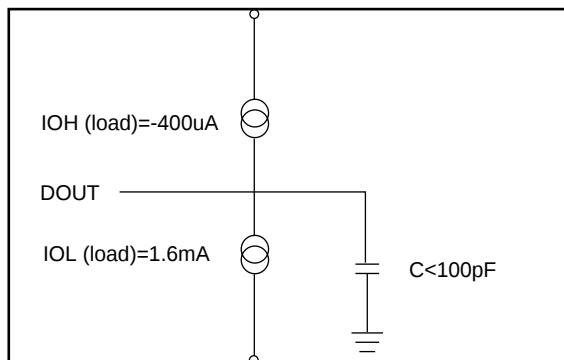
AC CHARACTERISTICS (Ta = -25°C ~ 85°C, VCC = 2.7V~3.6V)

Item	Symbol	23L12814-12	
		MIN.	MAX.
Read Cycle Time	tRC	120ns	-
Address Access Time	tAA	-	120ns
Chip Enable Access Time	tACE	-	120ns
Page Access Time	tPA	-	30ns
Output Enable Time	tOE	-	30ns
Output Hold After Address	tOH	0ns	-
Output High Z Delay	tHZ	-	20ns

Note: Output high-impedance delay (tHZ) is measured from OE# or CE# going high, and this parameter guaranteed by design over the full voltage and temperature operating range - not tested.

AC Test Conditions

Input Pulse Levels	0.4V~2.4V
Input Rise and Fall Times	5ns
Input Timing Level	1.5V
Output Timing Level	1.5V
Output Load	See Figure 100pF output load capacitance



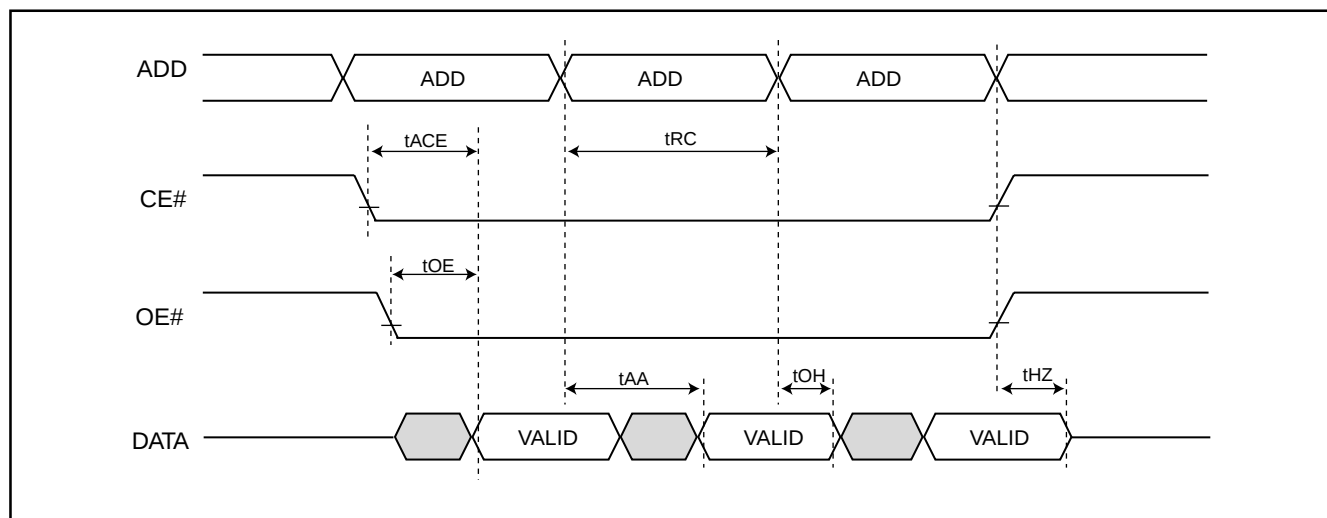
Note: No output loading is present in tester load board.

Active loading is used and under software programming control.

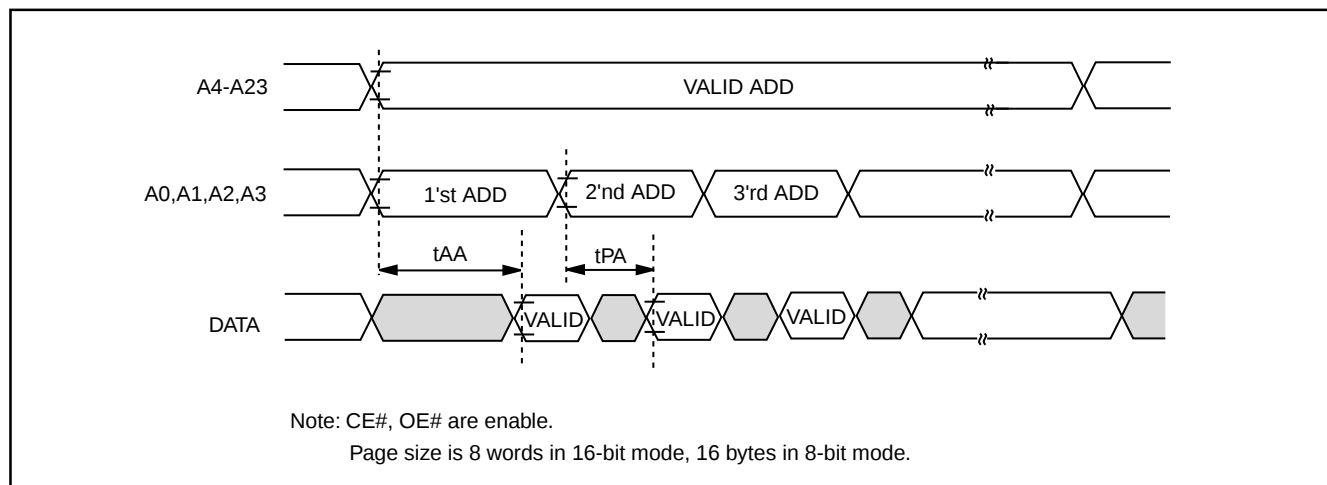
Output loading capacitance includes load board's and all stray capacitance.

TIMING DIAGRAM

RANDOM READ

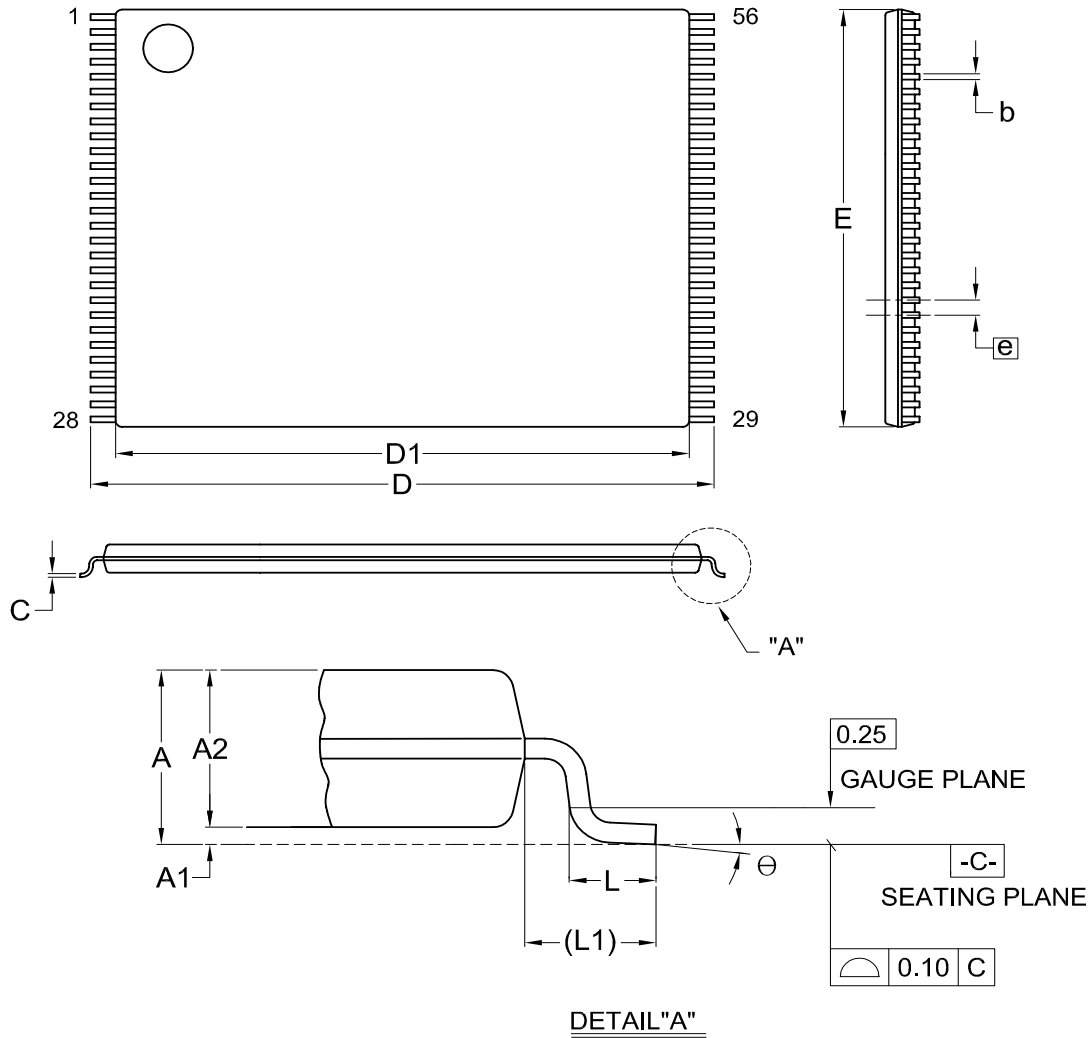


PAGE READ



PACKAGE INFORMATION

Title: Package Outline for TSOP(I) 56L (14X20mm)



Dimensions (inch dimensions are derived from the original mm dimensions)

SYMBOL		A	A1	A2	b	C	D	D1	E	e	L	L1	Θ
UNIT	Min.	---	0.05	0.95	0.17	0.10	19.80	18.30	13.90		0.50	0.70	0
	Nom.	---	0.10	1.00	0.20	0.13	20.00	18.40	14.00	0.50	0.60	0.80	5
	Max.	1.20	0.15	1.05	0.27	0.21	20.20	18.50	14.10		0.70	0.90	8
Inch	Min.	---	0.002	0.037	0.007	0.004	0.780	0.720	0.547		0.020	0.028	0
	Nom.	---	0.004	0.039	0.008	0.005	0.787	0.724	0.551	0.020	0.024	0.031	5
	Max.	0.047	0.006	0.041	0.011	0.008	0.795	0.728	0.555		0.028	0.035	8

DWG.NO.	REVISION	REFERENCE			ISSUE DATE
		JEDEC	EIAJ		
6110-1608	4	MO-142			12-01-'03



REVISION HISTORY

Revision No.	Description	Page	Date
2.1	Added MX23L12814TC-10/12 in order information	P1	SEP/09/2002
2.2	Delete access time:100ns	P1,3	SEP/16/2002
2.3	Added 64-BGA package	P1,6	JUL/03/2003
2.4	1. Removed "Preliminary" on page 1 2. Removed 64-CSP Package	P1 P1,2	FEB/02/2004
2.5	1. Removed access time:100ns	P1~3	AUG/10/2004
2.6	1. Added MX23L12814TC-12 & MX23L12814TC-12G in order information	P2	JAN/11/2005



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MX23L12814

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MACRONIX INTERNATIONAL CO., LTD.

Headquarters

Macronix, Int'l Co., Ltd.
16, Li-Hsin Road, Science Park,
Hsinchu, Taiwan, R.O.C.
Tel: +886-3-5786688
Fax: +886-3-5632888

Macronix America, Inc.

680 North McCarthy Blvd.
Milpitas, CA 95035, U.S.A.
Tel: +1-408-262-8887
Fax: +1-408-262-8810
Email: sales.northamerica@macronix.com

Macronix Japan Cayman Islands Ltd.

NKF Bldg. 5F, 1-2 Higashida-cho,
Kawasaki-ku Kawasaki-shi,
Kanagawa Pref. 210-0005, Japan
Tel: +81-44-246-9100
Fax: +81-44-246-9105

Macronix (Hong Kong) Co., Limited.

702-703, 7/F, Building 9,
Hong Kong Science Park,
5 Science Park West Avenue, Sha Tin, N.T.
Tel: +86-852-2607-4289
Fax: +86-852-2607-4229

[http : //www.macronix.com](http://www.macronix.com)

Taipei Office

Macronix, Int'l Co., Ltd.
19F, 4, Min-Chuan E. Road, Sec. 3,
Taipei, Taiwan, R.O.C.
Tel: +886-2-2509-3300
Fax: +886-2-2509-2200

Macronix Europe N.V.

Koningin Astridlaan 59, Bus 1
1780 Wemmel Belgium
Tel: +32-2-456-8020
Fax: +32-2-456-8021

Singapore Office

Macronix Pte. Ltd.
1 Marine Parade Central
#11-03 Parkway Centre
Singapore 449408
Tel: +65-6346-5505
Fax: +65-6348-8096