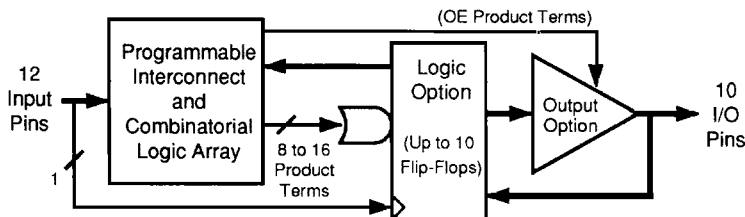


## Features

- **High Speed Programmable Logic Device**  
15 ns Max Propagation Delay  
5 V  $\pm$ 10% Operation
  - **Low Power CMOS Operation**
- | Speed                | "L"   | -15,-20 | All    |
|----------------------|-------|---------|--------|
| Temp                 | C/M   | C/M     | Others |
| I <sub>cc</sub> (mA) | 12/15 | 90/100  | 55     |
- **CMOS and TTL Compatible Inputs and Outputs**  
10  $\mu$ A Leakage Maximum
  - **Reprogrammable - Tested 100% for Programmability**
  - **High Reliability CMOS Technology**  
2000 V ESD Protection  
200 mA Latchup Immunity
  - **Full Military, Commercial and Industrial Temperature Ranges**
  - **Dual-In-Line and Surface Mount Packages**

## Logic Diagram



## Description

The AT22V10 and AT22V10L are CMOS high performance Erasable Programmable Logic Devices (EPLDs). Speeds down to 15 ns and power dissipation as low as 12 mA are offered. All speed ranges are specified over the full 5 V  $\pm$ 10% range. All pins offer a low  $\pm$ 10  $\mu$ A leakage.

The AT22V10L provides the optimum low power CMOS EPLD solution, with low DC power (8 mA typical) and full CMOS output levels. The AT22V10L significantly reduces total system power and enhances system reliability.

Full CMOS output levels help reduce power in many other system components.

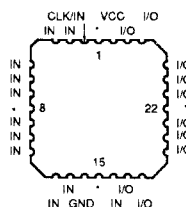
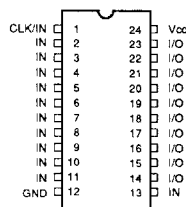
The AT22V10 and AT22V10L incorporate a variable product term architecture. Each output is allocated from eight to 16 product terms, which allows highly complex logic functions to be realized.

Two additional product terms are included to provide synchronous preset and asynchronous reset. These terms are common to all 10 registers. All registers are automatically cleared upon power up.

Register Preload simplifies testing. A Security Fuse prevents unauthorized copying of programmed fuse patterns.

## Pin Configurations

| Pin Name | Function               |
|----------|------------------------|
| CLK/IN   | Clock and Logic Input  |
| IN       | Logic Inputs           |
| I/O      | Bidirectional Buffers  |
| *        | No Internal Connection |
| VCC      | +5 V Supply            |



## Absolute Maximum Ratings\*

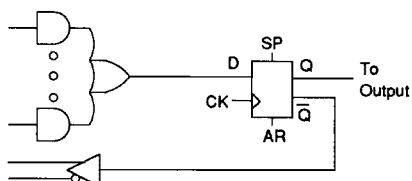
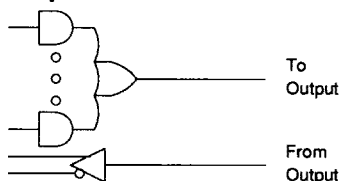
|                                                                            |                                  |
|----------------------------------------------------------------------------|----------------------------------|
| Temperature Under Bias.....                                                | -55°C to +125°C                  |
| Storage Temperature.....                                                   | -65°C to +150°C                  |
| Voltage on Any Pin with<br>Respect to Ground.....                          | -2.0 V to +7.0 V <sup>(1)</sup>  |
| Voltage on Input Pins<br>with Respect to Ground<br>During Programming..... | -2.0 V to +14.0 V <sup>(1)</sup> |
| Programming Voltage with<br>Respect to Ground.....                         | -2.0 V to +14.0 V <sup>(1)</sup> |
| Integrated UV Erase Dose.....                                              | 7258 W-sec/cm <sup>2</sup>       |

\*NOTICE: Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

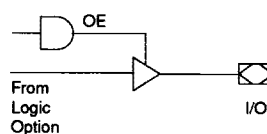
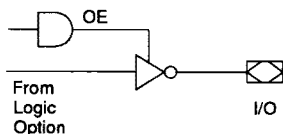
Note:

1. Minimum voltage is -0.6 V dc which may undershoot to -2.0 V for pulses of less than 20 ns. Maximum output pin voltage is  $V_{CC}+0.75$  V dc which may overshoot to +7.0 V for pulses of less than 20 ns.

## Logic Options



## Output Options



## D.C. and A.C. Operating Conditions

|                              | Commercial AT22V10/L<br>-15, -20, -25, -35 | Industrial AT22V10/L<br>-15, -20, -25, -35 | Military AT22V10/L<br>-15, -20, -25, -30 |
|------------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|
| Operating Temperature (Case) | 0°C - 70°C                                 | -40°C - 85°C                               | -55°C - 125°C                            |
| V <sub>CC</sub> Power Supply | 5 V ± 10%                                  | 5 V ± 10%                                  | 5 V ± 10%                                |

## Operating Modes

| Mode        | 24-Pin DIP | 1                | 5                                 | 8              | 13              | I/Os             | V <sub>CC</sub> (24) |
|-------------|------------|------------------|-----------------------------------|----------------|-----------------|------------------|----------------------|
|             | 28-Pin JLC | 2                | 6                                 | 10             | 16              | I/Os             | V <sub>CC</sub> (28) |
| "EPLD"      |            | X <sup>(1)</sup> | X                                 | X              | X               | I/O              | 5 V                  |
| Program     |            | V <sub>PP</sub>  | X / V <sub>H</sub> <sup>(2)</sup> | X              | V <sub>PP</sub> | D <sub>IN</sub>  | 6 V                  |
| PGM Verify  |            | V <sub>PP</sub>  | X/V <sub>H</sub>                  | X              | V <sub>IL</sub> | D <sub>OUT</sub> | 6 V                  |
| PGM Inhibit |            | V <sub>PP</sub>  | X/V <sub>H</sub>                  | X              | V <sub>IH</sub> | High Z           | 6 V                  |
| Preload     |            | X                | X                                 | V <sub>H</sub> | X               | D <sub>IN</sub>  | 5 V                  |

Notes: 1. X can be V<sub>IL</sub> or V<sub>IH</sub>.

2. V<sub>H</sub> = 11.0 V to 14.0 V

## D.C. Characteristics

| Symbol                         | Parameter                    | Condition                                                                       | Min                           | Typ        | Max                   | Units  |
|--------------------------------|------------------------------|---------------------------------------------------------------------------------|-------------------------------|------------|-----------------------|--------|
| I <sub>LI</sub>                | Input Load Current           | V <sub>IN</sub> = -0.1 V to V <sub>CC</sub> +1 V                                |                               |            | 10                    | μA     |
| I <sub>LO</sub>                | Output Leakage Current       | V <sub>OUT</sub> = -0.1 V to V <sub>CC</sub> +0.1 V                             |                               |            | 10                    | μA     |
| I <sub>CC</sub>                | Power Supply Current         | V <sub>CC</sub> = MAX,<br>V <sub>IN</sub> = GND,<br>Outputs Open                | AT22V10-15,-20                | Com.       |                       | 90 mA  |
|                                |                              |                                                                                 |                               | Ind., Mil. |                       | 100 mA |
|                                |                              |                                                                                 | AT22V10-25,-35 <sup>(2)</sup> |            |                       | 55 mA  |
|                                |                              |                                                                                 | AT22V10L <sup>(2)</sup>       | Com.       | 1.7                   | 12 mA  |
|                                |                              |                                                                                 |                               | Ind., Mil. | 2.0                   | 15 mA  |
| I <sub>CC2</sub>               | Clocked Power Supply Current | f = 1 MHz, V <sub>CC</sub> = MAX, Outputs Open                                  | AT22V10L <sup>(2)</sup>       | Com.       |                       | 15 mA  |
|                                |                              |                                                                                 |                               | Ind., Mil. |                       | 20 mA  |
| I <sub>OS</sub> <sup>(1)</sup> | Output Short Circuit Current | V <sub>OUT</sub> = 0.5 V                                                        |                               |            | -90                   | mA     |
| V <sub>IL</sub>                | Input Low Voltage            |                                                                                 | -0.6                          |            | 0.8                   | V      |
| V <sub>IH</sub>                | Input High Voltage           |                                                                                 | 2.0                           |            | V <sub>CC</sub> +0.75 | V      |
| V <sub>OL</sub>                | Output Low Voltage           | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> ,<br>V <sub>CC</sub> = MIN | I <sub>OL</sub> = 16 mA       | Com., Ind. |                       | 0.5 V  |
|                                |                              |                                                                                 | I <sub>OL</sub> = 12 mA       | Mil.       |                       | 0.5 V  |
|                                |                              |                                                                                 | I <sub>OL</sub> = 24 mA       | Com.       |                       | 0.8 V  |
| V <sub>OH</sub>                | Output High Voltage          | V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub> ,<br>V <sub>CC</sub> =MIN   | I <sub>OH</sub> = -100 μA     |            | V <sub>CC</sub> -0.3  | V      |
|                                |                              |                                                                                 | I <sub>OH</sub> = -4.0 mA     |            | 2.4                   | V      |

Notes: 1. Not more than one output at a time should be shorted.  
Duration of short circuit test should not exceed 30 sec.

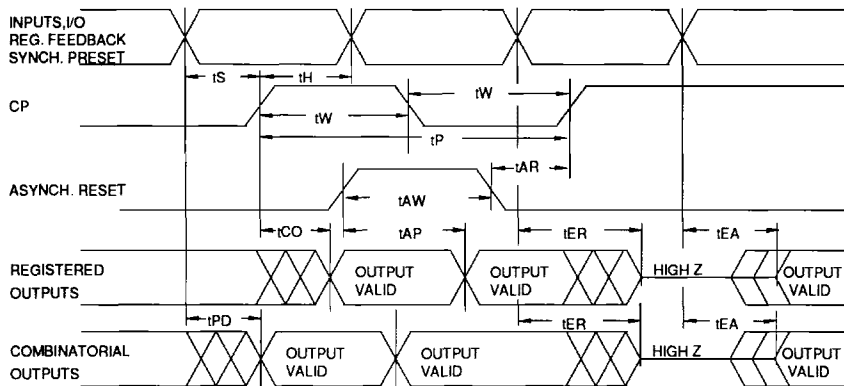
2. See I<sub>CC</sub> vs. Frequency curves in the back of this data sheet.

## A.C. Characteristics, Commercial and Industrial

| Symbol           | Parameter                                               | AT22V10-15 |     |      | AT22V10/L-20 |     |      | AT22V10/L-25 |     |      | AT22V10/L-35 |     |      | Units |
|------------------|---------------------------------------------------------|------------|-----|------|--------------|-----|------|--------------|-----|------|--------------|-----|------|-------|
|                  |                                                         | Min        | Typ | Max  | Min          | Typ | Max  | Min          | Typ | Max  | Min          | Typ | Max  |       |
| t <sub>PD</sub>  | Input or Feedback to Non-Registered Output              |            | 10  | 15   |              | 12  | 20   |              | 15  | 25   |              | 20  | 35   | ns    |
| t <sub>EA</sub>  | Input to Output Enable                                  |            | 10  | 15   |              |     | 20   |              | 15  | 25   |              | 20  | 35   | ns    |
| t <sub>ER</sub>  | Input to Output Disable                                 |            | 10  | 15   |              |     | 20   |              | 15  | 25   |              | 20  | 35   | ns    |
| t <sub>CF</sub>  | Clock to Feedback                                       | 0          | 1   | 2.5  | 0            | 4   | 8    | 0            | 5   | 10   | 0            | 10  | 15   | ns    |
| t <sub>CO</sub>  | Clock to Output                                         | 0          | 7   | 10   | 0            | 8   | 12   | 0            | 10  | 15   | 0            | 12  | 20   | ns    |
| t <sub>S</sub>   | Input or Feedback Setup Time                            | 10         | 8   |      | 12           | 8   |      | 15           | 12  |      | 20           | 15  |      | ns    |
| t <sub>H</sub>   | Hold Time                                               | 0          |     |      | 0            |     |      | 0            |     |      | 0            |     |      | ns    |
| t <sub>P</sub>   | Clock Period                                            | 12         |     |      | 20           |     |      | 24           |     |      | 30           |     |      | ns    |
| t <sub>W</sub>   | Clock Width                                             | 6          |     |      | 10           |     |      | 12           |     |      | 15           |     |      | ns    |
| F <sub>MAX</sub> | External Feedback 1/(t <sub>S</sub> +t <sub>CO</sub> )  |            |     | 50.0 |              |     | 41.6 |              |     | 33.3 |              |     | 25.0 | MHz   |
|                  | Internal Feedback 1/(t <sub>S</sub> + t <sub>CF</sub> ) |            |     | 80.0 |              |     | 50.0 |              |     | 40.0 |              |     | 28.5 | MHz   |
|                  | No Feedback 1/(t <sub>P</sub> )                         |            |     | 83.3 |              |     | 50.0 |              |     | 41.6 |              |     | 33.3 | MHz   |
| t <sub>AW</sub>  | Asynchronous Reset Width                                | 15         | 8   |      | 20           | 9   |      | 25           | 10  |      | 30           | 15  |      | ns    |
| t <sub>AR</sub>  | Asynchronous Reset, Synchronous Preset, Recovery Time   | 15         | 8   |      | 20           | 12  |      | 25           | 15  |      | 30           | 18  |      | ns    |
| t <sub>AP</sub>  | Asynchronous Reset to Registered Output Reset           |            | 12  | 20   |              | 15  | 22   |              | 18  | 25   |              | 20  | 30   | ns    |



## A.C. Waveforms<sup>(1)</sup>

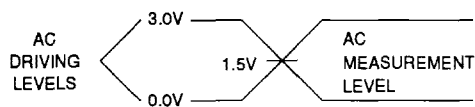


Note: 1. Timing measurement reference is 1.5 V. Input AC driving levels are 0.0 V and 3.0 V, unless otherwise specified.

### A.C. Characteristics, Military

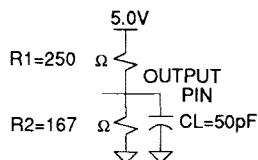
|        |                                               | AT22V10-15 |     |      | AT22V10/L-20 |     |      | AT22V10/L-25 |     |      | AT22V10/L-30 |     |      |       |    |
|--------|-----------------------------------------------|------------|-----|------|--------------|-----|------|--------------|-----|------|--------------|-----|------|-------|----|
| Symbol | Parameter                                     | Min        | Typ | Max  | Min          | Typ | Max  | Min          | Typ | Max  | Min          | Typ | Max  | Units |    |
| tPD    | Input or Feedback to Non-Registered Output    | 10         |     | 15   | 12           |     | 20   | 15           |     | 25   | 20           |     | 30   | ns    |    |
| tEA    | Input to Output Enable                        | 10         |     | 15   |              |     | 20   | 15           |     | 25   | 20           |     | 30   | ns    |    |
| tER    | Input to Output Disable                       | 10         |     | 15   |              |     | 20   | 15           |     | 25   | 20           |     | 30   | ns    |    |
| tCF    | Clock to Feedback                             | 0          | 1   | 2.5  | 0            | 4   | 8    | 0            | 5   | 10   | 0            | 10  | 15   | ns    |    |
| tCO    | Clock to Output                               | 0          | 7   | 10   | 0            | 8   | 15   | 0            | 10  | 15   | 0            | 12  | 20   | ns    |    |
| tSF    | Feedback Setup Time                           | 10         |     | 8    | 12           |     | 10   | 15           |     | 12   | 18           |     | 15   | ns    |    |
| tS     | Input Setup Time                              | 10         |     | 8    | 17           |     | 14   | 18           |     | 15   | 20           |     | 15   | ns    |    |
| tH     | Hold Time                                     | 0          |     |      | 0            |     |      | 0            |     |      | 0            |     |      | ns    |    |
| tP     | Clock Period                                  | 12         |     |      | 20           |     |      | 24           |     |      | 30           |     |      | ns    |    |
| tW     | Clock Width                                   | 6          |     |      | 10           |     |      | 12           |     |      | 15           |     |      | ns    |    |
| FMAX   | External Feedback 1/(tS+tCO)                  |            |     | 50.0 |              |     | 31.2 |              |     | 30.3 |              |     | 25.0 | MHz   |    |
|        | Internal Feedback 1/(tS + tCF)                |            |     | 80.0 |              |     | 50.0 |              |     | 40.0 |              |     | 30.0 | MHz   |    |
|        | No Feedback 1/(tP)                            |            |     | 83.3 |              |     | 50.0 |              |     | 41.6 |              |     | 33.3 | MHz   |    |
| tAW    | Asynchronous Reset Width                      | 15         |     | 8    | 20           |     | 9    | 25           |     | 10   | 30           |     | 15   | ns    |    |
| tAR    | Asynchronous Reset Recovery Time              | 15         |     | 8    | 20           |     | 12   | 25           |     | 15   | 30           |     | 18   | ns    |    |
| tAP    | Asynchronous Reset to Registered Output Reset |            |     | 12   |              |     | 20   |              |     | 18   |              |     | 20   | 30    | ns |

### Input Test Waveforms and Measurement Levels

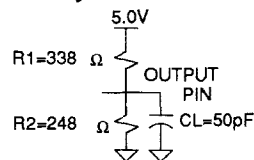
 $t_R, t_F < 5 \text{ ns}$  (10% to 90%)

### Output Test Loads:

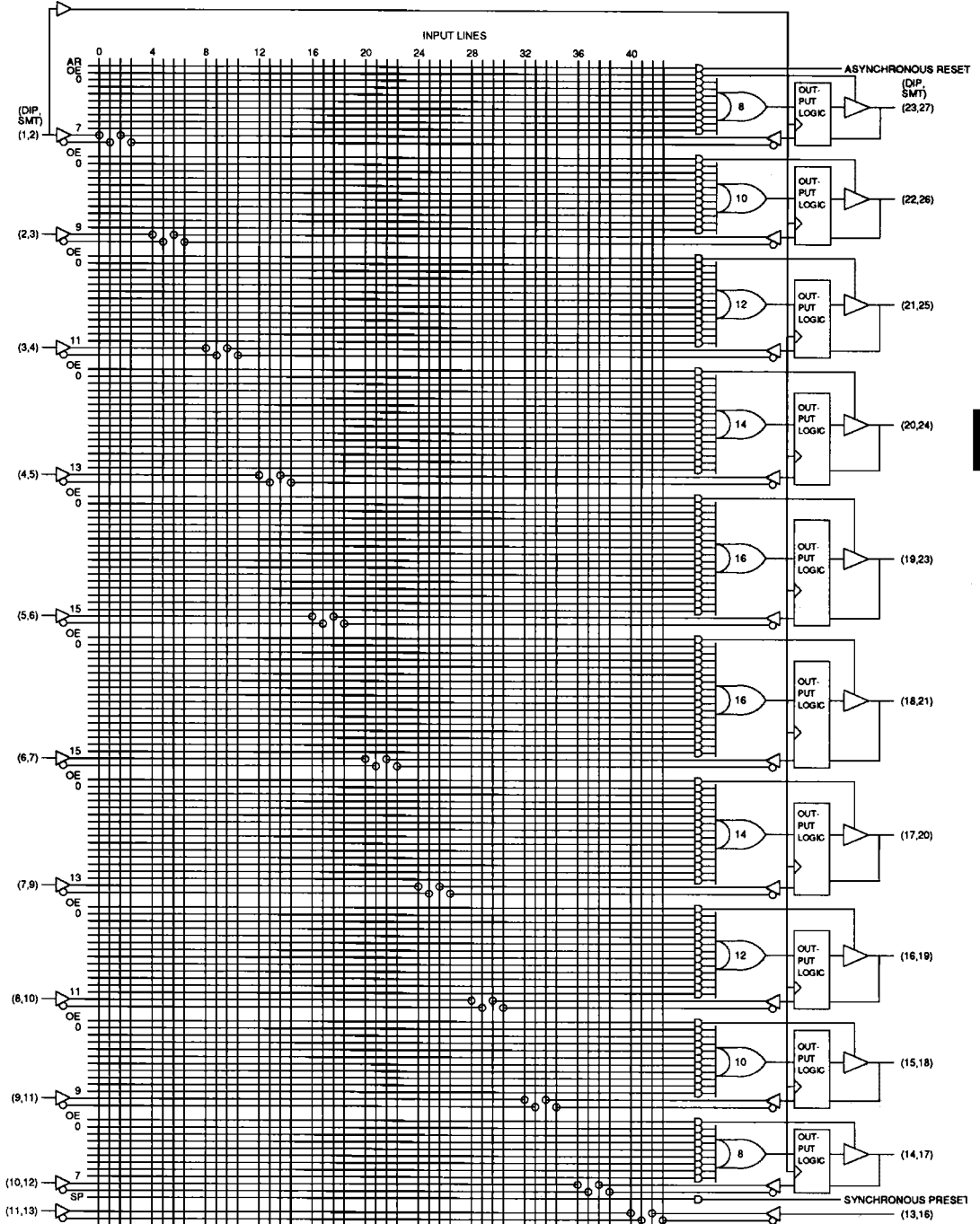
## Commercial



## Military



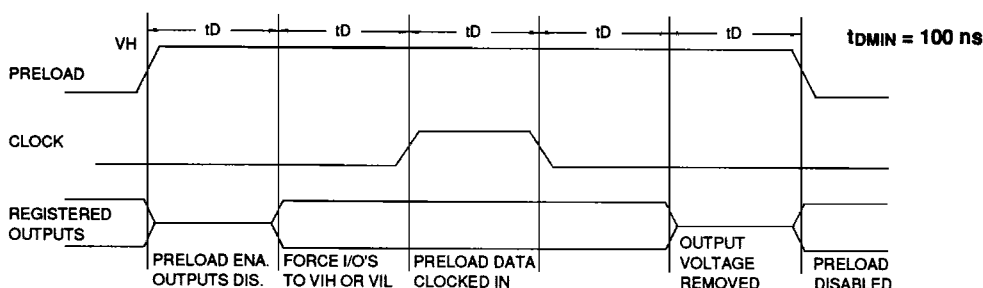
## Functional Logic Diagram AT22V10/L



## Preload of Registered Outputs

The registers in the AT22V10 and AT22V10L are provided with circuitry to allow loading of each register asynchronously with either a high or a low. This feature will simplify testing since any state can be forced into the registers to control test sequencing. A  $V_{IH}$  level on the I/O pin will force the register high; a  $V_{IL}$  will force it low, independent of the polarity bit (C0) setting. The PRELOAD state is entered by placing an 11 V to 14 V signal on pin 8 on DIPs, and pin 10 on SMPs. When the clock pin is pulsed high, the data on the I/O pins is placed into the ten registers.

| Level forced on registered output pin during PRELOAD cycle. | Register state After Cycle |
|-------------------------------------------------------------|----------------------------|
| $V_{IH}$                                                    | High                       |
| $V_{IL}$                                                    | Low                        |

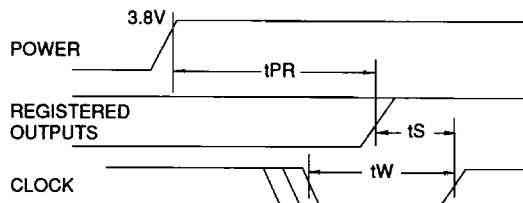


## Power Up Reset

The registers in the AT22V10 and AT22V10L are designed to reset during power up. At a point delayed slightly from  $V_{CC}$  crossing 3.8 V, all registers will be reset to the low state. The output state will depend on the polarity of the output buffer.

This feature is critical for state machine initialization. However, due to the asynchronous nature of reset and the uncertainty of how  $V_{CC}$  actually rises in the system, the following conditions are required:

- 1) The  $V_{CC}$  rise must be monotonic,
- 2) After reset occurs, all input and feedback setup times must be met before driving the clock pin high, and
- 3) The clock must remain stable during  $t_{PR}$ .



| Parameter | Description         | Min | Typ | Max  | Units |
|-----------|---------------------|-----|-----|------|-------|
| $t_{PR}$  | Power-Up Reset Time |     | 600 | 1000 | ns    |

## Pin Capacitance ( $f = 1 \text{ MHz}$ , $T = 25^\circ\text{C}$ ) <sup>(1)</sup>

|           | Typ | Max | Units | Conditions              |
|-----------|-----|-----|-------|-------------------------|
| $C_{IN}$  | 5   | 8   | pF    | $V_{IN} = 0 \text{ V}$  |
| $C_{OUT}$ | 6   | 8   | pF    | $V_{OUT} = 0 \text{ V}$ |

Note: 1. Typical values for nominal supply voltage. This parameter is only sampled and is not 100% tested.

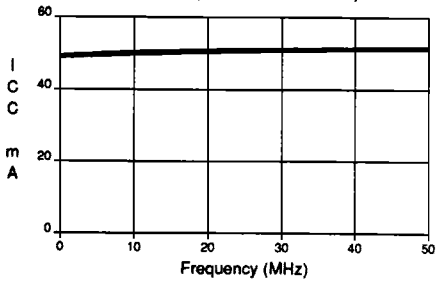
## Erasure Characteristics

The entire fuse array of an AT22V10 or AT22V10L is erased after exposure to ultraviolet light at a wavelength of 2537 Å. Complete erasure is assured after a minimum of 20 minutes exposure using  $12,000 \mu\text{W}/\text{cm}^2$  intensity lamps spaced one inch away from the chip. Minimum erase time for lamps at other in-

tensity ratings can be calculated from the minimum integrated erasure dose of  $15 \text{ W}\cdot\text{sec}/\text{cm}^2$ . To prevent unintentional erasure, an opaque label is recommended to cover the clear window on any UV erasable EPLD which will be subjected to continuous fluorescent indoor lighting or sunlight.

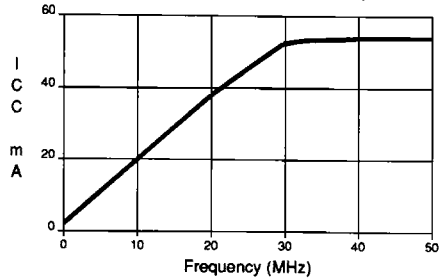
## SUPPLY CURRENT vs. INPUT FREQUENCY

AT22V10 (TA = 25°C, VCC = 5V)

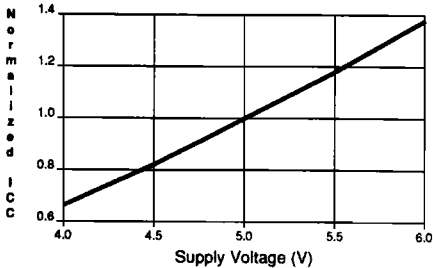


## SUPPLY CURRENT vs. INPUT FREQUENCY

AT22V10L (TA = 25°C, VCC = 5V)

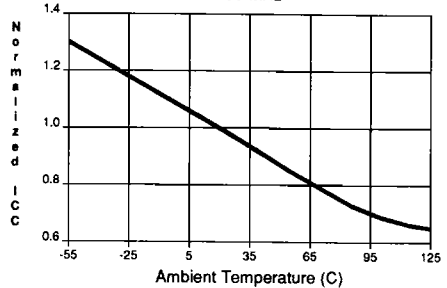


## NORMALIZED SUPPLY CURRENT vs. SUPPLY VOLTAGE

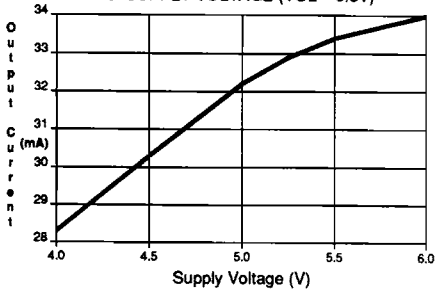


## NORMALIZED ICC vs. AMBIENT TEMP.

f = 30 MHz

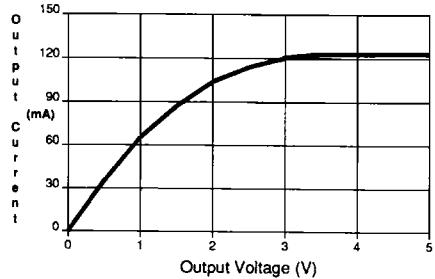


## OUTPUT SINK CURRENT vs. SUPPLY VOLTAGE (VOL = 0.5V)



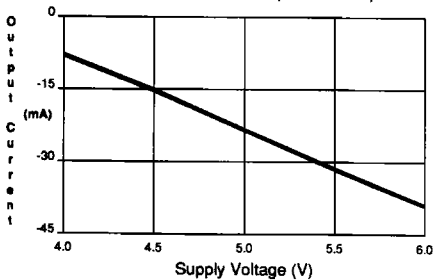
## OUTPUT SINK CURRENT

vs. OUTPUT VOLTAGE (TA = 25°C, VCC = 5V)



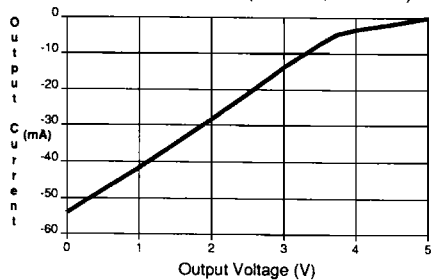
## OUTPUT SOURCE CURRENT

vs. SUPPLY VOLTAGE (VOH = 2.4V)

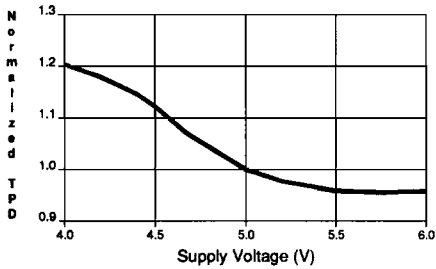


## OUTPUT SOURCE CURRENT

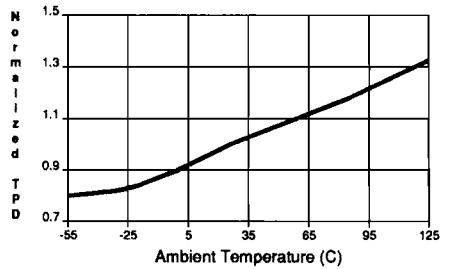
vs. OUTPUT VOLTAGE (TA = 25°C, VCC = 5V)



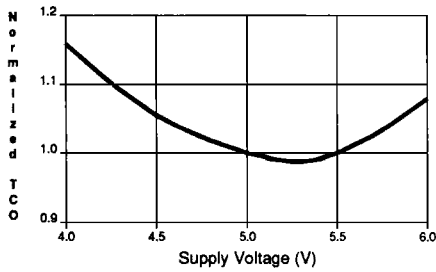
**NORMALIZED TPD  
vs. SUPPLY VOLTAGE**



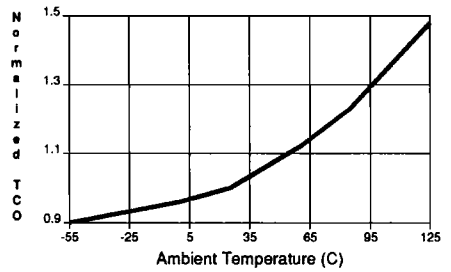
**NORMALIZED TPD  
vs. TEMPERATURE**



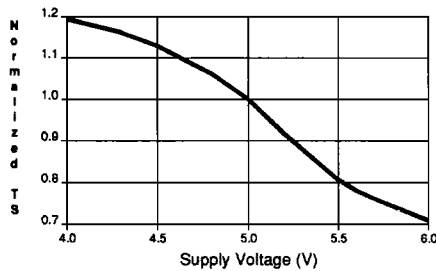
**NORMALIZED TCO  
vs. SUPPLY VOLTAGE**



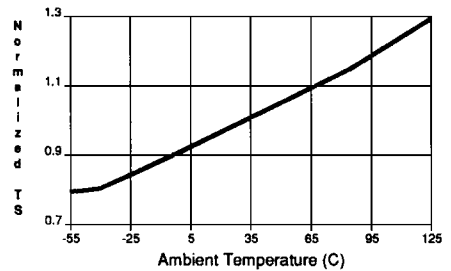
**NORMALIZED TCO  
vs. TEMPERATURE**



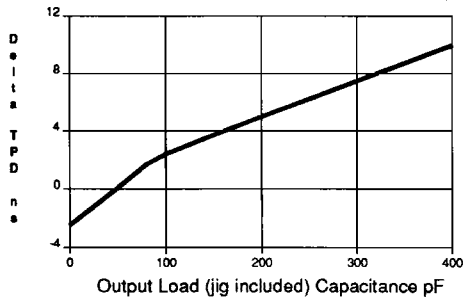
**NORMALIZED TS  
vs. SUPPLY VOLTAGE**



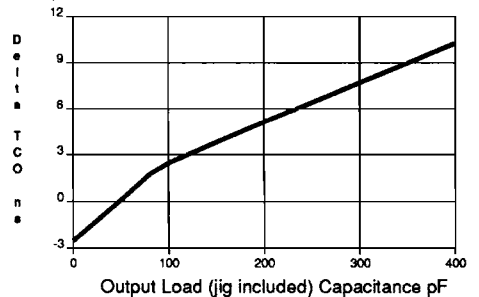
**NORMALIZED TS  
vs. TEMPERATURE**



**DELTA TPD vs. OUTPUT LOADING  
(VCC = 4.5V, OUTPUT LOAD = COMMERCIAL)**



**DELTA TCO vs. OUTPUT LOADING  
(VCC = 4.5V, OUTPUT LOAD = COMMERCIAL)**



**Ordering Information**

| tpd<br>(ns) | ts<br>(ns) | tco<br>(ns) | Ordering Code    | Package | Operation Range                                               |
|-------------|------------|-------------|------------------|---------|---------------------------------------------------------------|
| 15          | 10         | 10          | AT22V10-15DC     | 24DW3   | Commercial<br>(0°C to 70°C)                                   |
|             |            |             | AT22V10-15FC     | 24C     |                                                               |
|             |            |             | AT22V10-15GC     | 24D3    |                                                               |
|             |            |             | AT22V10-15JC     | 28J     |                                                               |
|             |            |             | AT22V10-15KC     | 28KW    |                                                               |
|             |            |             | AT22V10-15LC     | 28LW    |                                                               |
|             |            |             | AT22V10-15NC     | 28L     |                                                               |
|             |            |             | AT22V10-15PC     | 24P3    |                                                               |
|             |            |             | AT22V10-15SC     | 24S     | Industrial<br>(-40°C to 85°C)                                 |
|             |            |             | AT22V10-15YC     | 24CW    |                                                               |
|             |            |             | AT22V10-15DI     | 24DW3   |                                                               |
|             |            |             | AT22V10-15FI     | 24C     |                                                               |
|             |            |             | AT22V10-15GI     | 24D3    |                                                               |
|             |            |             | AT22V10-15JI     | 28J     |                                                               |
|             |            |             | AT22V10-15KI     | 28KW    |                                                               |
|             |            |             | AT22V10-15LI     | 28LW    |                                                               |
|             |            |             | AT22V10-15NI     | 28L     | Military<br>(-55°C to 125°C)                                  |
|             |            |             | AT22V10-15PI     | 24P3    |                                                               |
|             |            |             | AT22V10-15SI     | 24S     |                                                               |
|             |            |             | AT22V10-15YI     | 24CW    |                                                               |
|             |            |             | AT22V10-15DM     | 24DW3   |                                                               |
|             |            |             | AT22V10-15FM     | 24C     |                                                               |
|             |            |             | AT22V10-15GM     | 24D3    | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
|             |            |             | AT22V10-15KM     | 28KW    |                                                               |
|             |            |             | AT22V10-15LM     | 28LW    |                                                               |
|             |            |             | AT22V10-15NM     | 28L     |                                                               |
|             |            |             | AT22V10-15YM     | 24CW    |                                                               |
|             |            |             | AT22V10-15DM/883 | 24DW3   |                                                               |
|             |            |             | AT22V10-15FM/883 | 24C     |                                                               |
|             |            |             | AT22V10-15GM/883 | 24D3    |                                                               |
|             |            |             | AT22V10-15KM/883 | 28KW    |                                                               |
|             |            |             | AT22V10-15LM/883 | 28LW    |                                                               |
|             |            |             | AT22V10-15NM/883 | 28L     |                                                               |
|             |            |             | AT22V10-15YM/883 | 24CW    |                                                               |
| 20          | 12         | 15          | AT22V10-20DC     | 24DW3   | Commercial<br>(0°C to 70°C)                                   |
|             |            |             | AT22V10-20FC     | 24C     |                                                               |
|             |            |             | AT22V10-20GC     | 24D3    |                                                               |
|             |            |             | AT22V10-20JC     | 28J     |                                                               |
|             |            |             | AT22V10-20KC     | 28KW    |                                                               |
|             |            |             | AT22V10-20LC     | 28LW    |                                                               |
|             |            |             | AT22V10-20NC     | 28L     |                                                               |
|             |            |             | AT22V10-20PC     | 24P3    |                                                               |
|             |            |             | AT22V10-20SC     | 24S     |                                                               |
|             |            |             | AT22V10-20YC     | 24CW    |                                                               |
|             |            |             |                  |         |                                                               |

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## Ordering Information

| t <sub>PD</sub><br>(ns) | t <sub>s</sub><br>(ns) | t <sub>CO</sub><br>(ns) | Ordering Code                                                                                                                                                | Package                                                                   | Operation Range                                               |
|-------------------------|------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|
| 20                      | 12                     | 15                      | AT22V10-20DI<br>AT22V10-20FI<br>AT22V10-20GI<br>AT22V10-20JI<br>AT22V10-20KI<br>AT22V10-20LI<br>AT22V10-20NI<br>AT22V10-20PI<br>AT22V10-20SI<br>AT22V10-20YI | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Industrial<br>(-40°C to 85°C)                                 |
|                         |                        |                         | AT22V10-20DM<br>AT22V10-20FM<br>AT22V10-20GM<br>AT22V10-20KM<br>AT22V10-20LM<br>AT22V10-20NM<br>AT22V10-20YM                                                 | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military<br>(-55°C to 125°C)                                  |
| 20                      | 17                     | 15                      | AT22V10-20DM/883<br>AT22V10-20FM/883<br>AT22V10-20GM/883<br>AT22V10-20KM/883<br>AT22V10-20LM/883<br>AT22V10-20NM/883<br>AT22V10-20YM/883                     | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
|                         |                        |                         | AT22V10-25DC<br>AT22V10-25FC<br>AT22V10-25GC<br>AT22V10-25JC<br>AT22V10-25KC<br>AT22V10-25LC<br>AT22V10-25NC<br>AT22V10-25PC<br>AT22V10-25SC<br>AT22V10-25YC | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Commercial<br>(0°C to 70°C)                                   |
| 25                      | 15                     | 15                      | AT22V10-25DI<br>AT22V10-25FI<br>AT22V10-25GI<br>AT22V10-25JI<br>AT22V10-25KI<br>AT22V10-25LI<br>AT22V10-25NI<br>AT22V10-25PI<br>AT22V10-25SI<br>AT22V10-25YI | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Industrial<br>(-40°C to 85°C)                                 |

## Ordering Information

| tpd<br>(ns) | ts<br>(ns) | tco<br>(ns) | Ordering Code                                                                                                                                                | Package                                                                   | Operation Range                                               |
|-------------|------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|
| 25          | 18         | 15          | AT22V10-25DM<br>AT22V10-25FM<br>AT22V10-25GM<br>AT22V10-25KM<br>AT22V10-25LM<br>AT22V10-25NM<br>AT22V10-25YM                                                 | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military<br>(-55°C to 125°C)                                  |
|             |            |             | AT22V10-25DM/883<br>AT22V10-25FM/883<br>AT22V10-25GM/883<br>AT22V10-25KM/883<br>AT22V10-25LM/883<br>AT22V10-25NM/883<br>AT22V10-25YM/883                     | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 30          | 20         | 20          | AT22V10-30DM<br>AT22V10-30FM<br>AT22V10-30GM<br>AT22V10-30KM<br>AT22V10-30LM<br>AT22V10-30NM<br>AT22V10-30YM                                                 | 24DW3<br>24C<br>28D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military<br>(-55°C to 125°C)                                  |
|             |            |             | AT22V10-30DM/883<br>AT22V10-30FM/883<br>AT22V10-30GM/883<br>AT22V10-30KM/883<br>AT22V10-30LM/883<br>AT22V10-30NM/883<br>AT22V10-30YM/883                     | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 35          | 25         | 25          | AT22V10-35DC<br>AT22V10-35FC<br>AT22V10-35GC<br>AT22V10-35JC<br>AT22V10-35KC<br>AT22V10-35LC<br>AT22V10-35NC<br>AT22V10-35PC<br>AT22V10-35SC<br>AT22V10-35YC | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Commercial<br>(0°C to 70°C)                                   |
|             |            |             | AT22V10-35DI<br>AT22V10-35FI<br>AT22V10-35GI<br>AT22V10-35JI<br>AT22V10-35KI<br>AT22V10-35LI<br>AT22V10-35NI<br>AT22V10-35PI<br>AT22V10-35SI<br>AT22V10-35YI | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Industrial<br>(-40°C to 85°C)                                 |

## Ordering Information

| t <sub>PD</sub><br>(ns) | t <sub>S</sub><br>(ns) | t <sub>CO</sub><br>(ns) | Ordering Code                                            | Package               | Operation Range                                               |
|-------------------------|------------------------|-------------------------|----------------------------------------------------------|-----------------------|---------------------------------------------------------------|
| 20                      | 17                     | 15                      | 5962-87539 04 LX<br>5962-87539 04 3X                     | 24DW3<br>28LW         | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 25                      | 18                     | 15                      | 5962-87539 01 KX<br>5962-87539 01 LX<br>5962-87539 01 3X | 24CW<br>24DW3<br>28LW | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 30                      | 20                     | 20                      | 5962-87539 02 KX<br>5962-87539 02 LX<br>5962-87539 02 3X | 24CW<br>24DW3<br>28LW | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 40                      | 30                     | 25                      | 5962-87539 03 KX<br>5962-87539 03 LX<br>5962-87539 03 3X | 24CW<br>24DW3<br>28LW | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 15                      | 10                     | 10                      | 5962-88670 05 LX<br>5962-88670 05 3X                     | 24D3<br>28L           | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 20                      | 17                     | 15                      | 5962-88670 04 KX<br>5962-88670 04 LX<br>5962-88670 04 3X | 24C<br>24D3<br>28L    | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 25                      | 18                     | 15                      | 5962-88670 01 KX<br>5962-88670 01 LX<br>5962-88670 01 3X | 24C<br>24D3<br>28L    | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 30                      | 20                     | 20                      | 5962-88670 02 KX<br>5962-88670 02 LX<br>5962-88670 02 3X | 24C<br>24D3<br>28L    | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 40                      | 30                     | 25                      | 5962-88670 03 KX<br>5962-88670 03 LX<br>5962-88670 03 3X | 24C<br>24D3<br>28L    | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |

### Package Type

|              |                                                                                |
|--------------|--------------------------------------------------------------------------------|
| <b>24DW3</b> | 24 Lead, 0.300" Wide, Windowed, Ceramic Dual Inline Package (Cerdip)           |
| <b>24C</b>   | 24 Lead, Non-Windowed, Ceramic Flat Package (Cerpack)                          |
| <b>24D3</b>  | 24 Lead, 0.300" Wide, Non-Windowed (OTP), Ceramic Dual Inline Package (Cerdip) |
| <b>28J</b>   | 28 Lead, Plastic J-Leaded Chip Carrier OTP (PLCC)                              |
| <b>28KW</b>  | 28 Lead, Windowed, Ceramic J-Leaded Chip Carrier (JLCC)                        |
| <b>28LW</b>  | 28 Pad, Windowed, Ceramic Leadless Chip Carrier (LCC)                          |
| <b>28L</b>   | 28 Pad, Non-Windowed, Ceramic Leadless Chip Carrier OTP (LCC)                  |
| <b>24P3</b>  | 24 Lead, 0.300" Wide, Plastic Dual Inline Package OTP (PDIP)                   |
| <b>24S</b>   | 24 Lead, 0.300" Wide, Plastic Gull Wing Small Outline OTP (SOIC)               |
| <b>24CW</b>  | 24 Lead, Windowed, Ceramic Flat Package (Cerpack)                              |

## Ordering Information

| tpd<br>(ns) | ts<br>(ns) | tco<br>(ns) | Ordering Code                                                                                                                                                          | Package                                                                   | Operation Range                                               |
|-------------|------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|
| 20          | 12         | 15          | AT22V10L-20DC<br>AT22V10L-20FC<br>AT22V10L-20GC<br>AT22V10L-20JC<br>AT22V10L-20KC<br>AT22V10L-20LC<br>AT22V10L-20NC<br>AT22V10L-20PC<br>AT22V10L-20SC<br>AT22V10L-20YC | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Commercial<br>(0°C to 70°C)                                   |
|             |            |             | AT22V10L-20DI<br>AT22V10L-20FI<br>AT22V10L-20GI<br>AT22V10L-20JI<br>AT22V10L-20KI<br>AT22V10L-20LI<br>AT22V10L-20NI<br>AT22V10L-20PI<br>AT22V10L-20SI<br>AT22V10L-20YI | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Industrial<br>(-40°C to 85°C)                                 |
| 20          | 17         | 15          | AT22V10L-20DM<br>AT22V10L-20FM<br>AT22V10L-20GM<br>AT22V10L-20KM<br>AT22V10L-20LM<br>AT22V10L-20NM<br>AT22V10L-20YM                                                    | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military<br>(-55°C to 125°C)                                  |
|             |            |             | AT22V10L-20DM/883<br>AT22V10L-20FM/883<br>AT22V10L-20GM/883<br>AT22V10L-20KM/883<br>AT22V10L-20LM/883<br>AT22V10L-20NM/883<br>AT22V10L-20YM/883                        | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 25          | 15         | 15          | AT22V10L-25DC<br>AT22V10L-25FC<br>AT22V10L-25GC<br>AT22V10L-25JC<br>AT22V10L-25KC<br>AT22V10L-25LC<br>AT22V10L-25NC<br>AT22V10L-25PC<br>AT22V10L-25SC<br>AT22V10L-25YC | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Commercial<br>(0°C to 70°C)                                   |

## Ordering Information

| t <sub>PD</sub><br>(ns) | t <sub>S</sub><br>(ns) | t <sub>CO</sub><br>(ns) | Ordering Code                                                                                                                                                          | Package                                                                   | Operation Range                                               |
|-------------------------|------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|
| 25                      | 15                     | 15                      | AT22V10L-25DI<br>AT22V10L-25FI<br>AT22V10L-25GI<br>AT22V10L-25JI<br>AT22V10L-25KI<br>AT22V10L-25LI<br>AT22V10L-25NI<br>AT22V10L-25PI<br>AT22V10L-25SI<br>AT22V10L-25YI | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Industrial<br>(-40°C to 85°C)                                 |
| 25                      | 18                     | 15                      | AT22V10L-25DM<br>AT22V10L-25FM<br>AT22V10L-25GM<br>AT22V10L-25KM<br>AT22V10L-25LM<br>AT22V10L-25NM<br>AT22V10L-25YM                                                    | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military<br>(-55°C to 125°C)                                  |
|                         |                        |                         | AT22V10L-25DM/883<br>AT22V10L-25FM/883<br>AT22V10L-25GM/883<br>AT22V10L-25KM/883<br>AT22V10L-25LM/883<br>AT22V10L-25NM/883<br>AT22V10L-25YM/883                        | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 30                      | 20                     | 20                      | AT22V10L-30DM<br>AT22V10L-30FM<br>AT22V10L-30GM<br>AT22V10L-30KM<br>AT22V10L-30LM<br>AT22V10L-30NM<br>AT22V10L-30YM                                                    | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military<br>(-55°C to 125°C)                                  |
|                         |                        |                         | AT22V10L-30DM/883<br>AT22V10L-30FM/883<br>AT22V10L-30GM/883<br>AT22V10L-30KM/883<br>AT22V10L-30LM/883<br>AT22V10L-30NM/883<br>AT22V10L-30YM/883                        | 24DW3<br>24C<br>24D3<br>28KW<br>28LW<br>28L<br>24CW                       | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 35                      | 25                     | 25                      | AT22V10L-35DC<br>AT22V10L-35FC<br>AT22V10L-35GC<br>AT22V10L-35JC<br>AT22V10L-35KC<br>AT22V10L-35LC<br>AT22V10L-35NC<br>AT22V10L-35PC<br>AT22V10L-35SC<br>AT22V10L-35YC | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Commercial<br>(0°C to 70°C)                                   |

## Ordering Information

| t <sub>PD</sub><br>(ns) | t <sub>S</sub><br>(ns) | t <sub>CO</sub><br>(ns) | Ordering Code                                                                                                                                                          | Package                                                                   | Operation Range                                               |
|-------------------------|------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|
| 35                      | 25                     | 15                      | AT22V10L-35DI<br>AT22V10L-35FI<br>AT22V10L-35GI<br>AT22V10L-35JI<br>AT22V10L-35KI<br>AT22V10L-35LI<br>AT22V10L-35NI<br>AT22V10L-35PI<br>AT22V10L-35SI<br>AT22V10L-35YI | 24DW3<br>24C<br>24D3<br>28J<br>28KW<br>28LW<br>28L<br>24P3<br>24S<br>24CW | Industrial<br>(-40°C to 85°C)                                 |
| 20                      | 17                     | 15                      | 5962-88724 04 KX<br>5962-88724 04 LX<br>5962-88724 04 3X                                                                                                               | 24CW<br>24DW3<br>28LW                                                     | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 25                      | 18                     | 15                      | 5962-88724 01 KX<br>5962-88724 01 LX<br>5962-88724 01 3X                                                                                                               | 24CW<br>24DW3<br>28LW                                                     | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 30                      | 20                     | 20                      | 5962-88724 02 KX<br>5962-88724 02 LX<br>5962-88724 02 3X                                                                                                               | 24CW<br>24DW3<br>28LW                                                     | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 40                      | 30                     | 25                      | 5962-88724 03 KX<br>5962-88724 03 LX<br>5962-88724 03 3X                                                                                                               | 24CW<br>24DW3<br>28LW                                                     | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 20                      | 17                     | 15                      | 5962-89755 04 KX<br>5962-89755 04 LX<br>5962-89755 04 3X                                                                                                               | 24C<br>24D3<br>28L                                                        | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 25                      | 18                     | 15                      | 5962-89755 01 KX<br>5962-89755 01 LX<br>5962-89755 01 3X                                                                                                               | 24C<br>24D3<br>28L                                                        | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 30                      | 20                     | 20                      | 5962-89755 02 KX<br>5962-89755 02 LX<br>5962-89755 02 3X                                                                                                               | 24C<br>24D3<br>28L                                                        | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |
| 40                      | 30                     | 25                      | 5962-89755 03 KX<br>5962-89755 03 LX<br>5962-89755 03 3X                                                                                                               | 24C<br>24D3<br>28L                                                        | Military/883C<br>(-55°C to 125°C)<br>Class B, Fully Compliant |

### Package Type

|              |                                                                                |
|--------------|--------------------------------------------------------------------------------|
| <b>24DW3</b> | 24 Lead, 0.300" Wide, Windowed, Ceramic Dual Inline Package (Cerdip)           |
| <b>24C</b>   | 24 Lead, Non-Windowed, Ceramic Flat Package (Cerpack)                          |
| <b>24D3</b>  | 24 Lead, 0.300" Wide, Non-Windowed (OTP), Ceramic Dual Inline Package (Cerdip) |
| <b>28J</b>   | 28 Lead, Plastic J-Leaded Chip Carrier OTP (PLCC)                              |
| <b>28KW</b>  | 28 Lead, Windowed, Ceramic J-Leaded Chip Carrier (JLCC)                        |
| <b>28LW</b>  | 28 Pad, Windowed, Ceramic Leadless Chip Carrier (LCC)                          |
| <b>28L</b>   | 28 Pad, Non-Windowed, Ceramic Leadless Chip Carrier OTP (LCC)                  |
| <b>24P3</b>  | 24 Lead, 0.300" Wide, Plastic Dual Inline Package OTP (PDIP)                   |
| <b>24S</b>   | 24 Lead, 0.300" Wide, Plastic Gull Wing Small Outline OTP (SOIC)               |
| <b>24CW</b>  | 24 Lead, Windowed, Ceramic Flat Package (Cerpack)                              |





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