ELECTRONICS

16Mbit CMOS SRAM

3DS16-325

512K x 32 Bit High-Speed CMOS Static RAM-5.0V Operating

FEATURES

- Fast Access Time : 15 or 20ns
- Single 5.0 ± 0.5V Power Supply
- Power Dissipation
  - Standby 80mA
  - Operating 540mA (Max.)
- TTL Compatible Inputs and Outputs
- Fully Static Operation
  - No clock or Refresh required
- Three State Outputs
- Center Power/Ground Pin Configuration
- Die Control : CS0#, CS1#, CS2# and CS3# chip select

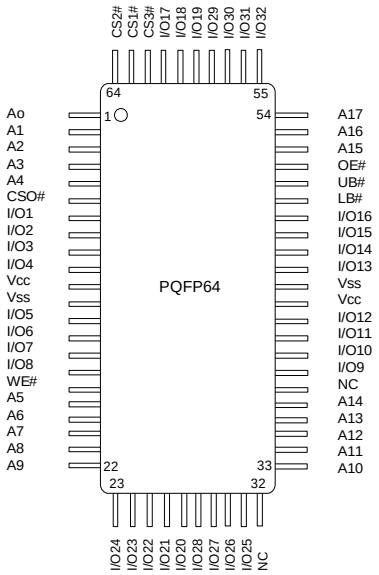
DESCRIPTION

The 3DS16-325 is a 16,777,216 - bit high-speed Static Random Access Memory organized as 4 banks of 262,144 words of 16 bits. Two banks can operate silmultaneously, giving 32 bit processing. The 3DS16-325 uses 32 common input and output lines and has an output enable pin which operates faster than address access time at read cycle.

Also it allows lower and upper byte access by data control (UB#, LB#). The device is manufactured using 3D PLUS well known MCM-V patended technology designed for high-speed circuit applications. It is particularly well suited for use in high-density high-speed system applications. The 3DS16-325 is packaged in a 64-pin PQFP .

PIN CONFIGURATION

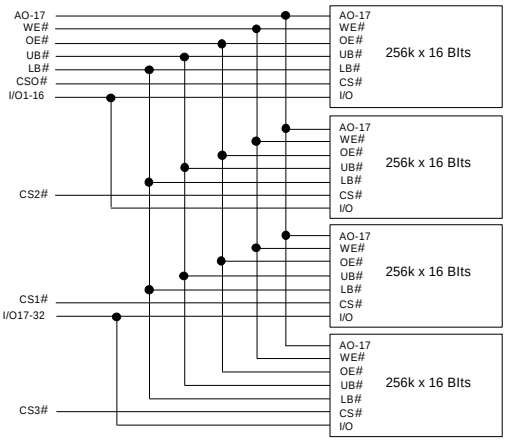
3DS16-325S (TOP VIEW)



PIN DESCRIPTION

A0-A17	Address Inputs
WE#	Write Enable
CS0#, CS1# CS2#, CS3#	Chip Selects
OE#	Output Enable
LB#	Lower - Byte Control
UB#	Upper - Byte Control
I/O1 - I/O32	Data Inputs / Outputs
Vcc	5.0 V Power
Vss	Ground
NC	No Connection

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Rating	Unit
Voltage on Any Pin Relative to Vss		V_{IN}, V_{OUT}	-0.5 to +7.0	V
Voltage on Vcc Supply Relative to Vss		V_{cc}	-0.5 to +7.0	V
Power Dissipation		P_D	2.0	W
Storage Temperature		T_{STG}	-65 to 150	°C
Operating Temperature	Commercial	T_A	0 to 70	°C
	Industrial	T_A	-40 to 85	°C

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

TRUTH TABLE

MODE	CS#	WE#	OE#	I/O Pin	Supply Current
Not Selected	X	X	X	High-Z	Standby
Not Selected	H	X	X	High-Z	Standby
D_{OUT} Disable	L	H	H	High-Z	Active
Read	L	H	L	DOUT	Active
Write	L	L	X	DIN	Active

H = HIGH L = LOW X = Don't Care
If OE is LOW during Write, tWHZ must be observed before data is presented to the device.

DC OUTPUT CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Unit
V_{OH}	HIGH Voltage	I_{OH} = -4.0mA	2.4		V
V_{OL}	LOW Voltage	I_{OL} = 8.0mA		0.4	V

RECOMMENDED DC OPERATING CONDITIONS (T_A=0 to 70°C)

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	4.5	5.0	5.5	V
Ground	V_{SS}	0	0	0	V
Input High Voltage	V_{IH}	2.2	-	V_{CC}+0.5	V
Input Low Voltage	V_{CC}	-0.5	-	0.8	V

NOTE: The above parameters are also guaranteed at industrial temperature range.

CAPACITANCE*(T_A = 25°C, f = 1.0MHZ)

Item	Symbol	Test Conditions	Min	Max	Unit
Input / Output Capacitance	$C_{I/O}$	$V_{I/O}$ = 0V	-	16	pF
Input / Capacitance	C_{IN}	V_{IN} = 0V	-	28	pF

*NOTE : Capacitance is sampled and not 100% tested.

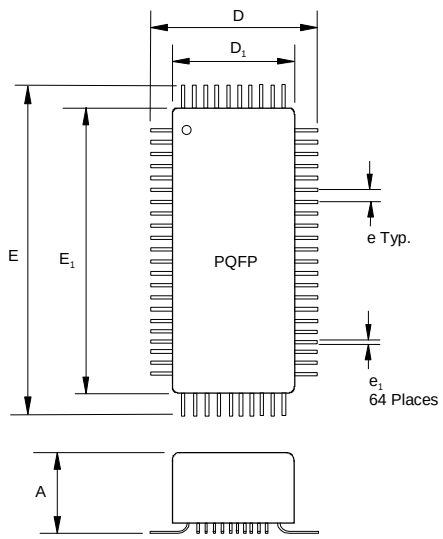
Symbol	Parameter	Val.
T_{RAC}	Read Cycle Time	15/20ns
T_{WC}	Write Cycle Time	15/20ns

DC AND OPERATING CHARACTERISTICS (T_A=0 to 70°C, V_{CC}=5.0 ± 0.5V, unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Max	Unit
Input Leakage Current	I_{LI}	V_{IN} = V_{SS} to V_{CC}		-8	8	µA
Output Leakage Current	I_{LO}	CS# = V_{IH} or OE# = V_{IH} or WE# = V_{IL} V_{OUT} = V_{SS} to V_{CC}		-8	8	µA
Operating Current	I_{CC}	Min. Cycle, 100% Duty CS = V_{IL}, V_{IN} = V_{IH} or V_{IL}, I_{OUT} = 0mA	15ns		540	mA
			20ns		530	
Standby Current	I_{SB}	Min. Cycle, CS# = V_{IH}			280	mA
	I_{SB1}	f = 0MHZ, CS# ≥= V_{CC}-0.2V, V_{IN}≥V_{CC}-0.2V or V_{IN}≤0.2V			80	mA
Output Low Voltage Level	V_{OL}	I_{OL} = 8mA			0.4	V
Output High Voltage Level	V_{OH}	I_{OH} = -4mA		2.4		V

Note: The above parameters are also guaranteed at industrial temperature range.

MECHANICAL DRAWING



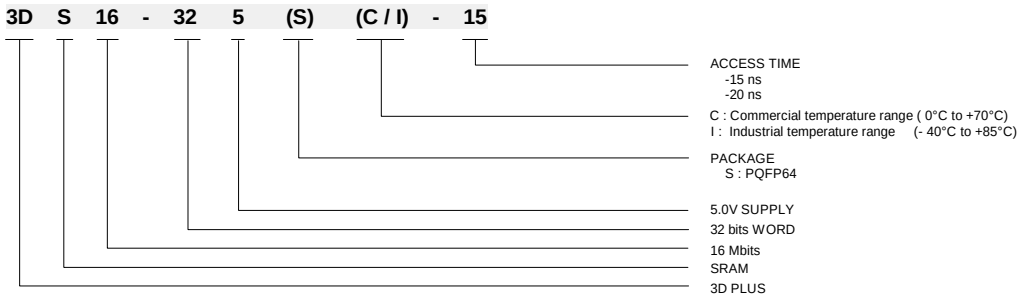
Dimensions (mm)

	Min	Max
A	7.15	7.75
D	15.80	16.20
D_1	10.80	11.20
E	27.80	28.20
E_1	22.80	23.20
e	0.80	
e_1	0.30	

ORDERING INFORMATION

Please contact 3D PLUS for more information about the available configurations.

3DS16-325SC-20 PQFP64 | 3DS16-325SI-20 PQFP64 | 3DS16-325SC-15 PQFP64 | 3DS16-325SI-15 PQFP64



PRODUCT MARKING

- Trademark
- Part Number
- Date Code (ww,yy)
- Serial Number on request

MAIN SALES OFFICE

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