

**Cost Competitive
ARCNET (ANSI 878.1)
Controller with 2K x 8
On-Chip RAM**

Data Brief

Product Features

- New Features:
 - Data Rates up to 312.5 Kbps
 - 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 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:
 - RS485 Differential Driver Interface For Cost Competitive, Low Power, High Reliability

ORDERING INFORMATION

Order Number(s):

COM20019I 3VLJP for 28 pin PLCC * package

COM20019I 3V-DZD for 28 pin PLCC * Lead-Free RoHS Compliant package

COM20019I 3V-HD for 48 pin TQFP package

COM20019I 3V-HT for 48 pin TQFP Lead-Free RoHS Compliant package

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



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General Description

SMSC's COM20019I 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 COM20019I 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 312.5 Kbps when using the COM20019I 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 maximum data rate, and the internal diagnostics make the COM20019I 3V the highest performance embedded communications device available. With only one COM20019I 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 COM20020 ULANC.

To accommodate transceivers with active high ENABLE pins, the COM20019I 3V contains a programmable TXEN output. To program the TXEN pin for an active high pulse, the nPULSE2 pin should be connected to ground. To retain the normal active low polarity, nPULSE2 should be left open. The polarity determination is made at power on reset and is valid only for Backplane Mode operation. The nPULSE2 pin should remain grounded at all times if an active high polarity is desired.

Block Diagram

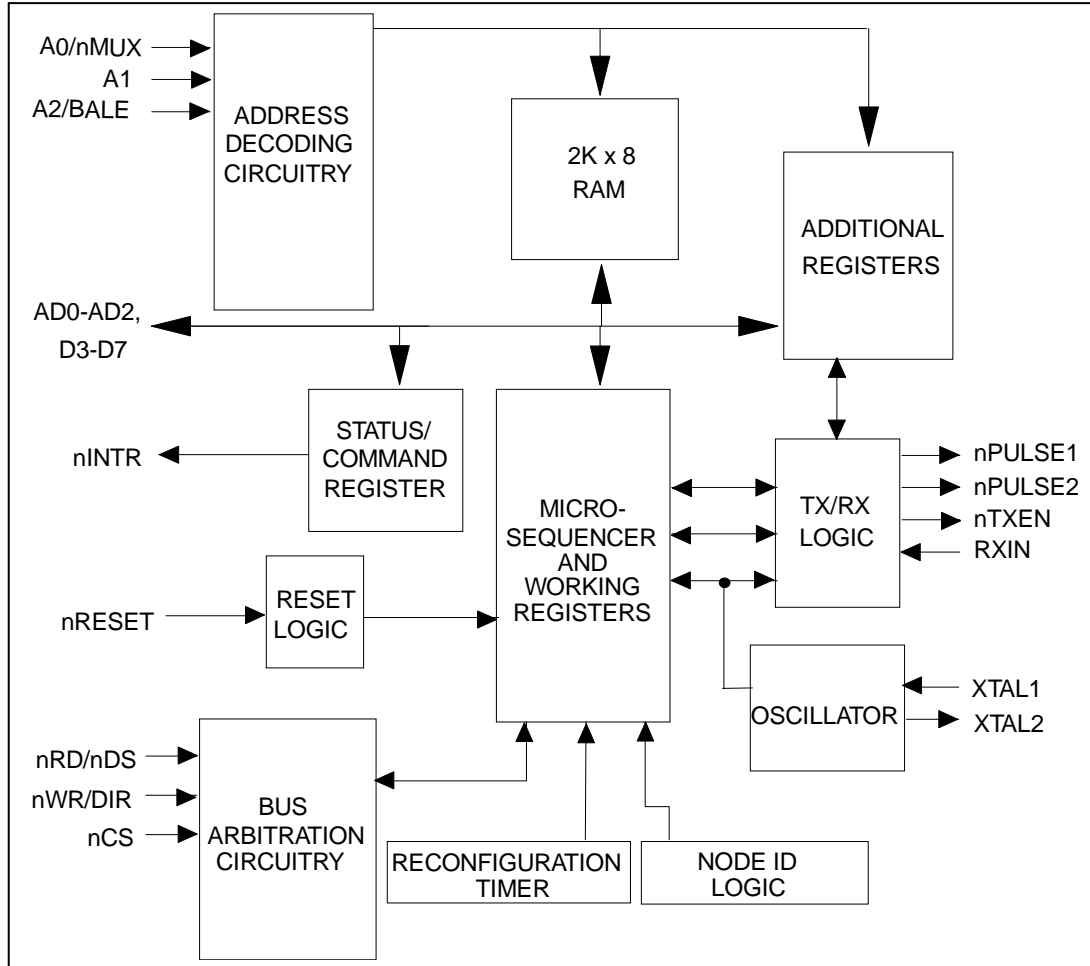
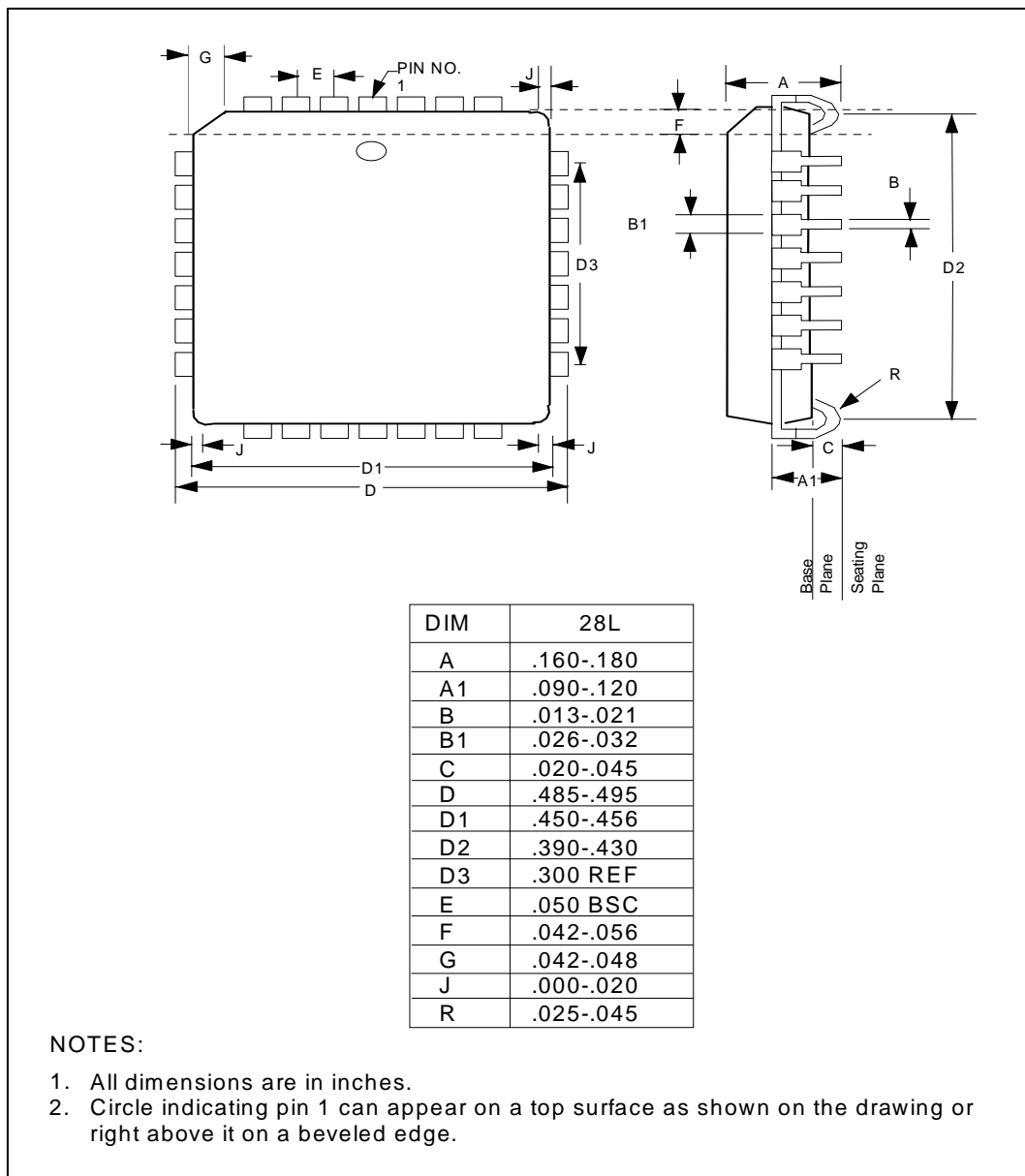


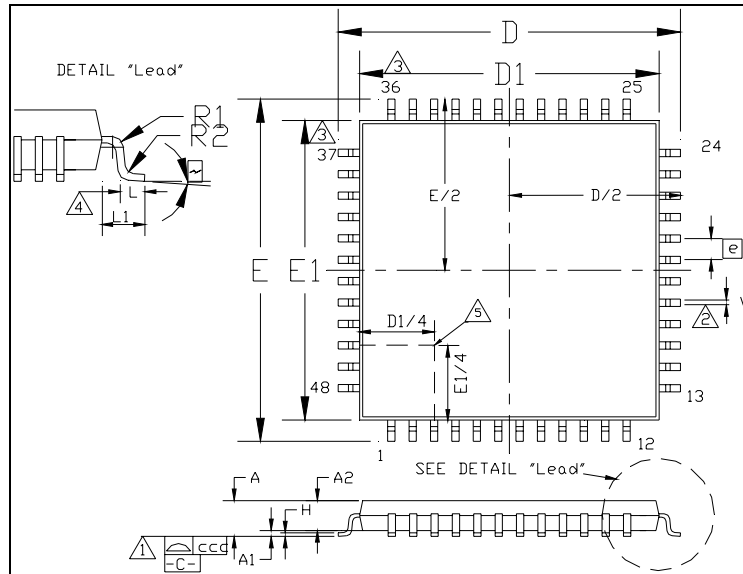
Figure 0.1 – Internal Block Diagram

Package Outlines

28 Pin PLCC Package Outline and Parameters



48 Pin TQFP Package Outline and Parameters



	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	$\frac{1}{2}$ 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	$\frac{1}{2}$ 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
theta	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