

## **5Mbps ARCNET (ANSI 878.1) Controller with 2K x 8 On-Chip RAM**

### **Data Brief**

#### **Product Features**

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- New Features:
  - Data Rates up to 5 Mbps
  - Programmable Reconfiguration Times
- 28 Pin PLCC and 48 Pin TQFP packages; Lead-Free RoHS Compliant packages also available
- Ideal for Industrial/Factory/Building Automation and Transportation Applications
- Deterministic, (ANSI 878.1), Token Passing ARCNET Protocol
- Minimal Microcontroller and Media Interface Logic Required
- Flexible Interface For Use With All Microcontrollers or Microprocessors
- Automatically Detects Type of Microcontroller Interface
- 2Kx8 On-Chip Dual Port RAM
- Command Chaining for Packet Queuing
- Sequential Access to Internal RAM
- Software Programmable Node ID
- Eight, 256 Byte Pages Allow Four Pages TX and RX Plus Scratch-Pad Memory
- Next ID Readable
- Internal Clock Scaler and Clock Multiplier for Adjusting Network Speed
- Operating Temperature Range of -40°C to +85°C
- 3.3V power supply with 5V tolerant I/O
- Self-Reconfiguration Protocol
- Supports up to 255 Nodes
- Supports Various Network Topologies (Star, Tree, Bus...)
- CMOS, Single +3.3V Supply
- Duplicate Node ID Detection
- Powerful Diagnostics
- Receive All Packets Mode
- Flexible Media Interface:
  - Traditional Hybrid Interface For Long Distances at 2.5Mbps
  - RS485 Differential Driver Interface For Low Cost, Low Power, High Reliability

### **ORDERING INFORMATION**

#### **Order Numbers:**

COM20020I 3VLJP for 28 pin PLCC \* package  
COM20020I 3V-DZD for 28 pin PLCC \* Lead-Free RoHS Compliant package

COM20020I 3V-HD for 48 pin TQFP package  
COM20020I 3V-HT for 48 pin TQFP Lead-Free RoHS Compliant package

**\* TQFP package is recommended for new design**



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## General Description

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SMSC's COM20020I 3V is a member of the family of Embedded ARCNET Controllers from Standard Microsystems Corporation. The device is a general purpose communications controller for networking microcontrollers and intelligent peripherals in industrial and embedded control environments using an ARCNET protocol engine. The flexible microcontroller and media interfaces, eight-page message support, and extended temperature range of the COM20020I 3V make it the only true network controller optimized for use in industrial and embedded applications. Using an ARCNET protocol engine is the ideal solution for embedded control applications because it provides a deterministic token-passing protocol, a highly reliable and proven networking scheme, and a data rate of up to 5 Mbps when using the COM20020I 3V.

A token-passing protocol provides predictable response times because each network event occurs within a predetermined time interval, based upon the number of nodes on the network. The deterministic nature of ARCNET is essential in real time applications. The integration of the 2Kx8 RAM buffer on-chip, the Command Chaining feature, the 5 Mbps maximum data rate, and the internal diagnostics make the COM20020I 3V the highest performance embedded communications device available. With only one COM20020I 3V and one microcontroller, a complete communications node may be implemented.

**For more details on the ARCNET protocol engine and traditional dipulse signaling schemes, please refer to the ARCNET Local Area Network Standard, available from Standard Microsystems Corporation or the ARCNET Designer's Handbook, available from Datapoint Corporation.**

**For more detailed information on cabling options including RS485, transformer-coupled RS-485 and Fiber Optic interfaces, please refer to the following technical note which is available from Standard Microsystems Corporation: Technical Note 7-5 - Cabling Guidelines for the COM20020I 3V ULANC.**

# Block Diagram

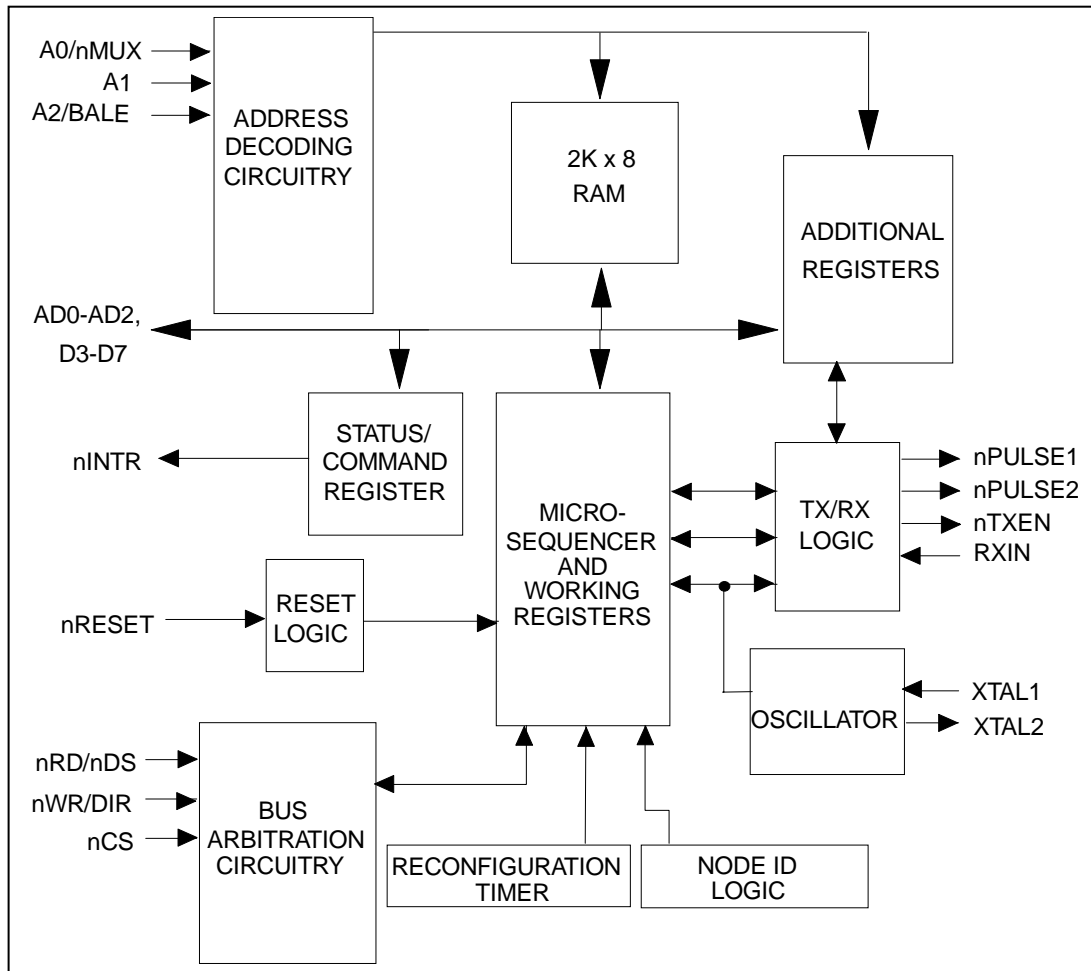


Figure 1 - Internal Block Diagram

# Package Outlines

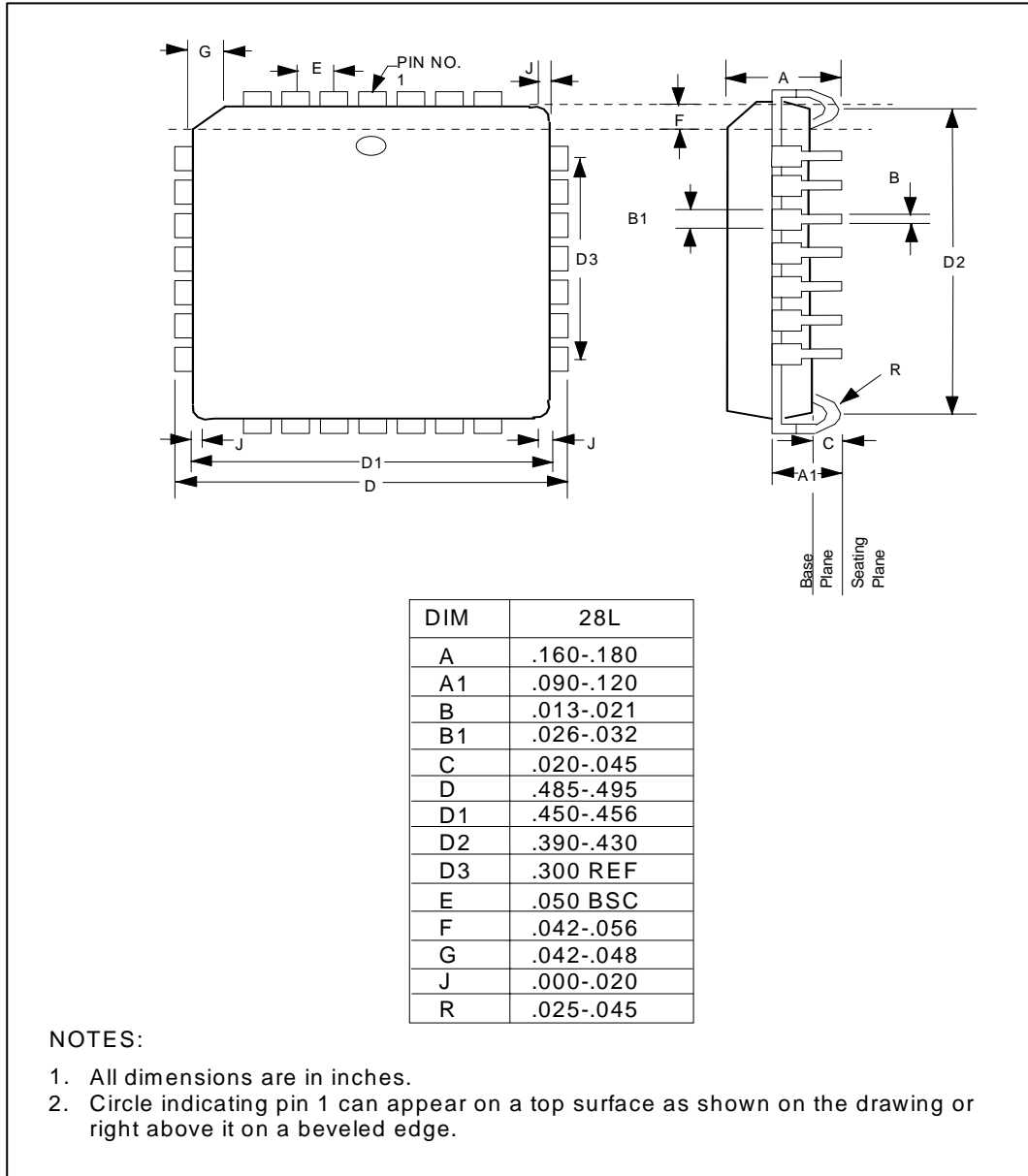


Figure 2 - 28 Pin PLCC Package Dimensions

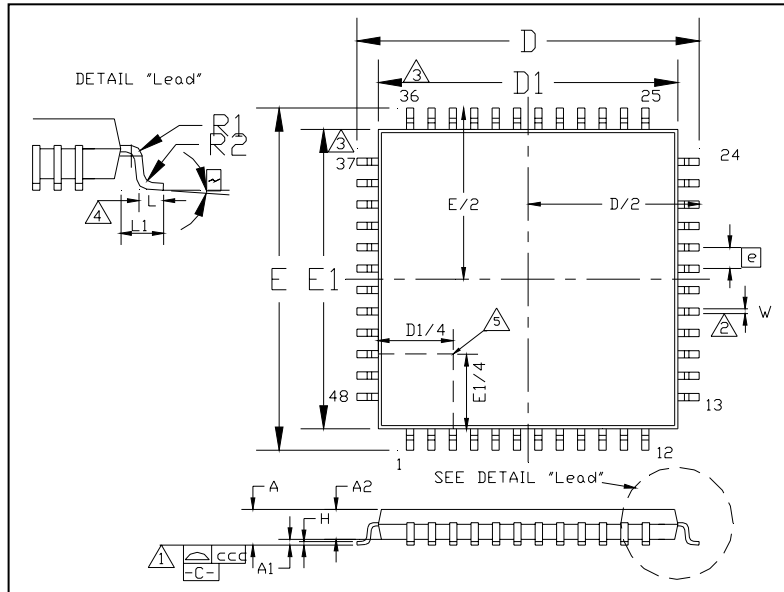


Figure 3 - 48 Pin TQFP Package Outline

|     | MIN        | NOMINAL | MAX    | REMARK                             |
|-----|------------|---------|--------|------------------------------------|
| A   | ~          | ~       | 1.6    | Overall Package Height             |
| A1  | 0.05       | 0.10    | 0.15   | Standoff                           |
| A2  | 1.35       | 1.40    | 1.45   | Body Thickness                     |
| D   | 8.80       | 9.00    | 9.20   | X Span                             |
| D/2 | 4.40       | 4.50    | 4.60   | 1/2 X Span Measure from Centerline |
| D1  | 6.90       | 7.00    | 7.10   | X body Size                        |
| E   | 8.80       | 9.00    | 9.10   | Y Span                             |
| E/2 | 4.40       | 4.50    | 4.60   | 1/2 Y Span Measure from Centerline |
| E1  | 6.90       | 7.00    | 7.10   | Y body Size                        |
| H   | 0.09       | ~       | 0.20   | Lead Frame Thickness               |
| L   | 0.45       | 0.60    | 0.75   | Lead Foot Length from Centerline   |
| L1  | ~          | 1.00    | ~      | Lead Length                        |
| e   | 0.50 Basic |         |        | Lead Pitch                         |
| θ   | 0°         | ~       | 7°     | Lead Foot Angle                    |
| W   | 0.17       | ~       | 0.27   | Lead Width                         |
| R1  | 0.08       | ~       | ~      | Lead Shoulder Radius               |
| R2  | 0.08       | ~       | 0.20   | Lead Foot Radius                   |
| ccc | ~          | ~       | 0.0762 | Coplanarity (Assemblers)           |
| ccc | ~          | ~       | 0.08   | Coplanarity (Test House)           |

Note 1: Controlling Unit: millimeter



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