FEDR27V1652F-02-02
Issue Date: Jul. 9, 2004

OKI Semiconductor

MR27V1652F

1M–Word × 16–Bit or 2M–Word × 8–Bit Page Mode P2ROM

GENERAL DESCRIPTION

The MR27V1652F is a 16 Mbit Production Programmed Read-Only Memory (P2ROM) with page mode. Its configuration can be electrically switched between 1,048,576-word × 16-bit and 2,097,152-word × 8-bit by the state of the BYTE# pin. The MR27V1652F supports high speed asynchronous read operation using a single 3.3V power supply.

FEATURES

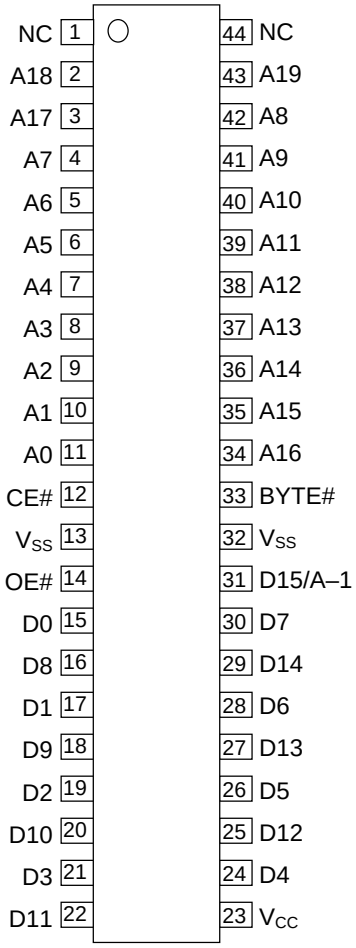
· 1,048,576-word × 16-bit/2,097,152-word × 8-bit electrically switchable configuration
· Page size of 8-word x 16-Bit or 16-word x 8-Bit
· +3.3 V power supply
· Access time

Random access mode	100 ns MAX
Page access mode	30 ns MAX

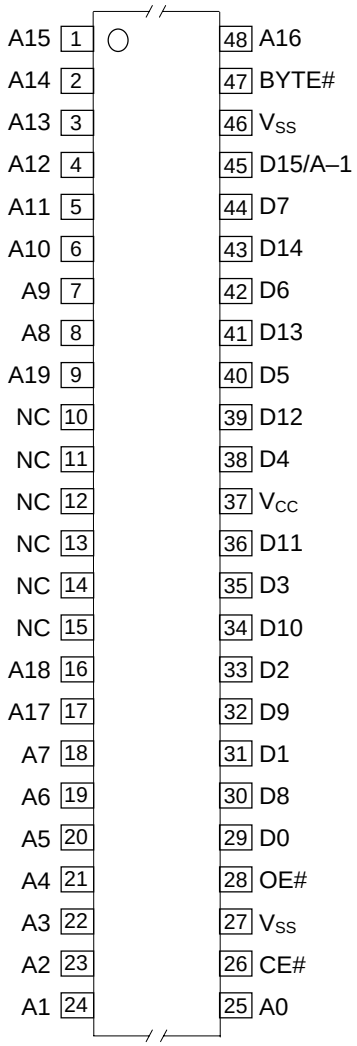
· Operating current 60 mA MAX
· Standby current 10 µA MAX
· Input/Output TTL compatible
· Three-state output
· Packages:

44-pin plastic SOP (SOP44-P-600-1.27-K) (MR27V1652F-xxxMA)
48-pin plastic TSOP (TSOP I 48-P-1220-0.50-1K) (MR27V1652F-xxxTN)

PIN CONFIGURATION (TOP VIEW)



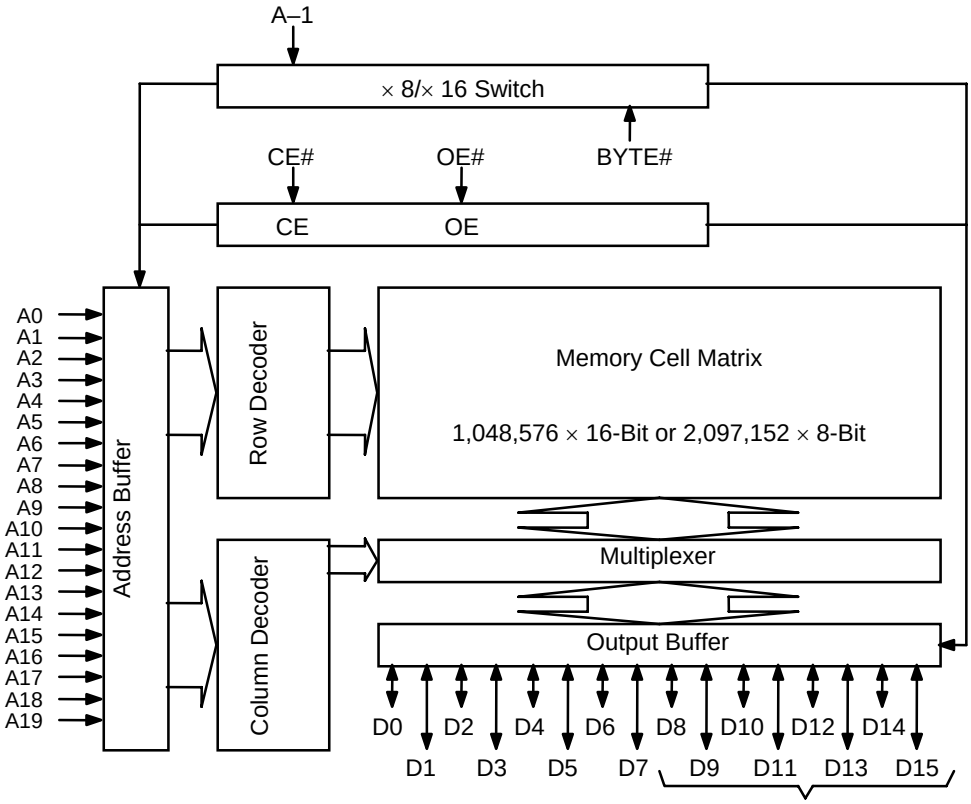
44-pin SOP



48-pin TSOP(I)

Pin name	Functions
D15/A–1	Data output/Address input
A0 to A19	Address input
D0 to D14	Data output
CE#	Chip enable
OE#	Output enable
BYTE#	Mode switch
V_{CC}	Power supply voltage
V_{SS}	GND
NC	Non connection

BLOCK DIAGRAM



In 8-bit output mode, these pins are placed in a high-Z state and pin D15 functions as the A-1 address pin.

FUNCTION TABLE

Mode	CE#	OE#	BYTE#	V_{CC}	D0 to D7	D8 to D14	D15/A–1
Read (16-Bit)	L	L	H	3.3 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} = 3.0 to 3.6 V	3.0	—	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.

ELECTRICAL CHARACTERISTICS

DC Characteristics

(V_{CC} = 3.3 V ± 0.3 V, Ta = 0 to 70°C)

parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input leakage current	I_{LI}	V_I = 0 to V_{CC}	—	—	10	μA
Output leakage current	I_{LO}	V_O = 0 to V_{CC}	—	—	10	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	—	—	60	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} = –2 mA	2.4	—	—	V
Output "L" level	V_{OL}	I_{OL} = 4 mA	—	—	0.4	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.

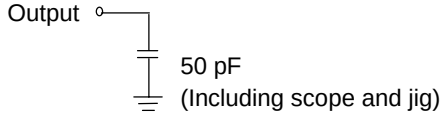
AC Characteristics

(V_{CC} = 3.3 V ± 0.3 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
Page cycle time	t_{PC}	—	30	—	ns
Page access time	t_{PAC}	—	—	30	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

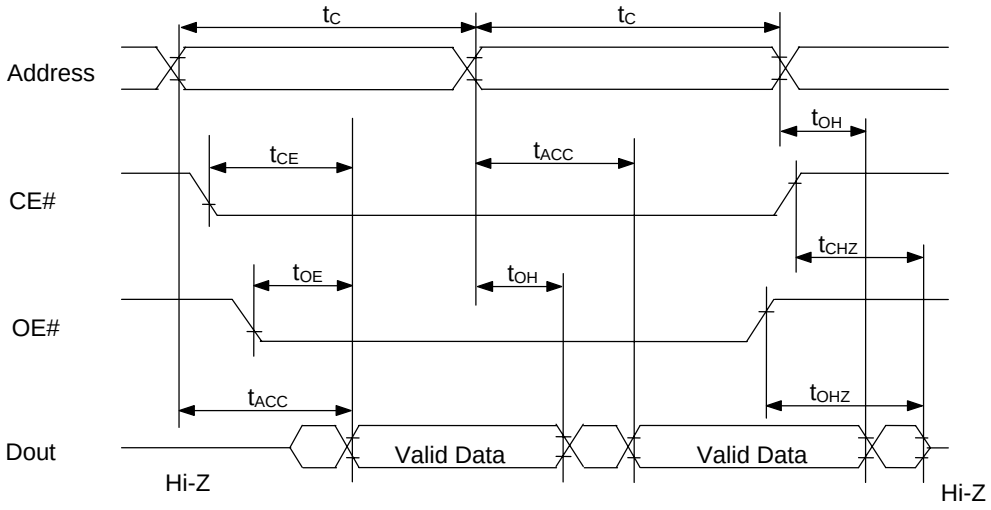
Measurement conditions
Input signal level ----------0 V/3 V
Input timing reference level----------1/2Vcc
Output load ----------50 pF
Output timing reference level ----------1/2Vcc

Output load

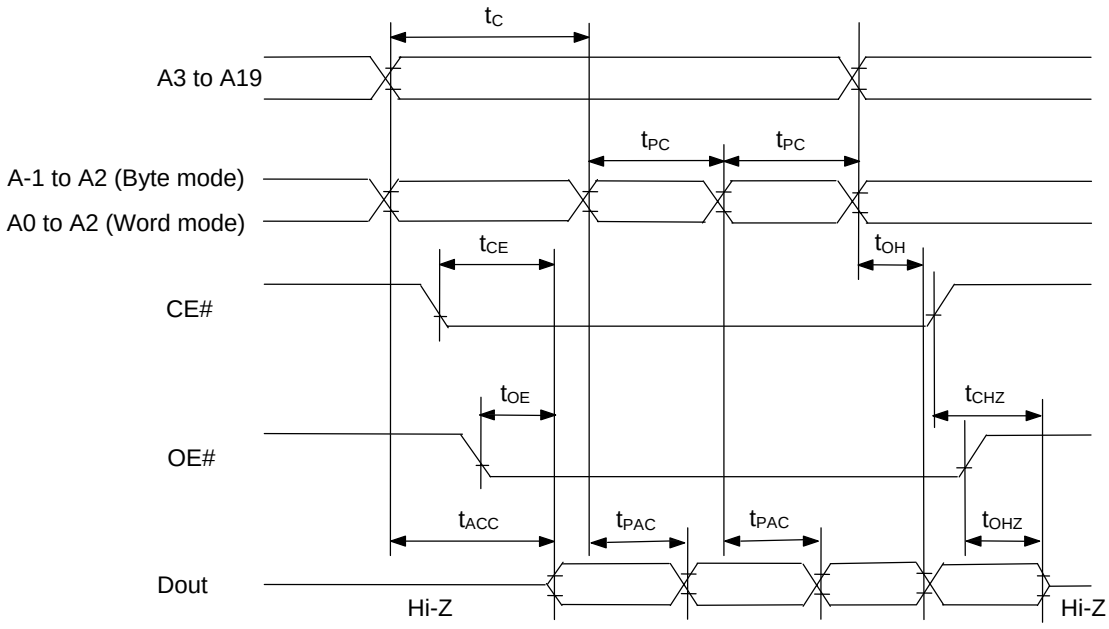


TIMING CHART (READ CYCLE)

Random Access Mode Read Cycle



Page Access Mode Read Cycle



Pin Capacitance

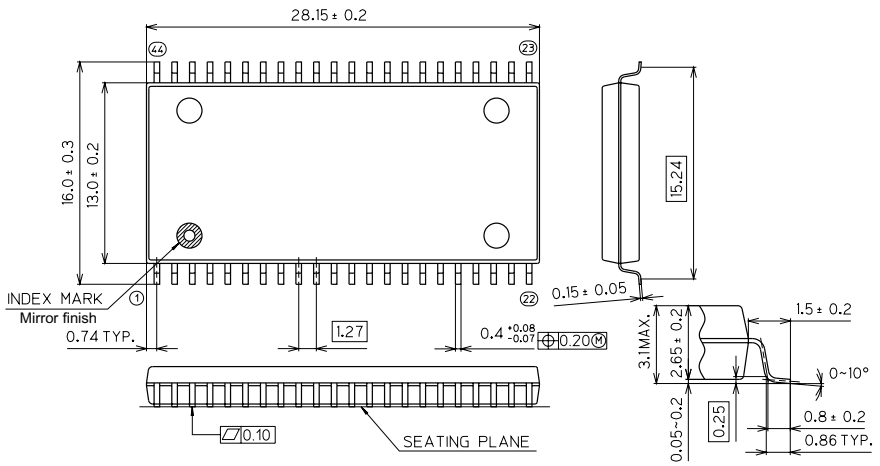
(V_{CC} = 3.3 V, Ta = 25°C, f = 1 MHz)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input	C_{IN1}	V_I = 0 V	—	—	10	pF
BYTE#	C_{IN2}		—	—	120	
Output	C_{OUT}	V_O = 0 V	—	—	10	

PACKAGE DIMENSIONS

(Unit: mm)

SOP44-P-600-1.27-K



Package material	Epoxy resin
Lead frame material	42 alloy
Pin treatment	Solder plating (≥5µm)
Package weight (g)	2.10 TYP.
Rev. No./Last Revised	4/Dec. 5, 1996

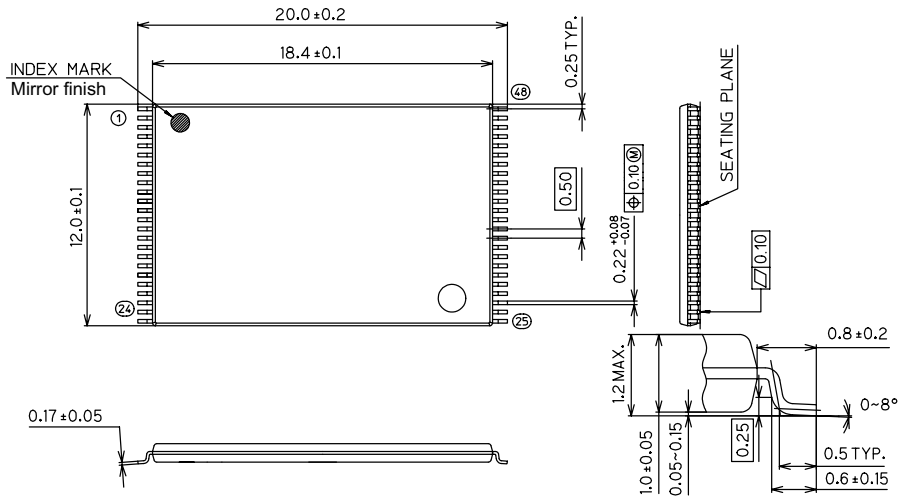
Oki Electric Industry Co., Ltd.

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 Oki's responsible sales person for the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

(Unit: mm)

TSOP(1)48-P-1220-0.50-1K



Package material	Epoxy resin
Lead frame material	42 alloy
Pin treatment	Solder plating (≥5μm)
Package weight (g)	0.55 TYP.
Rev. No./Last Revised	1/Dec. 2, 1999

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REVISION HISTORY

Document No.	Date	Page		Description
		Previous Edition	Current Edition	
FEDR27V1652F-02-01	Jun. 2, 2004	–	–	Final edition 1
FEDR27V1652F-02-02	Jul. 9, 2004	4	4	Add P_D condition and I_{OS} = 10mA

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