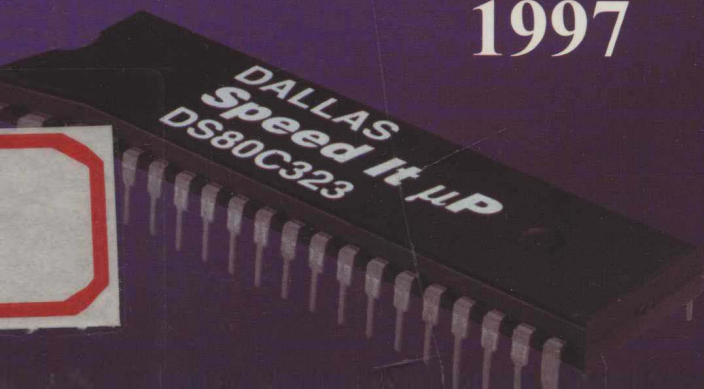




Short-Form Catalog

February
1997



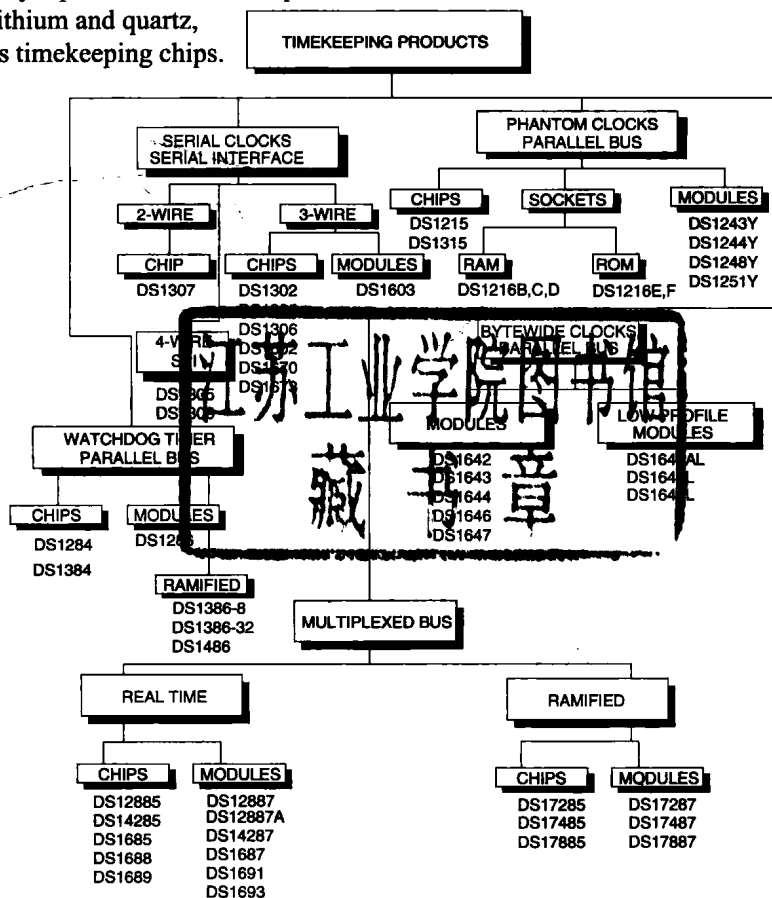
DALLAS
SEMICONDUCTOR

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Timekeeping

Dallas Semiconductor has been the leader in providing Real Time Clocks for a broad range of applications since 1985. The company's proprietary timekeeping CMOS circuits consume current at the nano-ampere level during periods of inactivity. As a result, they can be powered by a lithium cell for more than 10 years, longer than the useful life of most equipment. Because of this longevity, equipment manufacturers do not have to design provisions for battery replacement into their products. In addition to modules that combine circuits with lithium and quartz, Dallas Semiconductor offers timekeeping chips.



Applications

- ◆ Computers
- ◆ Data communication systems
- ◆ Medical equipment
- ◆ Cellular phones
- ◆ Fax machines
- ◆ Industrial controllers
- ◆ Security systems
- ◆ Hand-held GPS receivers

Featured Products

Watchdog Timekeeping Modules

Various configurations of directly addressable nonvolatile RAM are available.

- ◆ Provide four functions for a processor or controller:
 - Nonvolatile SRAM
 - Real time clock/calendar
 - Clock/calendar alarms
 - Watchdog timer
- ◆ Two highly programmable interrupts and a square wave output provide an external interface to alarm and/or watchdog events and a precise clock reference
- ◆ Various configurations of directly addressable nonvolatile RAM are available for uses such as general storage, system configuration, scratch-pad area, etc.
 - DS1286 - 50 bytes
 - DS1386 - 8K or 32K bytes
 - DS1486 - 128K bytes
- ◆ Self-contained packages
- ◆ Eliminate the need for any additional external components
- ◆ Maintain timekeeping and memory in the absence of system power for a minimum of 10 years with an accuracy of ± 1 minute/month at 25°C
- ◆ Interrupt outputs active during battery back mode

INTA	1	28	V _{CC}
NC	2	27	WE
NC	3	26	INTB (INTB)
NC	4	25	NC
A5	5	24	NC
A4	6	23	SQW
A3	7	22	OE
A2	8	21	NC
A1	9	20	CE
A0	10	19	DQ7
DQ0	11	18	DQ6
DQ1	12	17	DQ5
DQ2	13	16	DQ4
GND	14	15	DQ3

DS1286
28-Pin DIP
Module

INTA	1	32	V _{CC}
INTB (INTB)	2	31	SQW
NC	3	30	V _{CC}
A12	4	29	WE
A7	5	28	NC
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	OE
A2	10	23	A10
A1	11	22	CE
A0	12	21	DQ7
DQ0	13	20	DQ6
DQ1	14	19	DQ5
DQ2	15	18	DQ4
GND	16	17	DQ3

DS1386-8
32-Pin DIP
Module

INTA	1	32	V _{CC}
INTB (INTB)	2	31	SQW
NC	3	30	V _{CC}
A12	4	29	WE
A7	5	28	A13
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	OE
A2	10	23	A10
A1	11	22	CE
A0	12	21	DQ7
DQ0	13	20	DQ6
DQ1	14	19	DQ5
DQ2	15	18	DQ4
GND	16	17	DQ3

DS1386-32
32-Pin DIP
Module

INTB (INTB)	1	32	V _{CC}
A16	2	31	A15
A14	3	30	INTA/SQW
A12	4	29	WE
A7	5	28	A13
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	OE
A2	10	23	A10
A1	11	22	CE
A0	12	21	DQ7
DQ0	13	20	DQ6
DQ1	14	19	DQ5
DQ2	15	18	DQ4
GND	16	17	DQ3

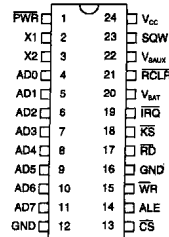
DS1486
32-Pin DIP
Module

Featured Products

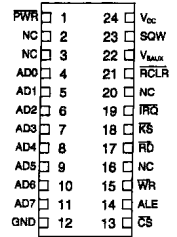
3V/5V Multiplexed Bus Real Time Clocks

These clocks incorporate the industry-standard DS1285/DS1287 clock plus additional features.

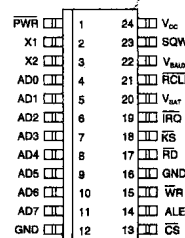
- ◆ Year 2000-compliant
- ◆ 64-bit silicon serial number
- ◆ 114 bytes of user RAM
- ◆ Additional extended general-purpose RAM:
 - 128 bytes (DS1685, DS1687)
 - 2K bytes (DS17285, DS17287)
 - 4K bytes (DS17485, DS17487)
 - 8K bytes (DS17885, DS17887)
- ◆ Burst mode feature available when accessing the extended RAM (DS17x8x devices only)
- ◆ Century counter and date alarm
- ◆ Power control circuitry supports system power-on from a date/time alarm or a key closure
- ◆ +3V or +5V operation
- ◆ Available as chip (DS1685, DS17285, DS17485, DS17885) or standalone module with embedded battery and 32.768 kHz crystal (DS1687, DS17287, DS17487, DS17887)
- ◆ Provide an easy upgrade path for systems requiring more memory without any hardware modifications
- ◆ Pin configuration closely matches the DS12885/DS12887
- ◆ Output a 32 kHz square wave signal each time system power is applied and are ideal devices for systems with processors requiring a clock at power-up



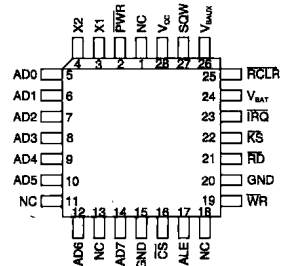
24-Pin SOIC
(24-Pin TSSOP
DS1685 Only)



24-Pin Encapsulated DIP



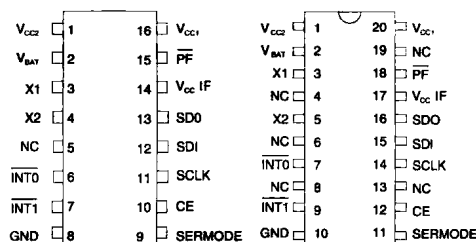
24-Pin DIP



Featured Products

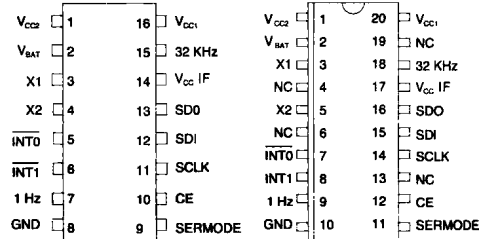
DS1305, DS1306 Serial Alarm Time Chips

- ◆ Two hardware-selectable serial interfaces: standard 3-wire or serial peripheral interface (SPI)
- ◆ Two time-of-day alarms with interrupt outputs
- ◆ Multiple power supply options supporting rechargeable backup power sources
- ◆ Interface logic power supply input for mixed 3V/5V supply system capability
- ◆ 2.0V to 5.5V operation
- ◆ Standard clock/calendar functions along with 96 bytes of user NV SRAM



DS1305
16-Pin DIP

DS1305
20-Pin TSSOP

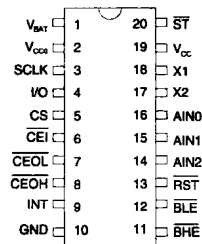


DS1306
16-Pin DIP

DS1306
20-Pin TSSOP

DS1670, DS1673 Portable System Controllers

- ◆ Low-power, highly integrated devices ideal for hand-held portable products
- ◆ Standard clock/calendar function with standard 3-wire interface
- ◆ CPU monitor functions including power-on reset and watchdog timer
- ◆ Contain a 3-channel multiplexed 8-bit A/D converter with 10ms conversion time
- ◆ Time-of-day alarm with interrupt output
- ◆ Perform nonvolatile backup control to external SRAM
- ◆ 3.0V, 3.3V, and 5.0V operation



DS1670, DS1673
20-Pin TSSOP
20-Pin SOIC

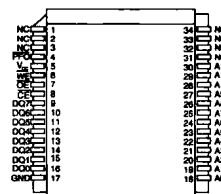


Featured Products

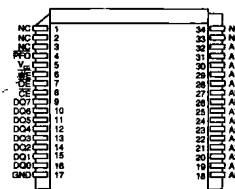
These Timekeeping RAM Modules provide identical functions and performance to their dual-in-line packaged counterparts. The low-profile module is a PLCC package which, when combined with a low-cost, surface mountable socket, provides a surface mount option to the NV Timekeeping RAM product family.

NV Timekeeping RAM Low Profile Modules

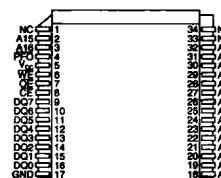
- ◆ Integrate a real time clock function with various configurations of non-volatile SRAM
- ◆ Self-contained packages include NV SRAM, real time clock, crystal, power control circuit, and lithium energy source
- ◆ Directly addressable byte-wide RAM and BCD formatted timekeeping registers
- ◆ Allow for a simple hardware/software device interface design
- ◆ Require no additional external components
- ◆ Maintain timekeeping and memory in the absence of system power for a minimum period of 10 years with an accuracy of ± 1 minute/month at 25°C



DS1643AL
34-Pin Low Profile Module



DS1644L
34-Pin Low Profile Module



DS1646L
34-Pin Low Profile Module

Selection Table

	Device Number	Power Options	Clock Format ^{1, 2}	Calendar Format	User RAM (Bytes)
Serial Clocks	DS1202 ³	2V-5V	STD	STD	24
	DS1302	3V-5V	STD	STD	31
	DS1305	3V-5V	STD	STD	96
	DS1306	3V-5V	STD	STD	96
	DS1307	5V	STD	STD	56
	DS1602	5V	BINARY	BINARY	
	DS1603	5V	BINARY	BINARY	
	DS1670	3.3V	STD	STD	
	DS1673	3.0V, 5V	STD	STD	
Phantom Clocks	DS1215	5V	STD+hh	STD	
	DS1216B	5V	STD+hh	STD	2K, 8K [†]
	DS1216C	5V	STD+hh	STD	8K, 32K [†]
	DS1216D	5V	STD+hh	STD	8K, 32K, 128K, 512K [†]
	DS1216E	5V	STD+hh	STD	ROM: 8K, 32K [†]
	DS1216F	5V	STD+hh	STD	ROM: 8K, 32K, 128K [†]
	DS1315	3.3V, 5V	STD+hh	STD	
NV SRAM with Phantom Clock	DS1243Y	5V	STD+hh	STD	8K
	DS1244Y	5V	STD+hh	STD	32K
	DS1248Y	5V	STD+hh	STD	128K
	DS1251Y	5V	STD+hh	STD	512K
Timekeeping NV RAM	DS1642	5V	STD	STD	2K
	DS1643	5V	STD	STD	8K
	DS1644	5V	STD	STD	32K
	DS1646	5V	STD	STD	128K
	DS1647	5V	STD	STD	512K
Watchdog Timekeepers	DS1284	5V	STD+hh	STD	50
	DS1286	5V	STD+hh	STD	50
	DS1384	5V	STD+hh	STD	50
	DS1386	5V	STD+hh	STD	8K, 32K
	DS1486	5V	STD+hh	STD	128K
Multiplexed Bus Real Time Clocks	DS12885	5V	STD	STD	114
	DS12887	5V	STD	STD	114
	DS12887A	5V	STD	STD	114
	DS14285	5V	STD	STD	114
	DS14287	5V	STD	STD	114
	DS1685	3V, 5V	STD	STD	114+128 (128 accessed via SW control)
	DS1687	3V, 5V	STD	STD	114+128 (128 accessed via SW control)
	DS1688	3V, 5V	STD	STD	114
	DS1689	3V, 5V	STD	STD	114
	DS1691	3V, 5V	STD	STD	114
	DS1693	3V, 5V	STD	STD	114
	DS17285	3V, 5V	STD	STD	114+2K (2K accessed via SW control)
	DS17287	3V, 5V	STD	STD	114+2K (2K accessed via SW control)
	DS17485	3V, 5V	STD	STD	114+4K (4K accessed via SW control)
	DS17487	3V, 5V	STD	STD	114+4K (4K accessed via SW control)
	DS17885	3V, 5V	STD	STD	114+8K (8K accessed via SW control)
	DS17887	3V, 5V	STD	STD	114+8K (8K accessed via SW control)

* TYPES OF INTERRUPTS:

A- TIME OF DAY ALARM: Programmable interrupt is activated when the time of day matches the programmed alarm registers.

WD- WATCHDOG: Interrupt occurs after a programmed interval if the real time clock's watchdog registers are not accessed.

WU- WAKE-UP: An internal alarm designed to wake up the system at a specified time/date.

KS-KICKSTART: An external signal to the real time clock causes an interrupt output which turns on the system power supply.

Selection Table

Interrupts*	NV Control	Serial Number	Bus Type	Other
A x 2 A x 2			3-WIRE 3-WIRE 3-WIRE OR SPI 3-WIRE OR SPI 2-WIRE 3-WIRE 3-WIRE	Contact factory for low-voltage version Contact factory for low-voltage version
A, WD, RESET A, WD, RESET	X X		3-WIRE 3-WIRE	3-CHANNEL A/D 3-CHANNEL A/D
	X		PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM	
	X		PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM	
			PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM PARALLEL/PHANTOM	
			PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE	
A, WD A, WD A, WD A, WD A, WD	X X		PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE PARALLEL/BYTEWIDE	
A, P, U A, P, U A, P, U A, P, U A, P, U A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR A, P, U, KS, WU, RC, CR	 X X X X X X X X X X X X X X X X X X	 X X X X X X X X X X X X X X X X X X	PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED PARALLEL/MUX'ED	 Y2K-Compliant Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant 32 kHz Clock Outputs, Y2K-Compliant

P - PERIODIC: Programmable period interrupt which occurs from 500 μ s to 122 μ s.

U - UPDATE IN PROGRESS: Allows the user to determine if the real time clock is ready to perform.

RC - RAM CLEAR: A RAM clear interrupt is generated when the real time clock has completed a RAM clear operation.

CR - CENTURY REGISTER: The century register is automatically updated at the turn of the century.

RESET- Reset activated when an out-of-tolerance V_{cc} condition is detected.

† DS1216s will accept ROM or static RAM of sizes indicated.

Notes:

1. STD (HH:MM:SS; HH-Hours, MM-Minutes, SS-Seconds)
2. STD+hh (HH:MM:SS; HH-Hours, MM-Minutes, SS-Seconds) hh-hundredths
3. Not recommended for new designs

Memory Products

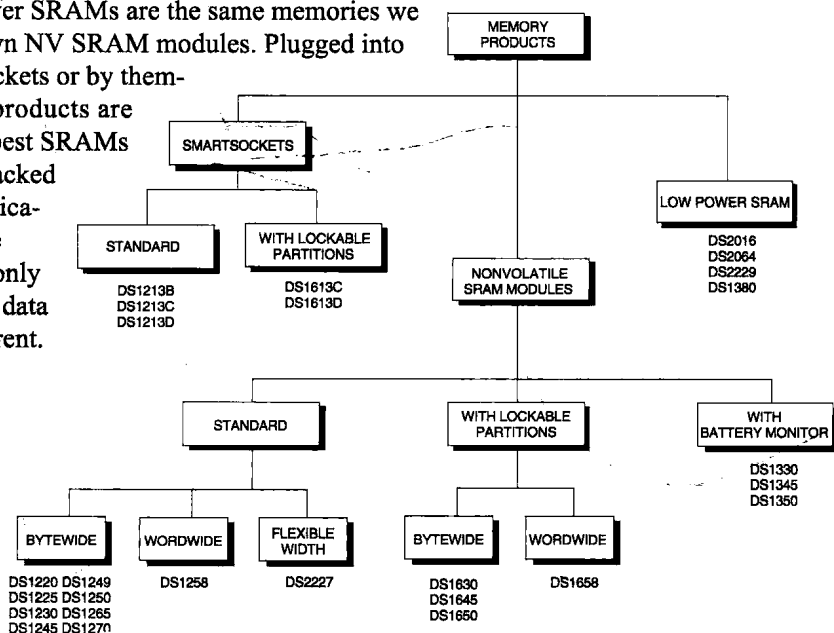
The centerpiece of the Memory Products family is our broad portfolio of Nonvolatile SRAM modules. Built using low-power SRAM, nonvolatile memory controllers and lithium batteries, these modules offer nonvolatile storage that can be read and written an unlimited number of times, at SRAM speeds, without wearing out. Capable of more than 10 years of battery-backed data retention, these products are truly ideal memories.

NV SRAM modules with lockable partitions offer programmable write protection for each of 16 memory array partitions. Using a simple software command, any of these 16 partitions can be configured to be either read-only or read/write memory. This capability allows critical code and data to be stored in read-only areas and changeable data to be stored in read/write areas, all in the same nonvolatile memory component.

NV SRAM modules with Battery Monitoring are the first battery-backed SRAMs in the industry with the built-in ability to monitor their own batteries and issue a warning before those batteries reach end-of-life.

SmartSockets contain the nonvolatile memory controller and backup batteries needed to nonvolatize standard byte-wide SRAM components. An SRAM inserted into a SmartSocket is a complete nonvolatile memory, identical in functionality to an NV SRAM module.

Our low-power SRAMs are the same memories we use in our own NV SRAM modules. Plugged into our SmartSockets or by themselves these products are the world's best SRAMs for battery-backed memory applications because they require only nanoamps of data retention current.



Most Nonvolatile SRAM modules are also available in 3-volt versions.

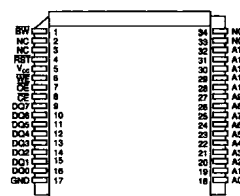
Featured Products

DS13xx Nonvolatile SRAM with Battery Monitor

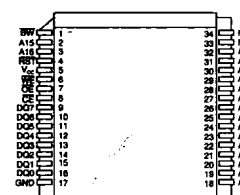
◆ Standard nonvolatile SRAM performance characteristics:

- More than 10 years of data retention
- Data automatically protected during power cycling
- Read and write access times as fast as 70ns
- Freshness seal: internal lithium battery is electrically disconnected to retain freshness until power is first applied

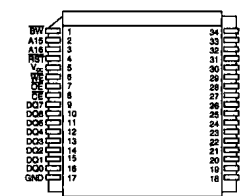
- ◆ Sophisticated battery monitor checks remaining capacity once per day and activates Battery Warning output when battery is nearing end of life
- ◆ CPU reset function holds system in reset when power supply goes out of tolerance and also serves as a power-on reset
- ◆ Low Profile Module package designed for surface-mount—snaps into standard, surface-mount PLCC sockets
- ◆ Compatible pinouts make designing for multiple memory sizes easy
- ◆ Optional industrial temperature range available



DS1330
34-Pin Low Profile Module



DS1345
34-Pin Low Profile Module

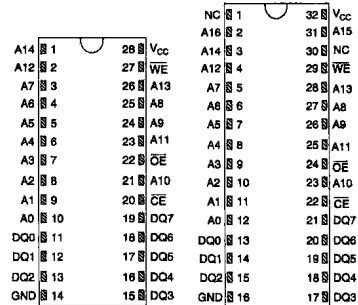


DS1350
34-Pin Low Profile Module

Featured Products

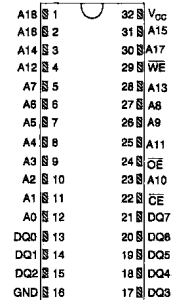
DS16xx Nonvolatile SRAM with Lockable Partitions

- ◆ Standard nonvolatile SRAM performance characteristics
 - More than 10 years of data retention
 - Data automatically protected during power cycling
 - Read and write access times as fast as 70ns
 - Freshness seal: internal lithium battery is electrically disconnected to retain freshness until power is first applied
- ◆ Programmable write-protection of any of 16 memory array partitions
- ◆ CPU interrupt function warns system when power supply goes out of tolerance
- ◆ DIP packages have JEDEC-standard, 600-mil SRAM pinouts
- ◆ Low Profile Module package designed for surface-mount—snaps into standard, surface-mount PLCC sockets
- ◆ Compatible pinouts make designing for multiple memory sizes easy
- ◆ Optional industrial temperature range available

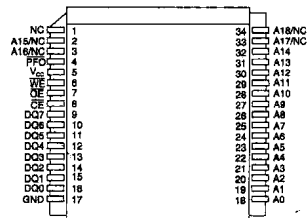


DS1630
28-Pin DIP
Module

DS1645
32-Pin DIP
Module



DS1650
32-Pin DIP
Module



DS1630, DS1645, DS1650
34-Pin Low Profile
Module

Selection Tables

DS12XXTP-SSS-III	STANDARD
	Operating Temperature Blank: 0°C to 70°C IND: -40°C to +85°C
	Access Time 100, 120, 150, or 200ns (DS1220) 85, 150, or 200ns (DS1225)
	Package Blank: 24-pin DIP (DS1220) 28-pin DIP (DS1225)
	Vcc Tolerance AB: ±5% AD: ±10% Y: ±10%
	Device DS1220: 2K x 8 DS1225: 8K x 8

DS12XXTP-SSS-III	STANDARD
	Operating Temperature Blank: 0°C to 70°C IND: -40°C to +85°C
	Access Time 70: 70ns 100: 100ns
	Package Blank: 28-pin DIP (DS1230) 32-pin DIP (DS1245, DS1250) 36-pin DIP (DS1265, DS1270) 40-pin DIP (DS1258) L: 34-pin Low Profile Module
	Vcc Tolerance AB: ±5% Y: ±10%
	Device DS1230: 32K x 8 DS1245: 128K x 8 DS1249: 256K x 8 DS1250: 512K x 8 DS1258: 128K x 16 DS1265: 1M x 8 DS1270: 2M x 8

DS16XXTP-SSS-III	LOCKABLE PARTITIONS
	Operating Temperature Blank: 0°C to 70°C IND: -40°C to +85°C
	Access Time 70: 70ns 100: 100ns
	Package Blank: 28-pin DIP (DS1630) 32-pin DIP (DS1645, DS1650) 40-pin DIP (DS1658) L: 34-pin Low Profile Module
	Vcc Tolerance AB: ±5% Y: ±10%
	Device DS1630: 32K x 8 DS1645: 128K x 8 DS1650: 512K x 8 DS1658: 128K x 16

DS13XXTP-SSS-III	BATTERY MONITOR
	Operating Temperature Blank: 0°C to 70°C IND: -40°C to +85°C
	Access Time 70: 70ns 100: 100ns
	Package L: 34-pin Low Profile Module
	Vcc Tolerance AB: ±5% Y: ±10%
	Device DS1330: 32K x 8 DS1345: 128K x 8 DS1350: 512K x 8

Selection Tables

SmartSockets

Number	Lockable Partitions	Supports 2K x 8 SRAM	Supports 8K x 8 SRAM	Supports 32K x 8 SRAM	Supports 128K x 8 SRAM	Supports 512K x 8 SRAM	DIP Pin Count
DS1213B		X	X				28
DS1213C				X			28
DS1213D					X	X*	32
DS1613C	X			X			28
DS1613D	X				X		32

*With user modification. See Application Note 4 in the Application Note Book.

Low-Power SRAM

Part Number	Density	Temperature	5-Volt Speed	3-Volt Speed	Package
DS2016-100	2K x 8	-40°C to +85°C	100ns	250ns	24-pin DIP
DS2016S-100	2K x 8	-40°C to +85°C	100ns	250ns	24-pin SOIC
DS2016-150	2K x 8	-40°C to +85°C	150ns	250ns	24-pin DIP
DS2016S-150	2K x 8	-40°C to +85°C	150ns	250ns	24-pin SOIC
DS2064-200	8K x 8	-40°C to +85°C	200ns	300ns	28-pin DIP
DS2064S-200	8K x 8	-40°C to +85°C	200ns	300ns	28-pin SOIC
DS2229-85	512K x 16	0°C to +70°C	85ns	n/a	80-pin SIP Stik

Cross Reference

Nonvolatile SRAM Modules

Benchmark Part Number	Memory Density	DS Standard Modules	DS Partitionable Modules
bq4010MA-XXX	8K x 8	DS1225AB-XXX	
bq4010MA-XXXN	8K x 8	DS1225AB-XXX-IND	
bq4010YMA-XXX	8K x 8	DS1225AD-XXX	
bq4010YMA-XXXN	8K x 8	DS1225AD-XXX-IND	
bq4011MA-XXX	32K x 8	DS1230AB-XXX	DS1630AB-XXX
bq4011MA-XXXN	32K x 8	DS1230AB-XXX-IND	DS1630AB-XXX-IND
bq4011YMA-XXX	32K x 8	DS1230Y-XXX	DS1630Y-XXX
bq4011YMA-XXXN	32K x 8	DS1230Y-XXX-IND	DS1630Y-XXX-IND
bq4013MA-XXX	128K x 8	DS1245AB-XXX	DS1645AB-XXX
bq4013MA-XXXN	128K x 8	DS1245AB-XXX-IND	DS1645AB-XXX-IND
bq4013YMA-XXX	128K x 8	DS1245Y-XXX	DS1645Y-XXX
bq4013YMA-XXXN	128K x 8	DS1245Y-XXX-IND	DS1645Y-XXX-IND
bq4014MB-XXX	256K x 8	DS1249AB-XXX	
bq4014YMB-XXX	256K x 8	DS1249Y-XXX	
bq4015MA-XXX	512K x 8	DS1250AB-XXX	DS1650AB-XXX
bq4015YMA-XXX	512K x 8	DS1250Y-XXX	DS1650Y-XXX
bq4016MC-XXX	1M x 8	DS1265AB-XXX	
bq4016YMC-XXX	1M x 8	DS1265Y-XXX	
bq4017MC-XXX	2M x 8	DS1270AB-XXX	
bq4017YMC-XXX	2M x 8	DS1270Y-XXX	
bq4024MA-XXX	128K x 16	DS1258AB-XXX	DS1658AB-XXX
bq4024YMA-XXX	128K x 16	DS1258Y-XXX	DS1658Y-XXX

SGS-Thomson Part Number	Memory Density	DS Standard Modules	DS Partitionable Modules
M48Z02-XXXPC1	2K x 8	DS1220AB-XXX	
M48Z02-XXXPC6	2K x 8	DS1220AB-XXX-IND	
M48Z12-XXXPC1	2K x 8	DS1220AD-XXX	
M48Z12-XXXPC6	2K x 8	DS1220AD-XXX-IND	
M48Z08-XXXPC1	8K x 8	DS1225AB-XXX	
M48Z18-XXXPC1	8K x 8	DS1225AD-XXX	
M48Z18-XXXPC6	8K x 8	DS1225AD-XXX-IND	
M48Z58-XXXPC1	8K x 8	DS1225AB-XXX	
M48Z58Y-XXXPC1	8K x 8	DS1225AD-XXX	
M48Z30-XXXPM1	32K x 8	DS1230AB-XXX	DS1630AB-XXX
M48Z30Y-XXXPM1	32K x 8	DS1230Y-XXX	DS1630Y-XXX
M48Z32-XXXPC1	32K x 8	DS1230AB-XXX	DS1630AB-XXX
M48Z32Y-XXXPC1	32K x 8	DS1230Y-XXX	DS1630Y-XXX
M48Z35-XXXPC1	32K x 8	DS1230AB-XXX	DS1630AB-XXX
M48Z35Y-XXXPC1	32K x 8	DS1230Y-XXX	DS1630Y-XXX
M48Z128-XXXPM1	128K x 8	DS1245AB-XXX	DS1645AB-XXX
M48Z128Y-XXXPM1	128K x 8	DS1245Y-XXX	DS1645Y-XXX
M48Z256-XXXPL1	256K x 8	DS1249AB-XXX	
M48Z256Y-XXXPL1	256K x 8	DS1249Y-XXX	
M48Z512-XXXPM1	512K x 8	DS1250AB-XXX	DS1650AB-XXX
M48Z512Y-XXXPM1	512K x 8	DS1250Y-XXX	DS1650Y-XXX
M46Z128-XXXPM1	128K x 16	DS1258AB-XXX	DS1658AB-XXX
M46Z128Y-XXXPM1	128K x 16	DS1258Y-XXX	DS1658Y-XXX

Thermal Sensors

Dallas Semiconductor makes Thermal Management easy with its line of direct-to-digital temperature sensors. These sensors provide a digital reading of temperature directly, eliminating the need for A/D converters dedicated to temperature conversions. Factory-calibrated to relieve the user of linearity corrections and other compensation, Dallas Semiconductor's sensors provide a range and accuracy unparalleled in the industry.

Beginning with our DS1620 Digital Thermometer and Thermostat, easy thermal management is available with three thermostatic outputs which change state based on where the temperature is in relation to user-programmed trip points. These trip points are stored in onboard EEPROM memory and are nonvolatile. For multi-point sensing applications, some temperature sensors can be multidropped, either through a two-wire interface or, for minimal wiring, through the Dallas 1-Wire™ interface.

Specialized functions are available in programmable standalone thermostats for heat limit switches and fan controls, as well as in a product which has a temperature sensor and 256 bytes of EEPROM memory for storage of temperature-related correction coefficients and other system-related lookup tables. Dallas also offers value-added options for most sensors to allow an OEM to purchase sensors with factory-programmed thermostat setpoints. Contact the factory or your local sales office for more details on this option.

Most of the Dallas Semiconductor thermal products also offer demo kits, complete with DOS/Windows software and interface electronics, to allow potential users to explore the capabilities of these products without expending time and energy.

Applications

- ◆ Fan control for computing equipment
- ◆ Clock speed adjustment to minimize temperature rise to high-power microprocessors like Pentium, Alpha, and PowerPC
- ◆ Scientific and analytical measurements
- ◆ Building automation and environmental controls
- ◆ Temperature compensation of crystal oscillators in sensitive time or frequency measurement applications such as cellular telephone handsets

Selection Table

Part	Packaging	Interface	Power Supply	Accuracy	Resolution *	Multidrop?	Thermostat Functions	NV Memory?	Parts Available?	Demo Available?
DS1620	300-mil PDIP8 208-mil SO8	3-wire	4.5V-5.5V	±0.5°C	≥9-bit	No	TH, TL, TCom	2 bytes	Now!	Yes!
DS1620R	300-mil SO16	3-wire	4.5V-5.5V	±0.5°C	≥9-bit	No	TH, TL, TCom	2 bytes	Now!	No
DS1621	300-mil PDIP8 150-mil SO8	2-wire	2.7V-5.5V	±0.5°C	≥9-bit	8	TCom	2 bytes	Now!	April 1997
DS1623	300-mil PDIP8 208-mil SO8	3-wire	2.7V-5.5V	±0.5°C	≥9-bit	No	TH, TL, TCom	2 bytes	Now!	Yes! **
DS1624	300-mil PDIP8 208-mil SO8	2-wire	2.7V-5.5V	±0.5°C	13-bit	8	None	256 bytes	Now!	No
DS1627	150-mil SO8	2-wire	2.7V-5.5V	±2.5°C	≥9-bit	8	TCom	2 bytes	May 97	No
DS1720	208-mil SO8	3-wire	2.7V-5.5V	±2.5°C	≥9-bit	No	TH, TL, TCom	2 bytes	Now!	Yes! **
DS1820	PR-35 SSOP16	1-Wire	4.3V-5.5V	±0.5°C	≥9-bit	Infinite	Alarm Search	2 bytes	Now!	Yes!
DS1821	PR-35 208-mil SO8 TO-220	1-Wire	4.3V-5.5V	±1.0°C	≥8-bit	No	TCom	2 bytes	Now!	Yes!

Notes: * Refer to Application Note 105 for a technique to increase readout resolution.

** DS1620 demo kit can be used.