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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 \times 16-bit and 2,097,152-word \times 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

 \cdot 1,048,576-word \times 16-bit/2,097,152-word \times 8-bit electrically switchable configuration

· Page size of 8-word x 16-Bit or 16-word x 8-Bit

 \cdot +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)

		/ /-	
		A15 🔟 🔿	48 A16
		A14 2	47 BYTE#
	44 NC	A13 3	46 V _{SS}
A18 2	43 A19	A12 4	45 D15/A–1
A17 3	42 A8	A11 5	44 D7
A7 4	41 A9	A10 6	43 D14
A6 5	40 A10	A9 7	42 D6
A5 6	39 A11	A8 8	41 D13
A4 7	38 A12	A19 9	40 D5
A3 8	37 A13	NC 10	39 D12
A2 9	36 A14	NC 11	38 D4
A1 10	35 A15	NC 12	37 V _{CC}
A0 11	34 A16	NC [13]	36 D11
CE# 12	33 BYTE#	NC 14	35 D3
V _{SS} 13	32 V _{SS}	NC 15	34 D10
OE# 14	31 D15/A–1	A18 16	33 D2
D0 15	30 D7	A17 17	32 D9
D8 16	29 D14	A7 18	31 D1
D1 17	28 D6	A6 19	30 D8
D9 18	27 D13	A5 20	29 D0
D2 19	26 D5	A4 21	28 OE#
D10 20	25 D12	A3 22	27 V _{SS}
D3 21	24 D4	A2 23	26 CE#
D11 22	23 V _{CC}	A1 24	25 A0

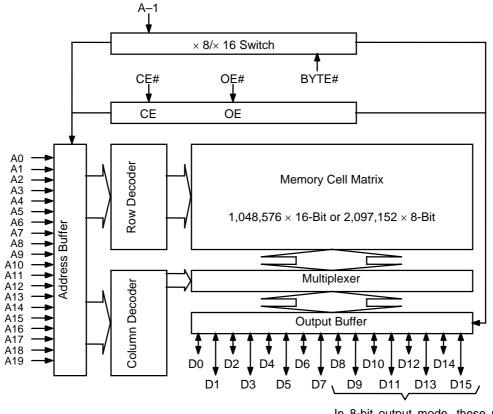
PIN CONFIGURATION (TOP VIEW)

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		
Vcc	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	Н			D _{OUT}	
Read (8-Bit)	L	L	L		D _{OUT}	Hi–Z	L/H
Output diaabla		Н	Н	3.3 V			
Output disable	L	п	L 5.5 V		Hi–Z		
Standby			* H			Hi–Z	
Standby	Н	*	L			⊓I–∠	*

*: Don't Care (H or L)

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Value	Unit
Operating temperature under bias	Та		0 to 70	°C
Storage temperature	Tstg	—	-55 to 125	°C
Input voltage	VI		–0.5 to V _{CC} +0.5	V
Output voltage	Vo	relative to V_{SS}	–0.5 to V _{CC} +0.5	V
Power supply voltage	Vcc		–0.5 to 5	V
Power dissipation per package	PD	Ta = 25°C	1.0	W
Output short circuit current	l _{os}	_	10	mA

RECOMMENDED OPERATING CONDITIONS

(Ta = 0 to 70°C)

					(,
Parameter	Symbol	Condition	Min.	Тур.	Max.	Unit
V _{CC} power supply voltage	V _{cc}		3.0	—	3.6	V
Input "H" level	VIH	V_{CC} = 3.0 to 3.6 V	2.2	—	V _{CC} +0.5*	V
Input "L" level	VIL		-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 \	/ ± 0.3 V, Ta	= 0 to 70°C)
parameter	Symbol	Condition	Min.	Тур.	Max.	Unit
Input leakage current	ILI	$V_I = 0$ to V_{CC}		—	10	μA
Output leakage current	I _{LO}	$V_{O} = 0$ to V_{CC}		—	10	μA
V _{CC} power supply current	I _{CCSC}	$CE\# = V_{CC}$	_	—	10	μA
(Standby)	ICCST	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}	$I_{OL} = 4 \text{ mA}$	_	_	0.4	V

Voltage is relative to V_{SS}.

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

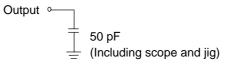
AC Characteristics

			$(V_{CC} =$	3.3 V \pm 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 dischla time	t _{CHZ}	$OE\# = V_{IL}$	0	20	ns
Output disable time	t _{OHZ}	$CE\# = V_{IL}$	0	20	ns
Output hold time	t _{OH}	$CE\# = OE\# = V_{IL}$	0		ns

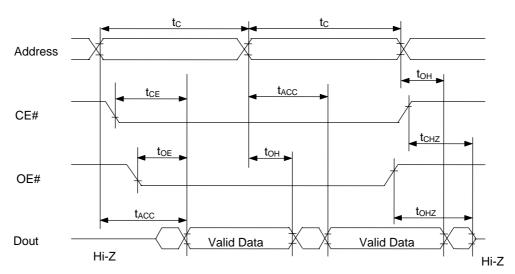
Measurement conditions

Input signal level	0 V/3 V
Input timing reference level	
Output load	
Output timing reference level	

Output load

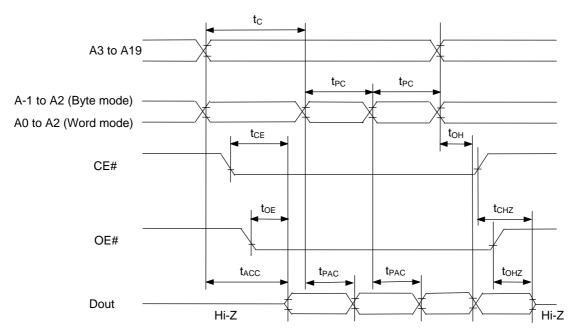


TIMING CHART (READ CYCLE)



Random Access Mode Read Cycle





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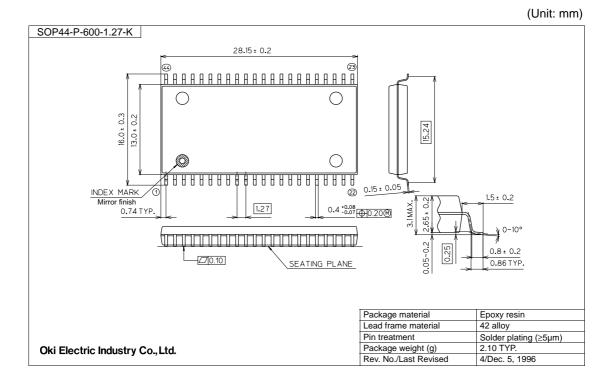
MR27V1652F / P2ROM

Pin Capacitance

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

Parameter	Symbol	Condition	Min.	Тур.	Max.	Unit
Input	C _{IN1}	$V_1 = 0 V$	—	—	10	
BYTE#	C _{IN2}	$v_1 = 0 v$	_	_	120	pF
Output	COUT	$V_0 = 0 V$	—	—	10	

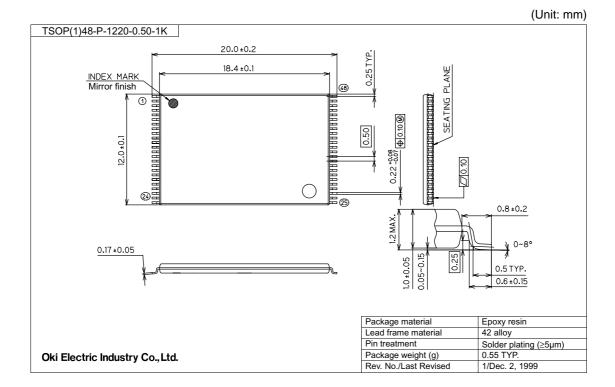
PACKAGE DIMENSIONS



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).





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REVISION HISTORY

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

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