MR27T25603L

16M–Word x 16–Bit or 32M–Word x 8–Bit P2ROM

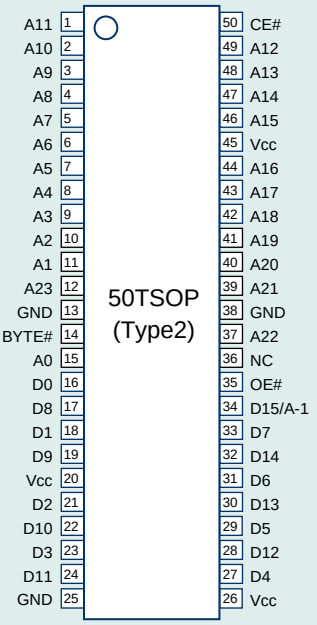
FEATURES

· 16,777,216-word × 16-bit/33,554,432-word × 8-bit
  electrically switchable configuration
· Access time
  2.7 V to 3.6 V power supply.....120 ns MAX
  3.0 V to 3.6 V power supply.....100 ns MAX
· Operating current .....35 mA MAX(5MHz)
· Standby current .....10 µA MAX
· Input/Output TTL compatible
· Three-state output

PACKAGES

· MR27T25603L-xxxTM
  50-pin plastic TSOP (TSOP(2)50-P-400-0.80-K)

PIN CONFIGURATION (TOP VIEW)

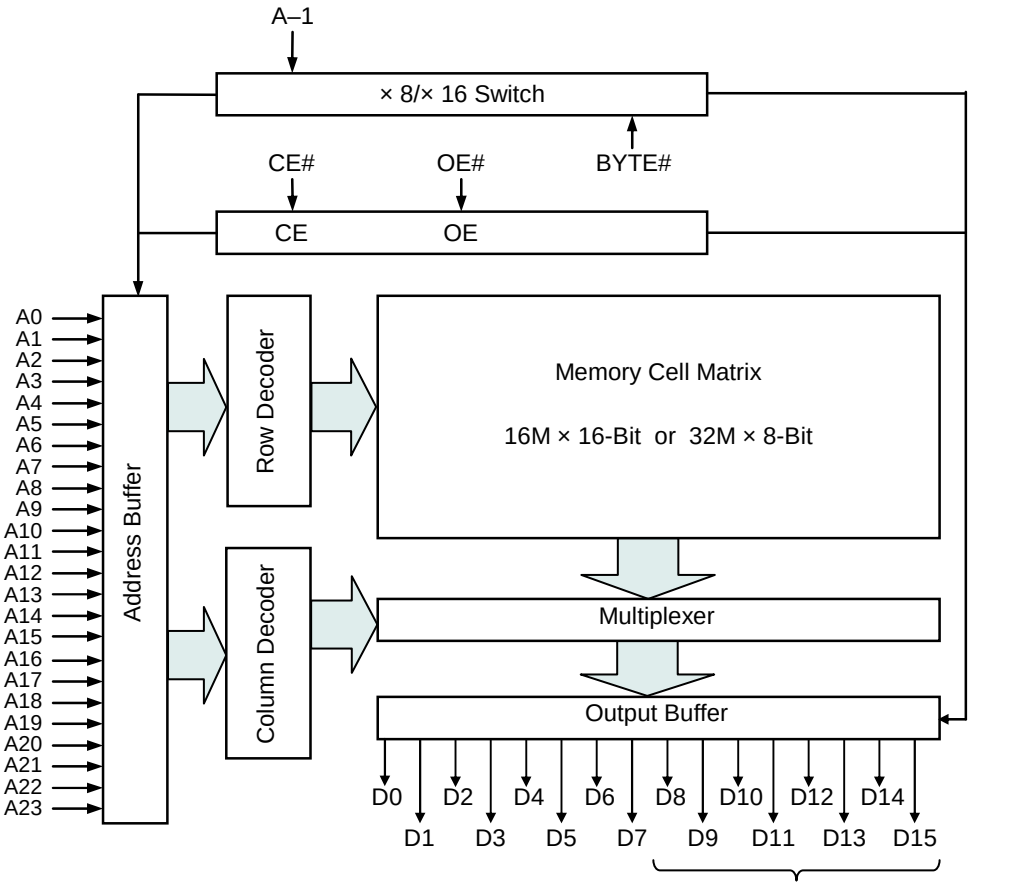


P2ROM ADVANCED TECHNOLOGY

P2ROM stands for Production Programmed ROM. This exclusive LAPIS Semiconductor technology utilizes factory test equipment for programming the customers code into the P2ROM prior to final production testing.
Advancements in this technology allows production costs to be equivalent to MASKROM and has many advantages and added benefits over the other non-volatile technologies, which include the following;

- **Short lead time**, since the P2ROM is programmed at the final stage of the production process, a large P2ROM inventory "bank system" of un-programmed packaged products are maintained to provide an aggressive lead-time and minimize liability as a custom product.
- **No mask charge**, since P2ROMs do not utilize a custom mask for storing customer code, no mask charges apply.
- **No additional programming charge,** unlike Flash and OTP that require additional programming and handling costs, the P2ROM already has the code loaded at the factory with minimal effect on the production throughput. The cost is included in the unit price.
- **Custom Marking is** available at no additional charge.

BLOCK DIAGRAM



PIN DESCRIPTIONS

Pin name	Functions
D15 / A–1	Data output / Address input
A0 to A23	Address inputs
D0 to D14	Data outputs
CE#	Chip enable input
OE#	Output enable input
BYTE#	Word / Byte select input
V_{CC}	Power supply voltage
V_{SS}	Ground

FUNCTION TABLE

Mode	CE#	OE#	BYTE#	V_{CC}	D0 to D7	D8 to D14	D15/A–1
Read (16-Bit)	L	L	H	2.7 V to 3.6 V	D_{OUT}		
Read (8-Bit)	L	L	L		D_{OUT}	Hi–Z	L/H
Output disable	L	H	H		Hi–Z		
			L				*
Standby	H	*	H		Hi–Z		
			L				*

*: Don't Care (H or L)

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Value	Unit
Operating temperature under bias	Ta	—	0 to 70	°C
Storage temperature	Tstg		–55 to 125	°C
Input voltage	V_I	Relative to V_{SS}	–0.5 to V_{CC}+0.5	V
Output voltage	V_O		–0.5 to V_{CC}+0.5	V
Power supply voltage	V_{CC}		–0.5 to 5	V
Power dissipation per package	P_D	Ta = 25°C	1.0	W
Output short circuit current	I_{OS}	—	10	mA

RECOMMENDED OPERATING CONDITIONS

(Ta = 0 to 70°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
V_{CC} power supply voltage	V_{CC}	V_{CC} = 2.7 to 3.6 V	2.7	—	3.6	V
Input "H" level	V_{IH}		2.2	—	V_{CC}+0.5*	V
Input "L" level	V_{IL}		–0.5**	—	0.6	V

Voltage is relative to V_{SS}.

* : Vcc+1.5V(Max.) when pulse width of overshoot is less than 10ns.

** : -1.5V(Min.) when pulse width of undershoot is less than 10ns.

PIN CAPACITANCE

(V_{CC} = 3.0 V, Ta = 25°C, f = 1 MHz)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input	C_{IN1}	V_I = 0 V	—	—	10	pF
BYTE#	C_{IN2}		—	—	200	
Output	C_{OUT}	V_O = 0 V	—	—	10	

ELECTRICAL CHARACTERISTICS

DC Characteristics

(V_{CC} = 2.7 to 3.6 V, Ta = 0 to 70°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input leakage current	I_{LI}	V_I = 0 to V_{CC}	—	—	5	µA
Output leakage current	I_{LO}	V_O = 0 to V_{CC}	—	—	5	µA
V_{CC} power supply current (Standby)	I_{CCSC}	CE# = V_{CC}	—	—	10	µA
	I_{CCST}	CE# = V_{IH}	—	—	1	mA
V_{CC} power supply current (Read)	I_{CCA}	CE# = V_{IL}, OE# = V_{IH} f=5MHz			35	mA
Input “H” level	V_{IH}	—	2.2	—	V_{CC}+0.5*	V
Input “L” level	V_{IL}	—	–0.5**	—	0.6	V
Output “H” level	V_{OH}	I_{OH} = –1 mA	2.4	—	—	V
Output “L” level	V_{OL}	I_{OL} = 2 mA	—	—	0.4	V

Voltage is relative to VSS.

* : Vcc+1.5 V(Max.) when pulse width of overshoot is less than 10 ns.

** : –1.5 V(Min.) when pulse width of undershoot is less than 10 ns.

AC Characteristics

(V_{CC} = 2.7 to 3.6 V, Ta = 0 to 70°C)

Parameter	Symbol	Condition	Min.	Max.	Unit
Address cycle time	t_C	—	120	—	ns
Address access time	t_{ACC}	CE# = OE# = V_{IL}	—	120	ns
CE# access time	t_{CE}	OE# = V_{IL}	—	120	ns
OE# access time	t_{OE}	CE# = V_{IL}	—	30	ns
Output disable time	t_{CHZ}	OE# = V_{IL}	0	20	ns
	t_{OHZ}	CE# = V_{IL}	0	20	ns
Output hold time	t_{OH}	CE# = OE# = V_{IL}	0	—	ns

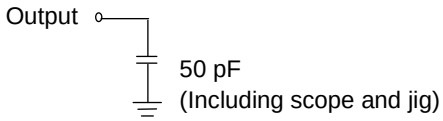
(V_{CC} = 3.0 to 3.6 V, Ta = 0 to 70°C)

Parameter	Symbol	Condition	Min.	Max.	Unit
Address cycle time	t_C	—	100	—	ns
Address access time	t_{ACC}	CE# = OE# = V_{IL}	—	100	ns
CE# access time	t_{CE}	OE# = V_{IL}	—	100	ns
OE# access time	t_{OE}	CE# = V_{IL}	—	30	ns
Output disable time	t_{CHZ}	OE# = V_{IL}	0	20	ns
	t_{OHZ}	CE# = V_{IL}	0	20	ns
Output hold time	t_{OH}	CE# = OE# = V_{IL}	0	—	ns

Measurement conditions

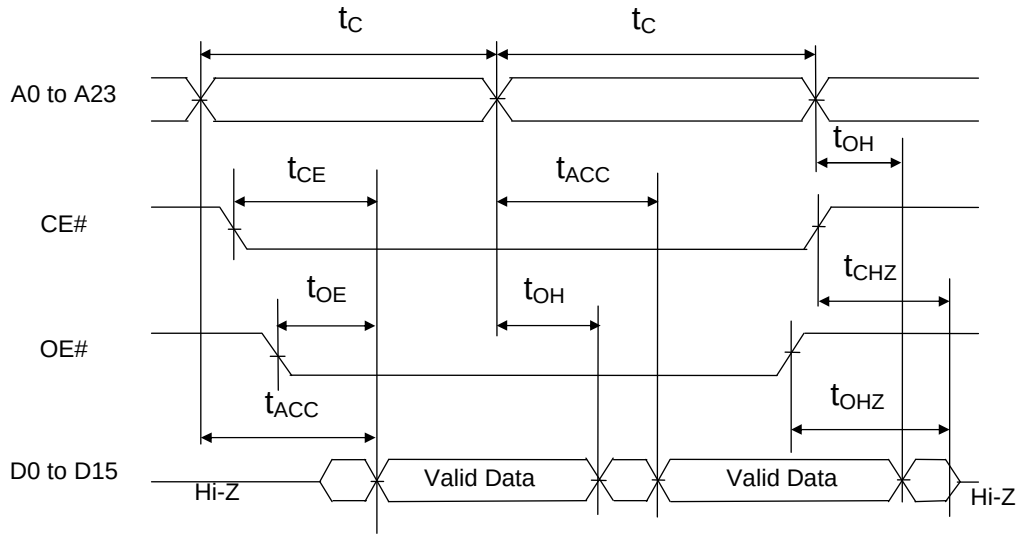
Input signal level ---------- 0 V / Vcc
Input timing reference level---------- 1/2Vcc
Output load ---------- 50 pF
Output timing reference level ---------- 1/2Vcc

Output load

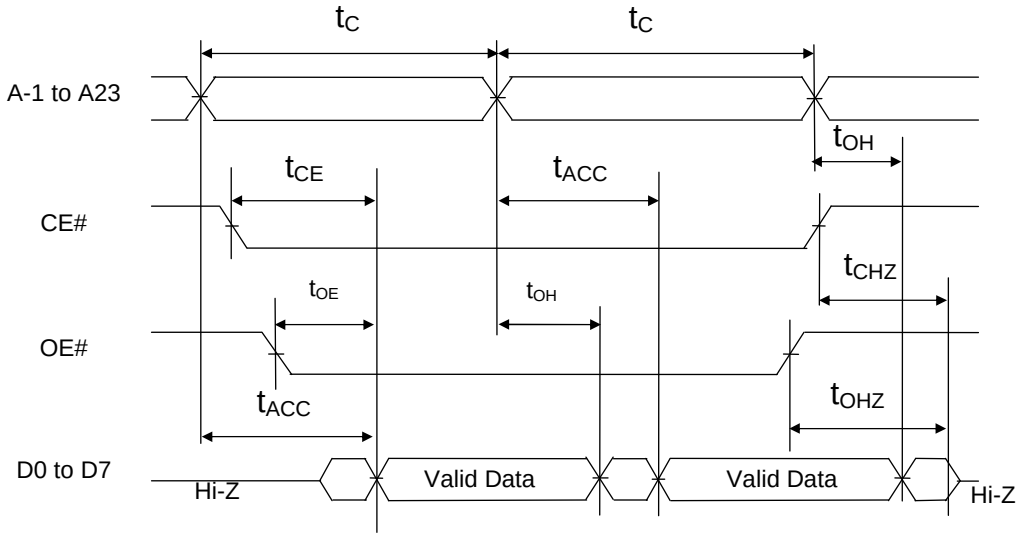


TIMING CHART (READ CYCLE)

16-Bit Read Mode (BYTE# = V_{IH})



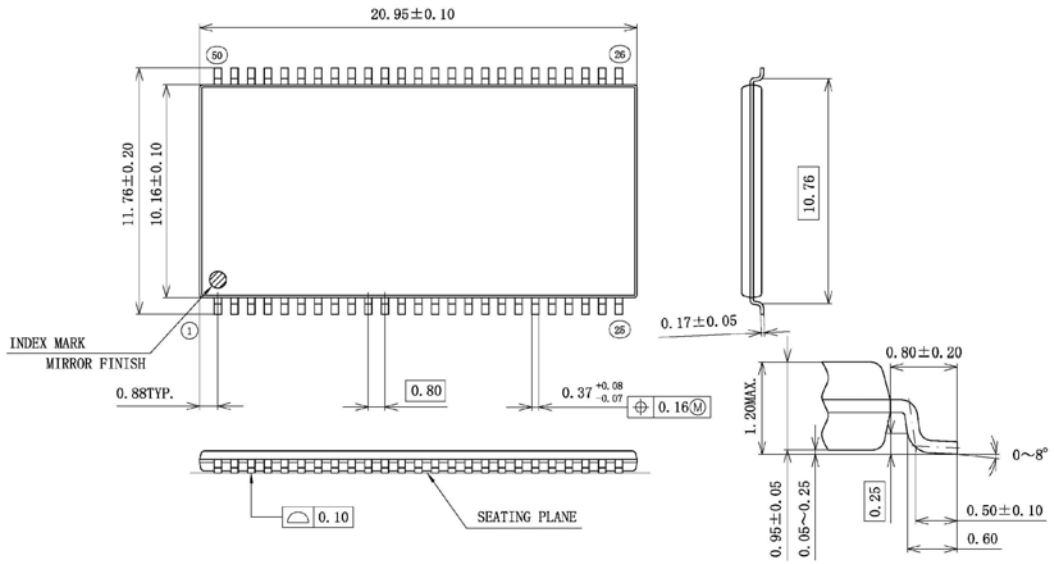
8-Bit Read Mode (BYTE# = VIL)



PACKAGE DIMENSIONS

(Unit: mm)

TSOP II 50-P-400-0.80-K



Package material	Epoxy resin
Lead frame material	42 alloy
Lead finish	Sn-2Bi (Bi 2% typ.)
Pin treatment	Solder plating (≥5μm)
Package weight (g)	0.61 TYP.
Rev. No./Last Revised	1/Sep. 7, 2007

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Notes for Mounting the Surface Mount Type Package

The surface mount type packages are very susceptible to heat in reflow mounting and humidity absorbed in storage.
Therefore, before you perform reflow mounting, contact ROHM's responsible sales person for the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

REVISION HISTORY

Document No.	Date	Page		Description
		Previous Edition	Current Edition	
FEDR27T25603L-02-01	Apr. 1, 2004	–	–	Final edition 1
FEDR27T25603L-02-02	Jun. 8, 2004	3	3	Change C_{IN1} to 10pF
FEDR27T25603L-02-03	Jul. 9, 2004	3 1, 4	3 1, 5	Add P_D condition and I_{OS} = 10mA Add access time 100ns spec.
FEDR27T25603L-02-04	Dec. 8, 2004	1, 8	1	Delete MR27T25603L-xxxMB
FEDR27T25603L-002-05	Oct. 1, 2008	5	5	Changed Input signal level from “0V/3V” to “0V/Vcc”.
		–	–	Changed company logo and name to OKI SEMICONDUCTOR

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