

16 MBIT (1 M WORD BY 16 BITS/2 M WORD BY 8 BITS) CMOS MASK ROM

DESCRIPTION

The TC5316200CP/CF/CFT is a 16,777,216-bit Read Only Memory organized as 1,048,576 words by 16 bits when $\overline{\text{BYTE}}$ is logical high, and as 2,097,152 words by 8 bits when $\overline{\text{BYTE}}$ is logical low.

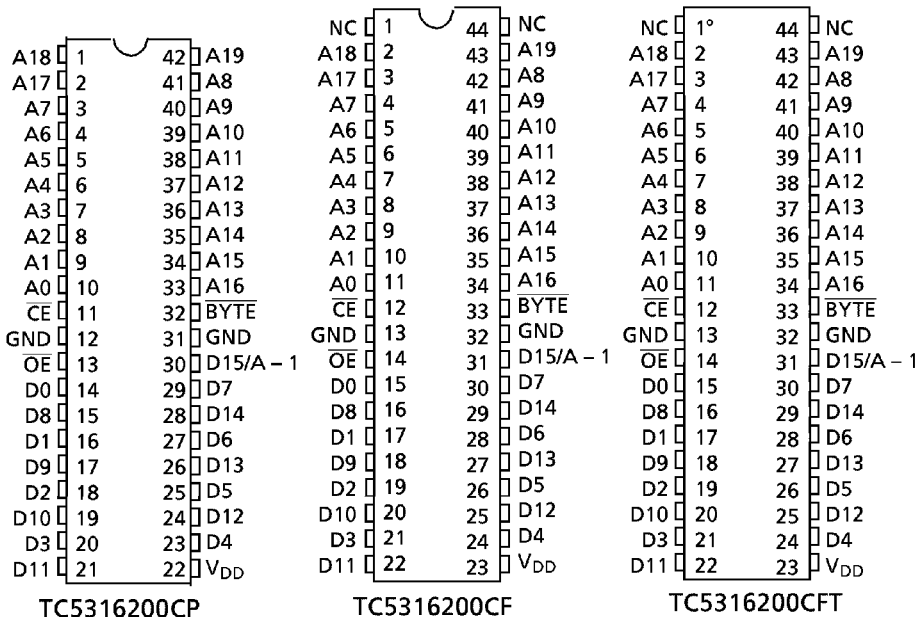
The TC5316200CP/CF/CFT is most suitable for application such as program memory, data memory, and character generators.

The TC5316200CP/CF/CFT is packaged in a standard 600 mil 42-pin DIP, or 600 mil 44-pin SOP or 400 mil 44-pin TSOP Type II.

FEATURES

- Single 5 V Power Supply
- Access Time: 120 ns (max)
- Power Dissipation
 - Operating Current: 80 mA (max)
 - Standby Current : 100 μ A (max)
- Fully Static Operation
- All Inputs and Outputs: TTL Compatible
- Three State Outputs
- TC5316200CP : DIP42 – P – 600
- TC5316200CF : SOP44 – P – 600
- TC5316200CFT: TSOP44 – P – 400

PIN ASSIGNMENT (TOP VIEW)



PIN NAMES

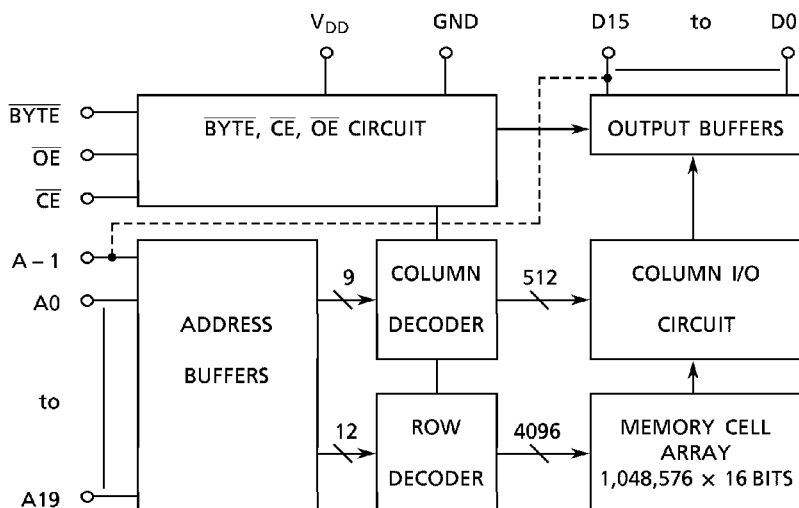
A0 to A19	Address Inputs
D0 to D14	Data Outputs
$\overline{\text{CE}}$	Chip Enable Input
$\overline{\text{OE}}$	Output Enable Input
D15/A – 1	Data Output/Address Input
$\overline{\text{BYTE}}$	Word, Byte Selection Input
V _{DD}	Power Supply
GND	Ground
NC	No Connection

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BLOCK DIAGRAM



MODE SELECTION

MODE	\overline{CE}	\overline{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 (10 s)	260	°C

* SOP/TSOP

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}	–	± 5.0	μA
I_{LO}	Output Leakage Current	$V_{OUT} = 0$ to V_{DD}	–	± 5.0	μA
I_{OH}	Output High Current	$V_{OH} = 2.4$ V	– 1.0	–	mA
I_{OL}	Output Low Current	$V_{OL} = 0.4$ V	2.0	–	mA
I_{DDs1}	Standby Current	$\overline{CE} = V_{IH}$	–	2	mA
I_{DDs2}		$\overline{CE} = V_{DD} - 0.2$ V	–	100	μA
I_{DDO1}	Operating Current	$V_{IN} = V_{IH}/V_{IL}$, $t_{\text{cycle}} = 120$ ns $I_{OUT} = 0$ mA	–	90	mA
I_{DDO1}		$V_{IN} = V_{IH}/V_{IL}$, $t_{\text{cycle}} = 150$ ns $I_{OUT} = 0$ mA	–	80	mA
I_{DDO2}		$V_{IN} = V_{DD} - 0.2$ V/0.2 V $t_{\text{cycle}} = 120$ ns, $I_{OUT} = 0$ mA	–	80	mA
I_{DDO2}		$V_{IN} = V_{DD} - 0.2$ V/0.2 V $t_{\text{cycle}} = 150$ ns, $I_{OUT} = 0$ mA	–	70	mA

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
C_{IN}	Input Capacitance	$V_{IN} = 0$ V	–	10	pF
C_{OUT}	Output Capacitance	$V_{OUT} = 0$ 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 , $V_{DD} = 5\text{ V} \pm 10\%$)

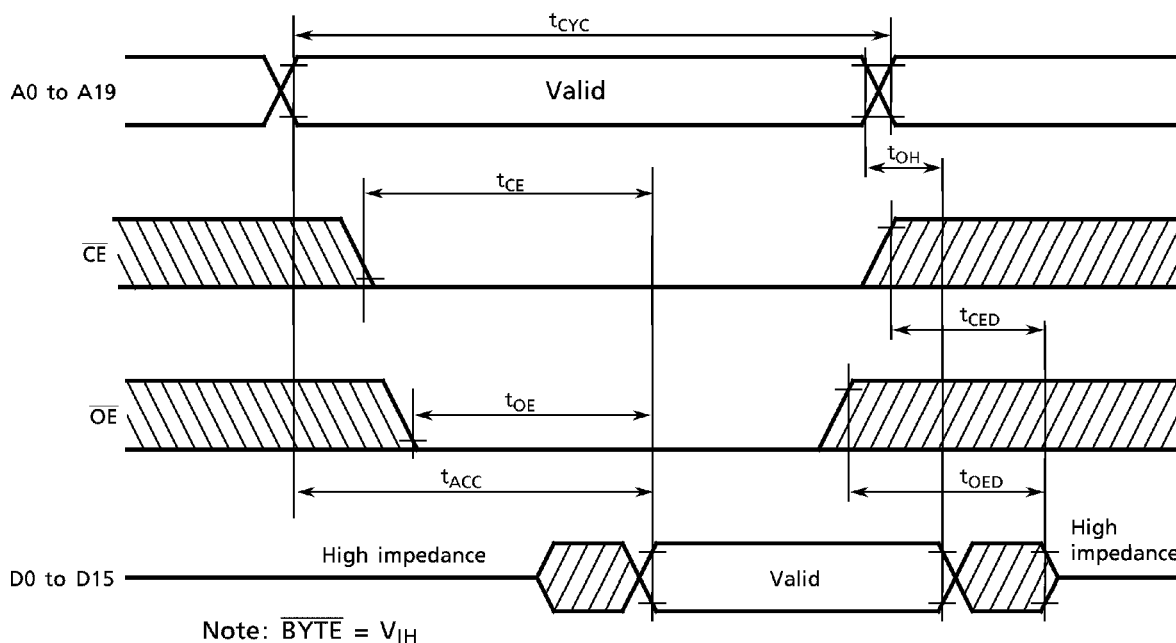
SYMBOL	PARAMETER	MIN	MAX	UNIT
t_{CYC}	Cycle Time	120	-	ns
t_{ACC}	Address Access Time	-	120	ns
t_{CE}	Chip Enable Access Time	-	120	ns
t_{BT}	BYTE Access Time	-	120	ns
t_{OE}	Output Enable Access Time	-	60	ns
t_{CED}	Output Disable Time from \overline{CE}	-	45	ns
t_{OED}	Output Disable Time from \overline{OE}	-	45	ns
t_{BTD}	Output Disable Time from BYTE	-	45	ns
t_{OH}	Output Hold Time	5	-	ns

AC TEST CONDITIONS

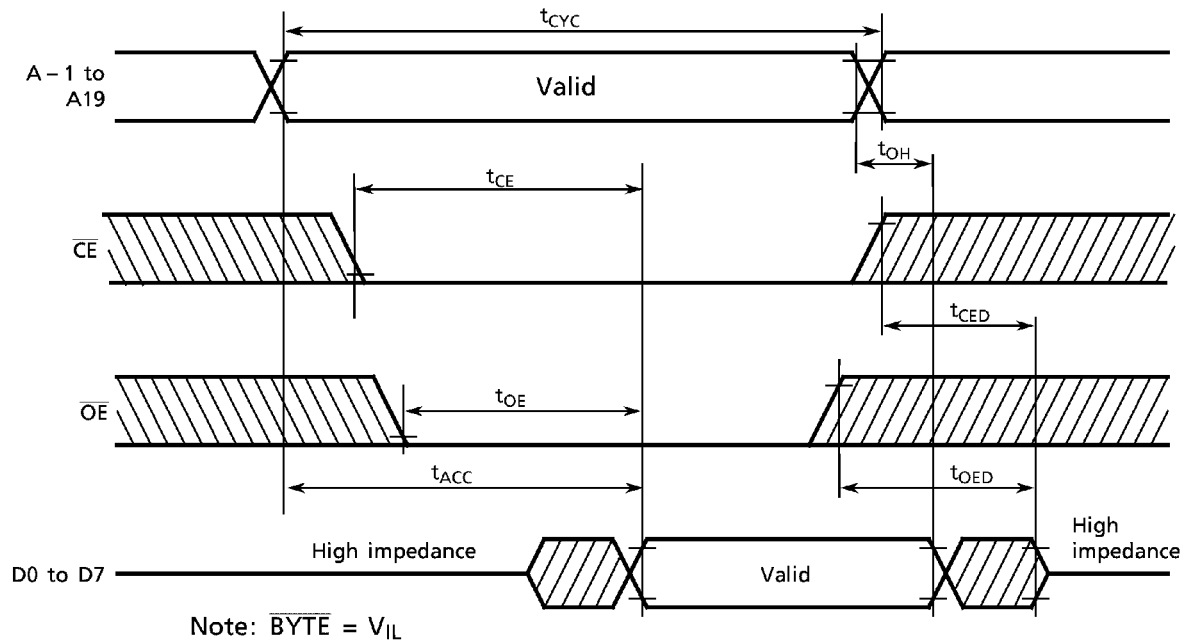
Output Load : 100 pF + 1 TTL
 Input Levels : 0.6 V, 2.4 V
 Timing Measurement Reference Levels Input : 0.8 V, 2.2 V
 Output: 0.8 V, 2.0 V
 Input Rise and Fall Time : 5 ns

TIMING DIAGRAMS

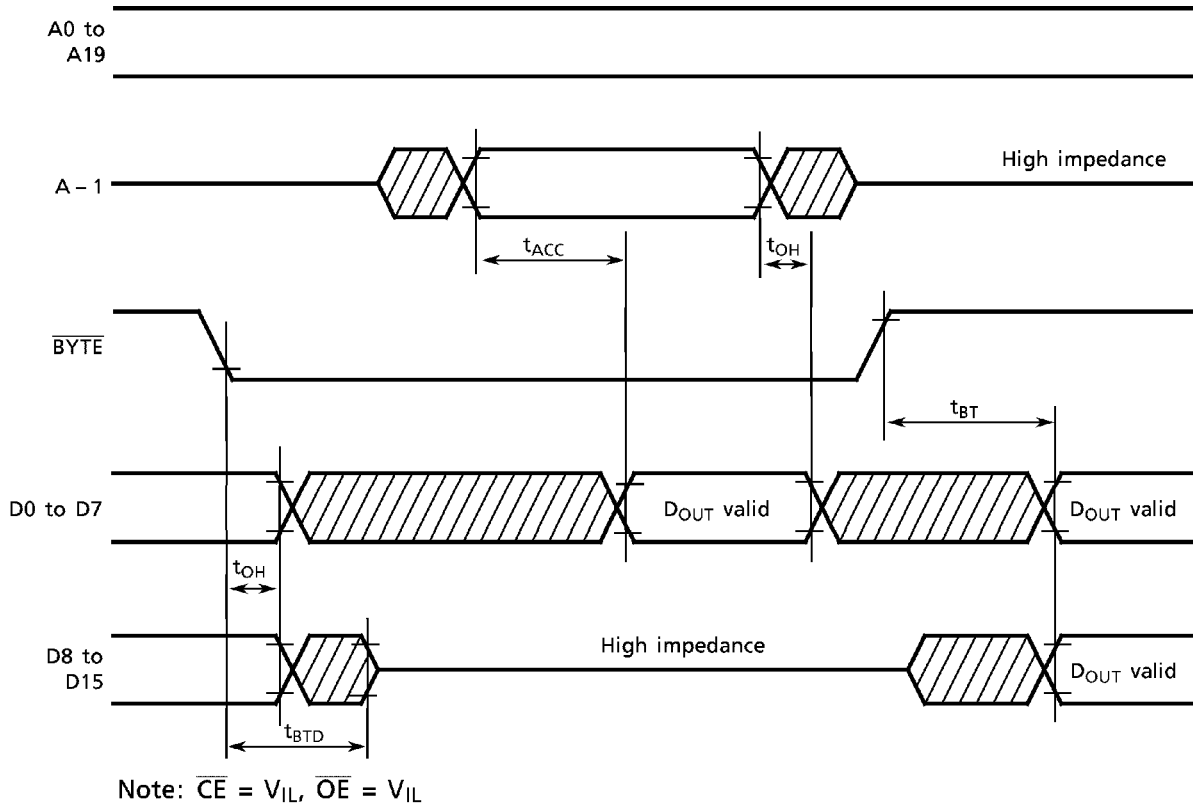
WORD-WIDE READ MODE



BYTE-WIDE READ MODE



BYTE TRANSITION

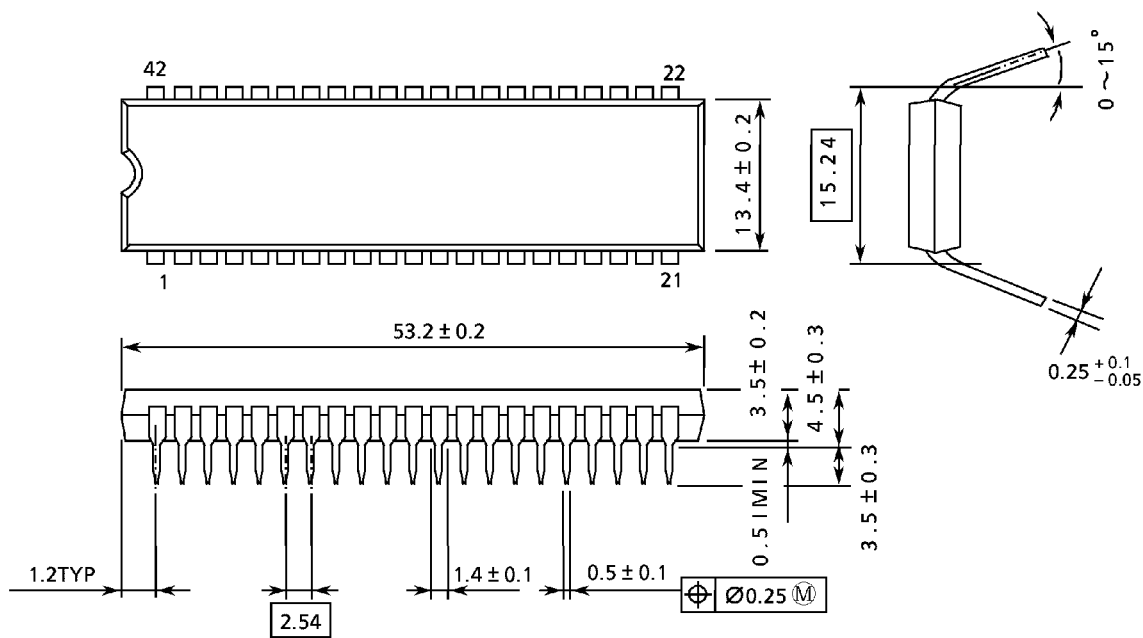


PACKAGE DIMENSIONS

- Plastic DIP

DIP42-P-600

UNITS: mm

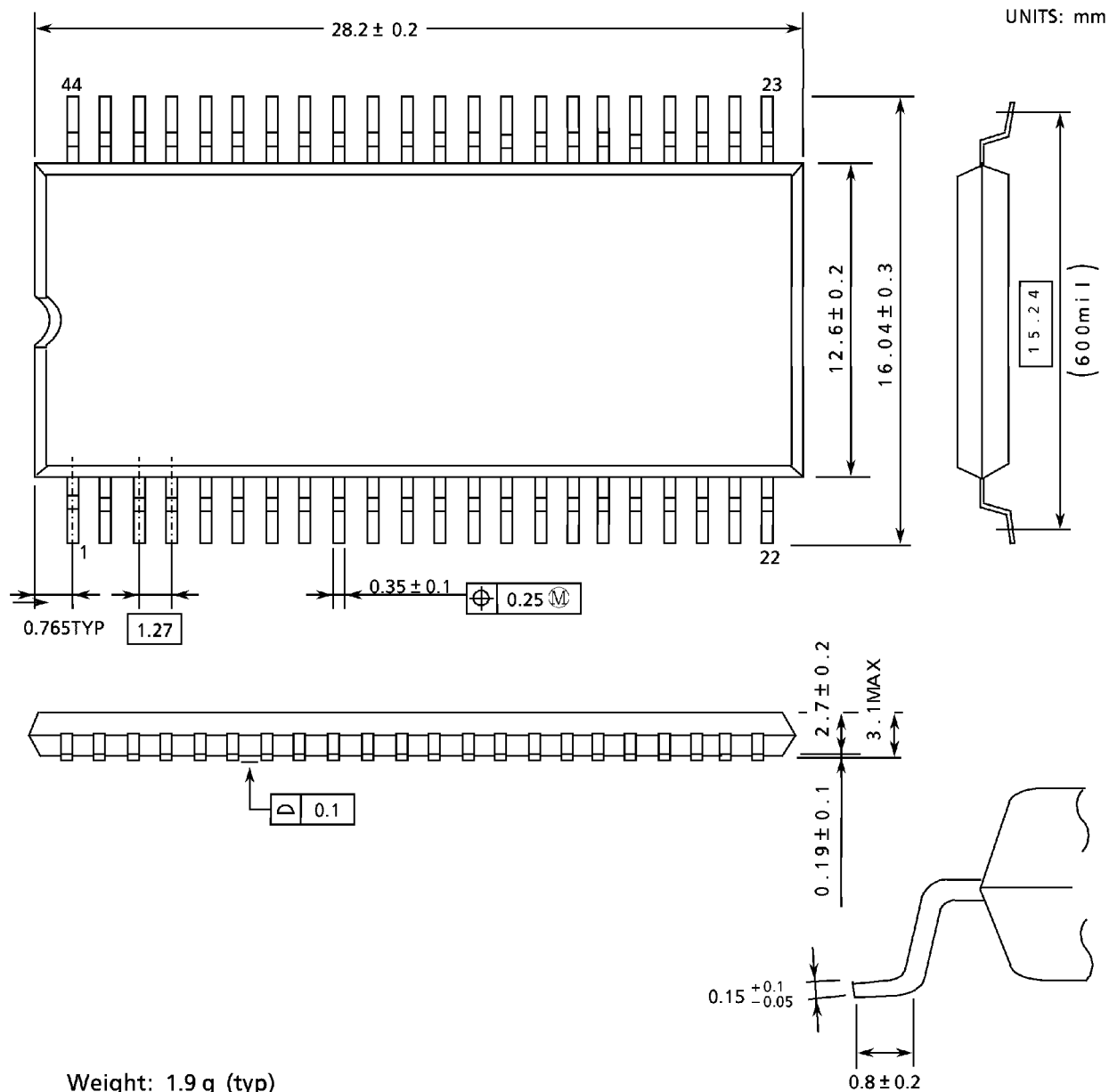


Weight: 5.7 g (typ)

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



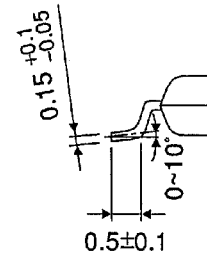
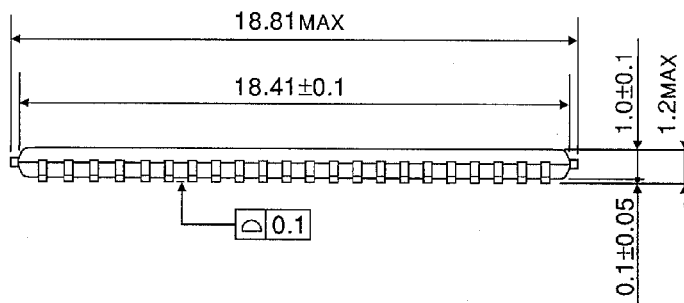
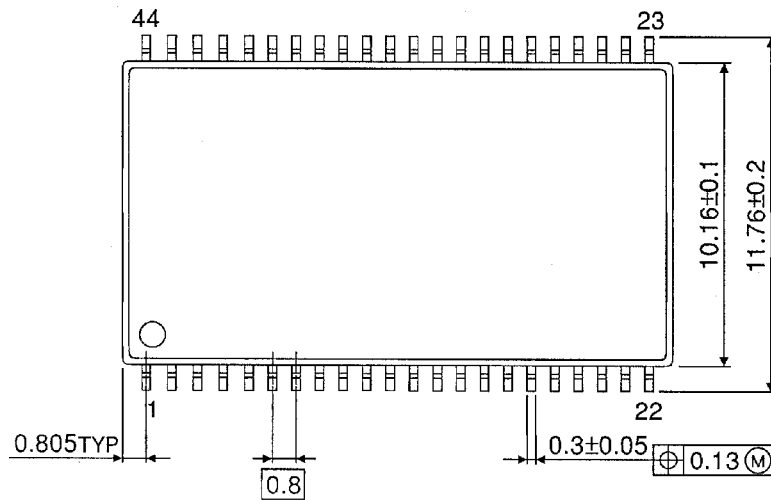
Weight: 1.9 g (typ)

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

PACKAGE DIMENSIONS

- TC5316200CFT

TSOP44-P-400



Weight: 0.5 g (typ)