

8 MBIT (512 K WORD BY 16 BITS/1 M WORD BY 8 BITS) CMOS MASK ROM

DESCRIPTION

The TC538200AP/AF is a 8,388,608-bit Read Only Memory organized as 524,288 words by 16 bits when BYTE is logical high, and as 1,048,576 words by 8 bits when BYTE is logical low.

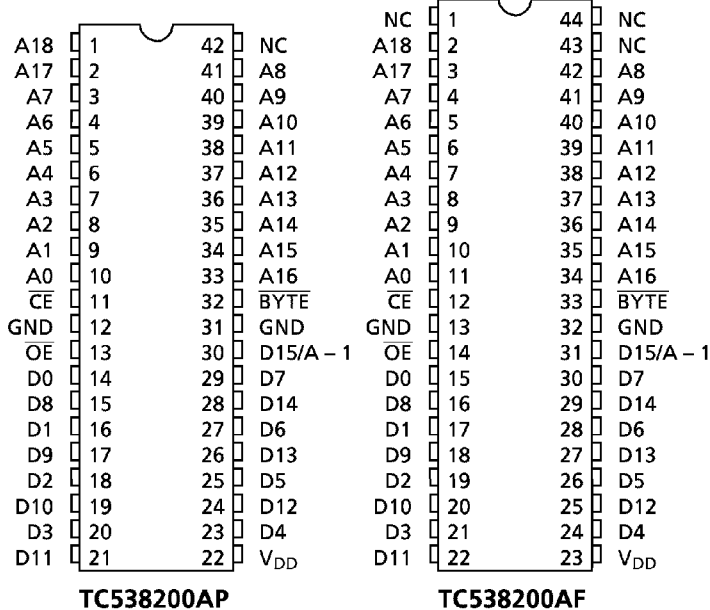
The TC538200AP/AF is most suitable for application such as program memory, data memory fast high speed from, and character generators.

The TC538200AP/AF is packaged in a standard 600 mil 42-pin DIP or 600 mil 44-pin SOP.

FEATURES

- Single 5 V Power Supply
- Access Time: 150 ns (max)
- Power Dissipation
 - Operating Current: 60 mA (max)
 - Standby Current : 100 μ A (max)
- Fully Static Operation
- All Inputs and Outputs: TTL Compatible
- Three State Outputs
- TC538200AP: DIP42 – P – 600
- TC538200AF: SOP44 – P – 600

PIN ASSIGNMENT (TOP VIEW)



PIN NAMES

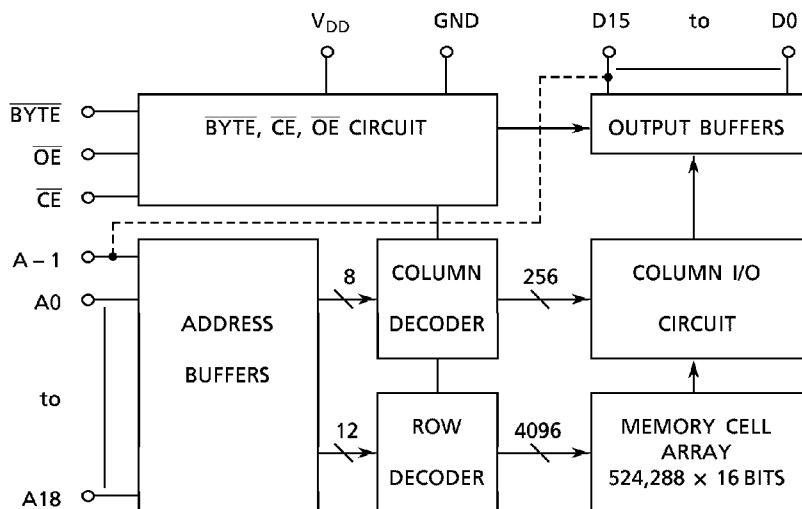
A0 to A18	Address Inputs
D0 to D14	Data Outputs
\overline{CE}	Chip Enable Input
\overline{OE}	Output Enable Input
D15/A – 1	Data Output/Address Input
\overline{BYTE}	Word, Byte Selection Input
V _{DD}	Power Supply
GND	Ground
NC	No Connection

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BLOCK DIAGRAM



MODE SELECTION

MODE	CE	OE	BYTE	D0 to D7	D8 to D14	D15/A-1	POWER
Read (16-Bit)	L	L	H	Data Out			Active
Read (8-Bit)	L	L	L	Data Out (Lower 8 bits)	High Impedance	L	Active
Read (8-Bit)	L	L	L	Data Out (Upper 8 bits)	High Impedance	H	Active
Output Deselect	L	H	*	High Impedance			Active
Standby	H	*	*	High Impedance			Standby

H: V_{IH} L: V_{IL} *: V_{IH} or V_{IL}

ABSOLUTE MAXIMUM RATINGS

SYMBOL	RATING	VALUE	UNIT
V_{DD}	Power Supply Voltage	- 0.5 to 7.0	V
V_{IN}	Input Voltage	- 0.5 to V_{DD}	V
V_{OUT}	Output Voltage	0 to V_{DD}	V
P_D	Power Dissipation	1.0/0.6*	W
T_{STG}	Storage Temperature	- 55 to 150	°C
T_{OPR}	Operating Temperature	0 to 70	°C
T_{SOLDER}	Soldering Temperature (10s)	260	°C

* SOP

DC RECOMMENDED OPERATING CONDITIONS ($T_a = 0^\circ$ to 70°C)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
V_{DD}	Power Supply Voltage	4.5	5.0	5.5	V
V_{IH}	Input High Voltage	2.2	–	$V_{DD} + 0.3$	V
V_{IL}	Input Low Voltage	– 0.3	–	0.8	V

DC CHARACTERISTICS ($T_a = 0^\circ$ to 70°C)

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
I_{IL}	Input Leakage Current	$V_{IN} = 0$ to V_{DD}	–	± 1.0	μA
I_{LO}	Output Leakage Current	$V_{OUT} = 0$ to V_{DD}	–	± 5.0	μA
I_{OH}	Output High Current	$V_{OH} = 2.4\text{ V}$	– 1.0	–	mA
I_{OL}	Output Low Current	$V_{OL} = 0.4\text{ V}$	2.0	–	mA
I_{DDS1}	Standby Current	$\overline{CE} = V_{IH}$	–	2	mA
I_{DDS2}		$\overline{CE} = V_{DD} - 0.2\text{ V}$	–	100	μA
I_{DDO1}	Operating Current	$V_{IN} = V_{IH}/V_{IL}$, $t_{\text{cycle}} = 150\text{ ns}$	–	70	mA
I_{DDO2}		$V_{IN} = V_{DD} - 0.2\text{ V}/0.2\text{ V}$, $t_{\text{cycle}} = 150\text{ ns}$	–	60	mA

CAPACITANCE ($f = 1\text{ MHz}$, $T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
C_{IN}	Input Capacitance	$V_{IN} = 0\text{ V}$	–	10	pF
C_{OUT}	Output Capacitance	$V_{OUT} = 0\text{ V}$	–	12	pF

Note: This parameter is periodically sampled and is not tested for every component.

AC CHARACTERISTICS AND OPERATING CONDITIONS

($T_a = 0^\circ$ to 70°C , $V_{DD} = 5\text{ V} \pm 10\%$)

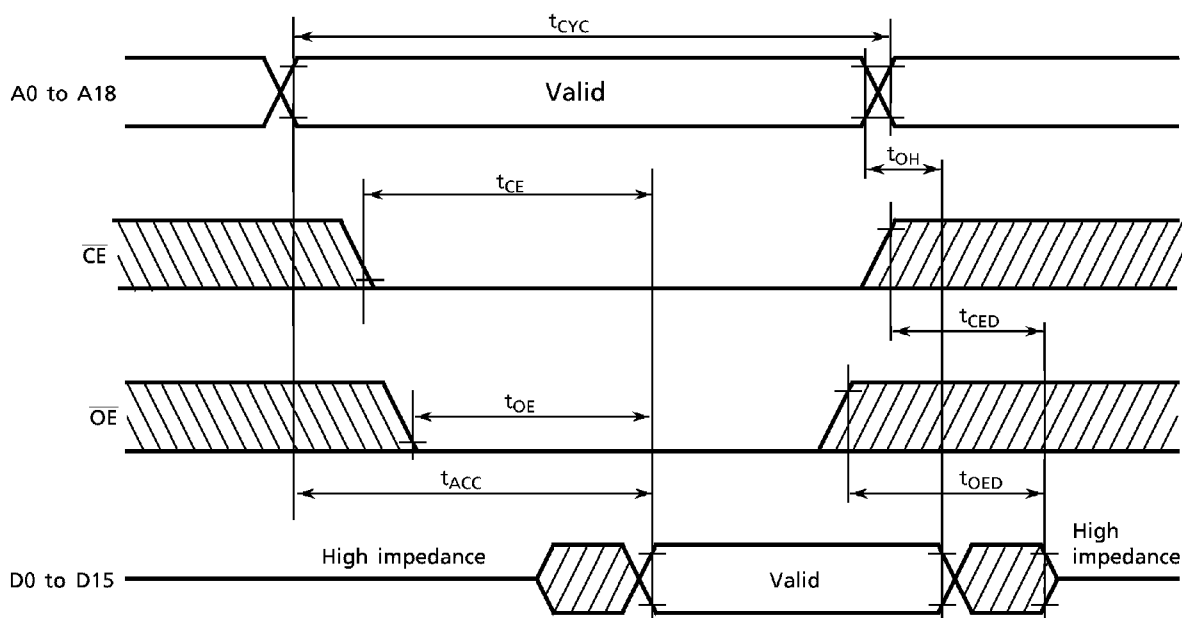
SYMBOL	PARAMETER	MIN	MAX	UNIT
t_{CYC}	Cycle Time	150	-	ns
t_{ACC}	Address Access Time	-	150	ns
t_{CE}	Chip Enable Access Time	-	150	ns
t_{BT}	$\overline{\text{BYTE}}$ Access Time	-	150	ns
t_{OE}	Output Enable Access Time	-	70	ns
t_{CED}	Output Disable Time from $\overline{\text{CE}}$	-	60	ns
t_{OED}	Output Disable Time from $\overline{\text{OE}}$	-	60	ns
t_{BTD}	Output Disable Time from $\overline{\text{BYTE}}$	-	60	ns
t_{OH}	Output Hold Time	5	-	ns

AC TEST CONDITIONS

Output Load : 100 pF + 1 TTL
 Input Levels : 0.6 V, 2.4 V
 Timing Measurement Reference Levels Input : 0.8 V, 2.2 V
 Output: 0.8 V, 2.0 V
 Input Rise and Fall Time : 5 ns

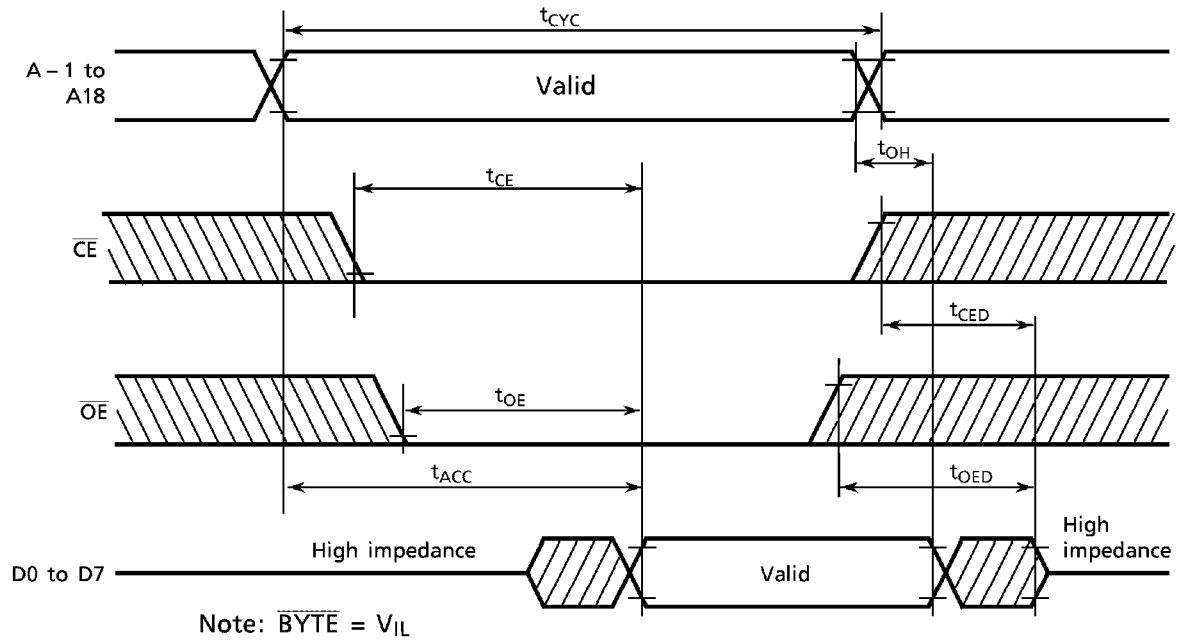
TIMING DIAGRAMS

WORD-WIDE READ MODE

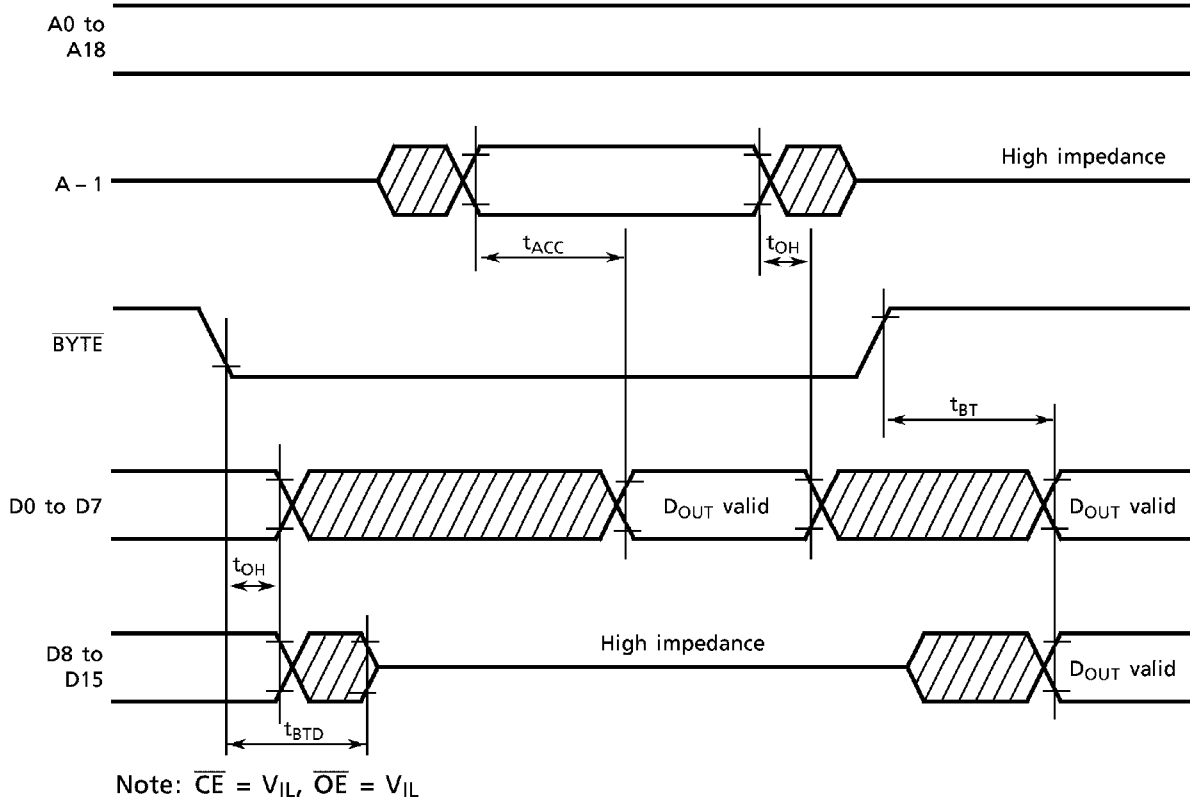


Note: $\overline{\text{BYTE}} = V_{IH}$

BYTE-WIDE READ MODE



BYTE TRANSITION

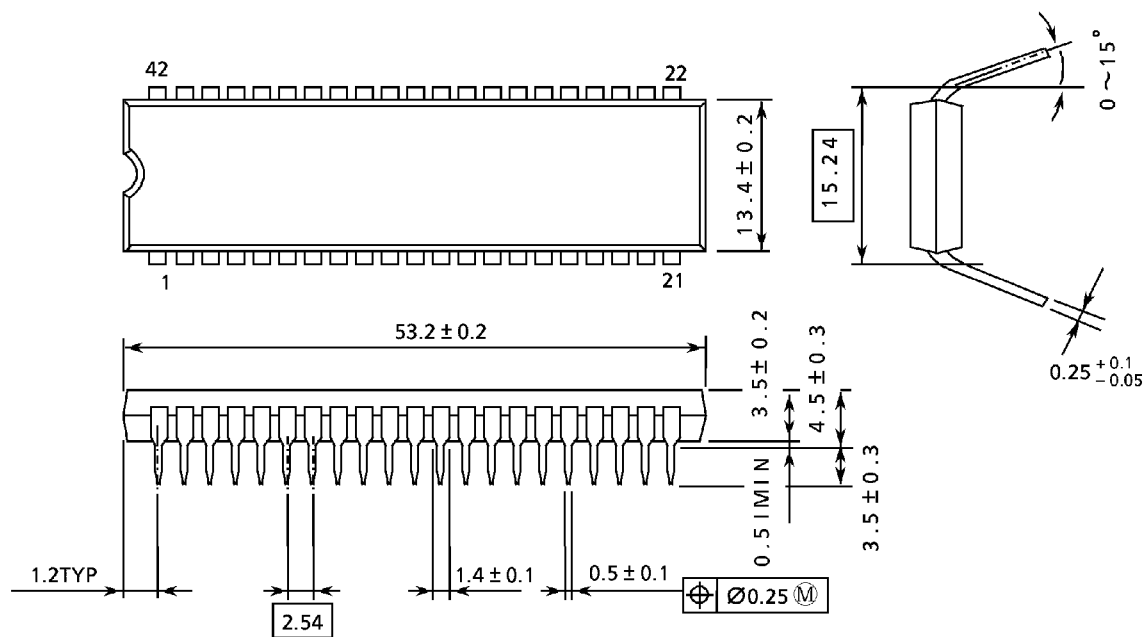


PACKAGE DIMENSIONS

- Plastic DIP

DIP42-P-600

UNITS: mm

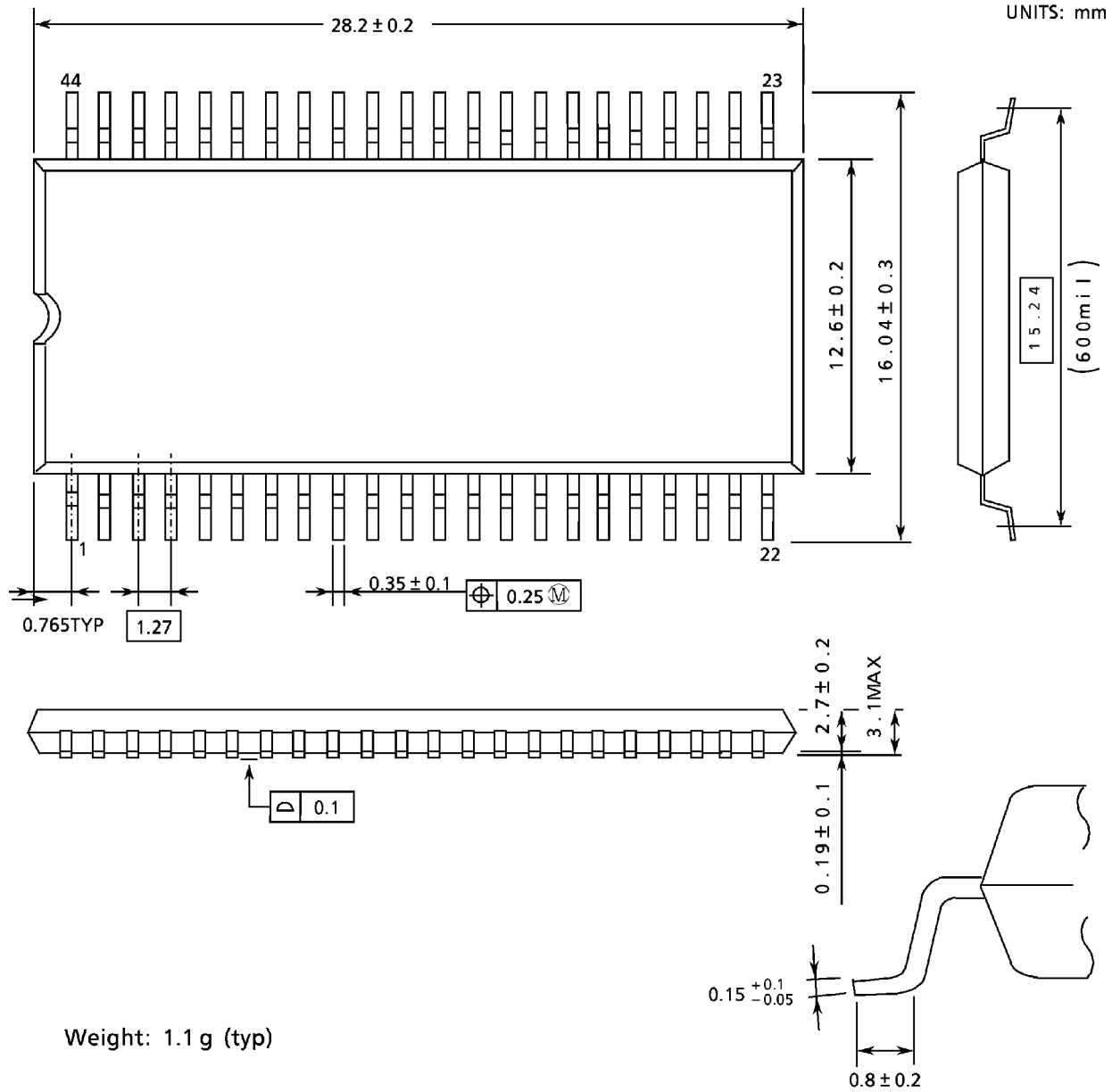


Weight: 5.7 g (typ)

Note: Package width and length do not include mold protrusion. The permissible mold protrusion is 0.15 mm.

PACKAGE DIMENSIONS

- Plastic SOP
- SOP44-P-600



Weight: 1.1 g (typ)

Note: Package width and length do not include mold protrusion. The permissible mold protrusion is 0.15 mm.