

CMOS 256K-BIT EPROM

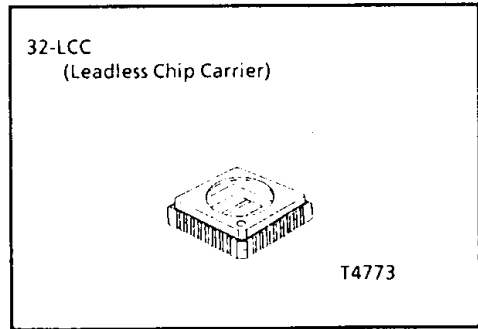
T4773

The T4773 is a CMOS ultraviolet light Erasable and Electrically Programmable Read Only Memory consisting of 32768 x 8bits.

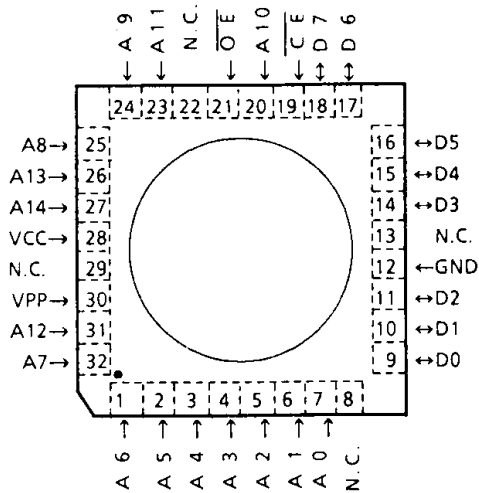
PART No.	CAPACITY	PACKAGE
T4773	32768 x 8-bit	32-LCC

FEATURES

- ◆ Access time: 200ns
- ◆ High speed programming mode
- ◆ Programming voltage: 12.5V
- ◆ Fully static operation
- ◆ Stand-by current: 100µA max. (at 85°C)
- ◆ Equivalent to TC57256AD-20



PIN ASSIGNMENT (TOP VIEW)



PIN FUNCTION

PIN NAME	I/O	FUNCTIONS
D7 - D0	I/O	Data input/output
A14 - A0		Address input
\overline{CE}	Input	Chip enable input
\overline{OE}		Output enable input
VPP		Program power supply
VCC	Power Supply	+ 5V
GND		0V

OPERATION MODE

Operation mode	VCC	VPP	\overline{CE}	\overline{OE}	D7 to D0
Read	5V	5V	V_{IL}	V_{IL}	Data output
Output disable			V_{IH} or V_{IL}	V_{IH}	High impedance
Stand-by			V_{IH}	V_{IH} or V_{IL}	
Program	6V	12.5V	V_{IL}	V_{IH}	Data input
Program inhibit			V_{IH}	V_{IH}	High impedance
Program verify			V_{IH} or V_{IL}	V_{IL}	Data output

ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	- 0.6 to 7.0	V
Program Supply Voltage	V_{PP}	- 0.6 to 14.0	V
Input Voltage	V_{IN}	- 0.6 to 7.0	V
I/O pin Voltage	$V_{I/O}$	- 0.6 to $V_{CC} + 0.5$	V
Power Dissipation	PD	1.5	W
Storage Temperature	T_{stg}	- 60 to 125	°C
Operating Temperature	T_{opr}	- 40 to 85	°C

(1) Read operation

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	PIN	Min.	Typ.	Max.	UNIT
Input High Voltage	V_{IH}		2.2	—	$V_{CC} + 0.3$	V
Input Low Voltage	V_{IL}		- 0.3	—	0.8	V
Supply Voltage	V_{CC}	VCC	4.75	5.00	5.25	V
Supply Voltage for Programming	V_{PP}	VPP	$V_{CC} - 0.6$	V_{CC}	$V_{CC} + 0.6$	V

D.C. CHARACTERISTICS

 $(V_{SS} = 0V, V_{CC} = 4.5 \text{ to } 5.5V, T_{opr} = -40 \text{ to } 85^\circ\text{C})$

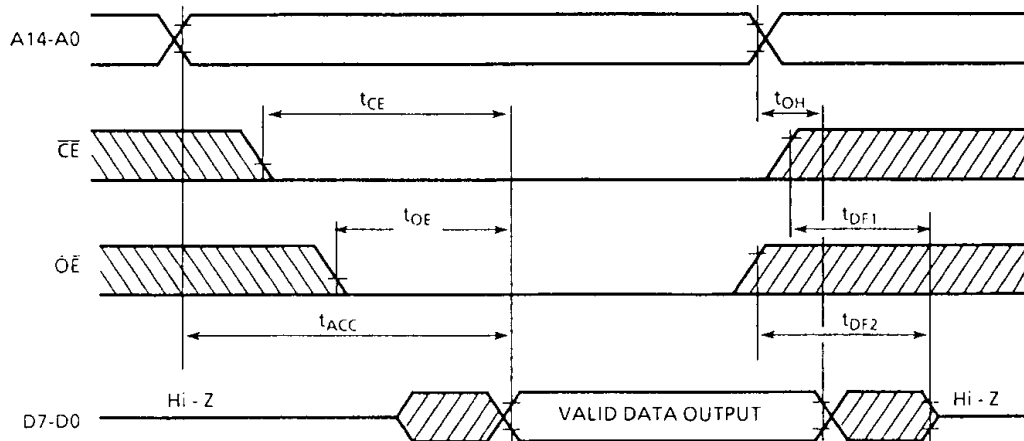
PARAMETER	SYMBOL	CONDITIONS	Min.	Typ.	Max.	UNIT
Input Current	I_{LI}	$V_{IN} = 0 \text{ to } V_{CC}$	-	-	± 10	μA
Output Leakage Current	I_{LO}	$V_{OUT} = 0.4 \text{ to } V_{CC}$	-	-	± 10	μA
Output High Voltage	V_{OH}	$I_{OH} = -400\mu\text{A}$	2.4	-	-	V
Output Low Voltage	V_{OL}	$I_{OL} = 2.1\text{mA}$	-	-	0.4	V
V_{PP} Supply Current (During read operation)	I_{PP1}	$V_{PP} = 0 \text{ to } V_{CC} + 0.6V$	-	-	± 10	μA
Supply Current (in the normal mode)	I_{CCO1}	$\overline{CE} = 0V$			30	mA
	I_{CCO2}	$I_{OUT} = 0\text{mA}$	$f = 6.7\text{MHz}$	-	-	
Supply Current (in the stand-by mode)	I_{CCS1}	$\overline{CE} = V_{IH}$	-	-	1	mA
	I_{CCS2}	$\overline{CE} = V_{CC} - 0.2V$	-	-	100	

A. C. CHARACTERISTICS (V_{SS} = 0V, V_{CC} = 4.5 to 5.5V, V_{PP} = V_{CC} ± 0.6V, T_{opr} = -40 to 85°C)

PARAMETER	SYMBOL	CONDITIONS	Min.	Max.	UNIT
Address Access Time	t _{ACC}	$\overline{CE} = \overline{OE} = V_{IL}$	-	200	ns
\overline{CE} to Output Data Valid Time	t _{CE}	$\overline{OE} = V_{IL}$	-	200	ns
\overline{OE} to Output Data Valid Time	t _{OE}	$\overline{CE} = V_{IL}$	-	70	ns

A.C. Test Conditions

- Output load : 1TTL Gate, C_L = 100pF
- Input pulse rising time : 10ns max.
- Input pulse level : 0.45V to 2.4V
- Reference level for timing measurement : Input 0.8V, 2.2V, Output 0.8V, 2.0V



(2) Program Operation

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	PIN	Min.	Typ.	Max.	UNIT
Input High Voltage	V _{IH}		2.2	—	V _{CC} + 1.0	V
Input Low Voltage	V _{IL}		-0.3	—	0.8	V
Supply Voltage	V _{CC}	VCC	5.75	6.00	6.25	V
Program Supply Voltage	V _{PP}	VPP	12.0	12.5	13.0	V

D. C. CHARACTERISTICS

PARAMETER	SYMBOL	PIN	CONDITIONS	Min.	Typ.	Max.	UNIT
Input Current	I_{LI}		$V_{IN} = 0 \text{ to } V_{CC}$	-	-	± 10	μA
Output High Voltage	V_{OH}		$I_{OH} = -400\mu\text{A}$	2.4	-	-	V
Output Low Voltage	V_{OL}		$I_{OL} = 2.1\text{mA}$	-	-	0.4	V
Signature mode setup Voltage	V_{ID}	A9	$\overline{CE} = \overline{OE} = V_{IL}$	11.5	12.0	12.5	V
Supply Current	I_{PP2}	VPP	$V_{PP} = 13.0\text{V}$	-	-	40	mA
	I_{CC}	VCC		-	-	50	mA

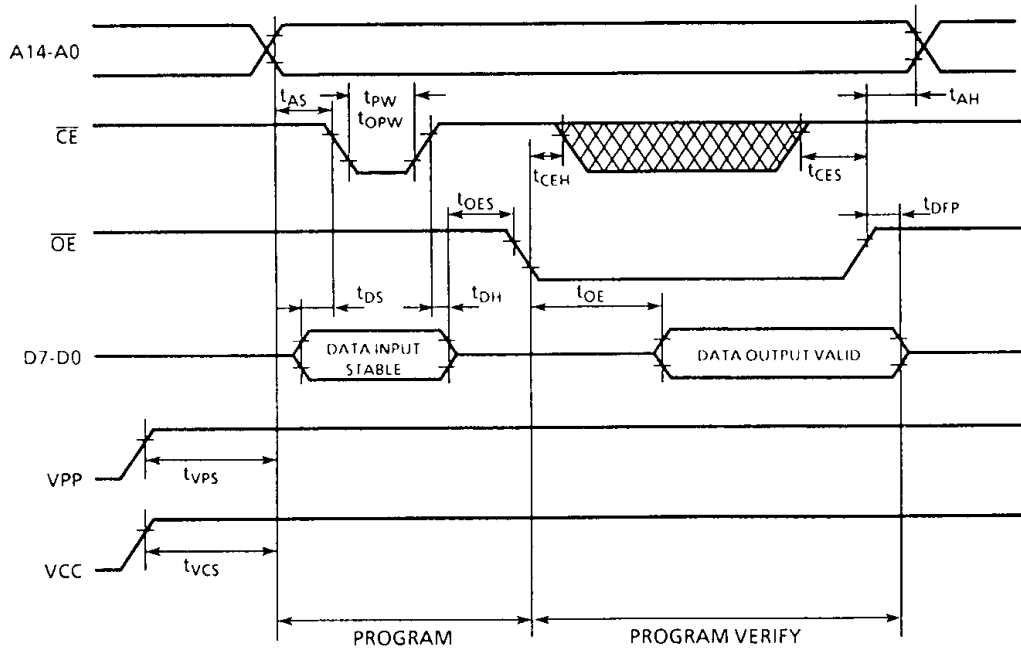
A. C. CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	Min.	Typ.	Max.	UNIT
Address Setup Time	t_{AS}		2	-	-	μs
Address Hold Time	t_{AH}		2	-	-	
\overline{CE} Setup Time	t_{CES}		0	-	-	ns
\overline{CE} Hold Time	t_{CEH}		0	-	-	
\overline{OE} Setup Time	t_{OES}		2	-	-	μs
Data Setup Time	t_{DS}		2	-	-	μs
Data Hold Time	t_{DH}		2	-	-	
V_{PP} Setup Time	t_{VPS}		2	-	-	μs
V_{CC} Setup Time	t_{VCS}		2	-	-	μs
Initial Program Pulse Width	t_{PW}	$\overline{CE} = V_{IL}, \overline{OE} = V_{IH}$	0.95	1	1.05	ms
Overprogram Pulse Valid Time	t_{OPW}		2.85	3	78.75	
\overline{OE} to Output Data Valid Time	t_{OE}	$\overline{CE} = V_{IH}$	-	-	150	ns
\overline{OE} to Output Data High Impedance Time	t_{DFP}					

A.C. Test Conditions

- Output load : 1TTL Gate, $C_L = 100\text{pF}$
- Input pulse rising/falling time : 10ns max.
- Input pulse levels : 0.45V to 2.4V
- Timing measurement Reference level : Input 0.8V, 2.2V, Output 0.8V, 2.2V

Note. Overprogram pulse width varies according to the pulse width required for the initial program.



- Note 1. Turn on the VPP power supply (12.5V) at the same time as or later than the VCC power supply.
Turn off the VPP power supply at the same time as or earlier than the VCC power supply.
- Note 2. Do not remove or set the device under the condition of $V_{PP} = 12.5 \pm 0.5V$. If removed or set, it might be damaged.
- Note 3. Should not be applied voltage over 14V to the VPP pin during programming (include the overshoot voltage).

The electrical characteristics of the T4773 is identical to those of the TC57256AD-20. Also refer to the technical data sheets of the TC57256AD-20.