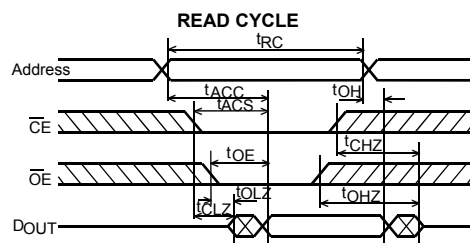
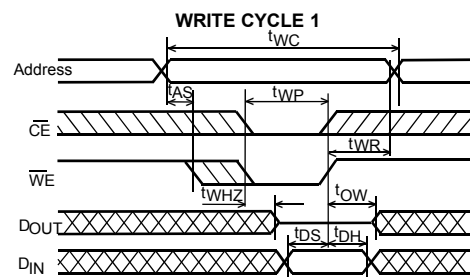


**GR3281H (32K x 8)
NON-VOLATILE RAM**

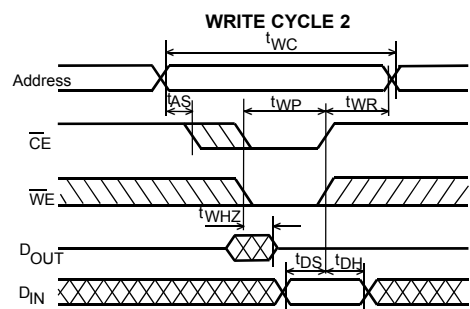


TIMING (nS-nano seconds)

Symbol	Parameter	Min	Max
tRC	Read cycle time	70	
tACC	Access time		70
tACS	CE to output valid		70
tOE	OE to output valid		35
tCLZ	CE to output active	10	
tOLZ	OE to output active	10	
tOH	Output hold time	10	
tCHZ	CE to output disable		25
tOHZ	OE to output disable		25



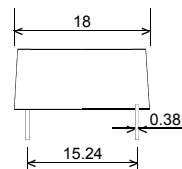
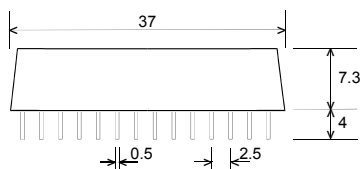
Symbol	Parameter	Min	Max
tWC	Write cycle time	70	
tWP	Write pulse width	50	
tAS	Address setup time	0	
tWR	Write recovery time	0	
tWHZ	WR to output disable		20
tOW	Output active from WR	5	
tDS	Data setup time	30	
tDH	Data HOLD TIME	0	



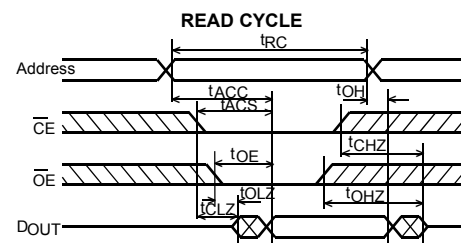
- Notes
1. WE must be high during address transitions.
 2. A Write occurs during the overlap of a low CE and a low WE.
 3. WE is high for a read cycle.

REPLACES
62256., 43256., 55257., etc.

DIMENSIONS (mm)

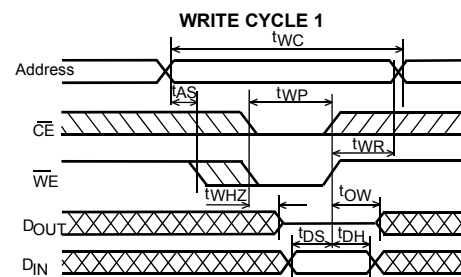


**GR3281H (32K x 8)
NON-VOLATILE RAM**

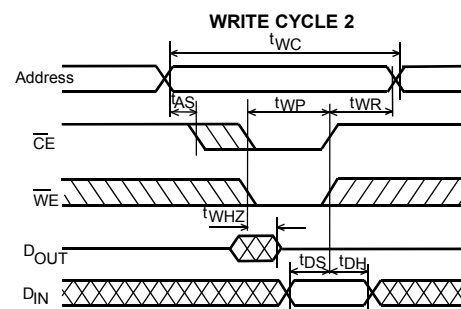


TIMING (nS-nano seconds)

Symbol	Parameter	Min	Max
tRC	Read cycle time	70	
tACC	Access time		70
tACS	CE to output valid		70
tOE	OE to output valid		35
tCLZ	CE to output active	10	
tOLZ	OE to output active	10	
tOH	Output hold time	10	
tCHZ	CE to output disable		25
tOHZ	OE to output disable		25



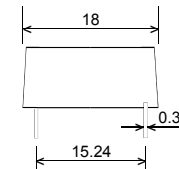
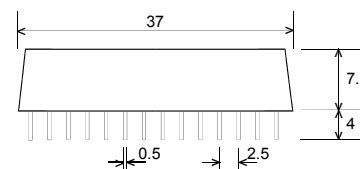
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1. WE must be high during address transitions.
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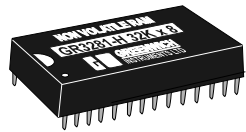
REPLACES
62256., 43256., 55257., etc.

DIMENSIONS (mm)



GR3281H (32K x 8) NON-VOLATILE RAM

GREENWICH
INSTRUMENTS LTD



ABSOLUTE MAXIMUM RATINGS

Symbol	Min	Max	Units
Vdd	-0.3	7.0	Volts
V _{i/o}	-0.3	Vdd +0.3	Volts
Temp	-40	+85	

DESCRIPTION

The GR3281-H is an industrial temperature range, 32768 word by 8 bits (32K x 8) non-volatile CMOS Static Ram, fabricated from advanced silicon gate CMOS technology and a high reliability lithium power cell.

The pin-out of the GR3281-H conforms to the JEDEC standards and is fully compatible with normal static RAM.

The power down circuit is fully automatic and is referenced at 4.5 volts. At this point the GR3281-H is write protected by an internal inhibit function for Data Protection and the memory contents are retained by the lithium power source.

Power down is very fast, this being essential for data integrity, taking a maximum of 15 µS (15 microseconds) to power down from 5 volts to 0 volts. This is much faster than system power failure conditions. Therefore there are no special conditions required when installing the GR3281-H.

The GR3281-H can, without external power, retain data almost indefinitely. The limiting factor will be the shelf life of the lithium cell, which is typically ten years. It is possible that this figure may be extended in view of the extremely light duty imposed upon the cell.

APPLICATION

When powered down, the GR3281H is transportable and data can be moved from system to system, this makes it ideal for program development, data collection in data loggers, program changes in process control, automation and robotics and user definable lookup tables, etc.

DISPOSAL INSTRUCTIONS

Do not dispose of non-volatile memory devices by incineration or crushing. Devices may be returned carriage paid to Greenwich Instruments Ltd., for disposal.

UK

Greenwich Instruments Ltd.,
Meridian House, Park Road,
Swanley, Kent. BR8 8AH
Tele: 08700 505 404
Fax: 08700 505 405

Greenwich Instruments Ltd., are continually developing their products and reserve the right to alter specifications without prior notice. Standard Terms and Conditions of Sale apply.

OPERATING CONDITIONS

Symbol	Min	Typ	Max	Unit
Vdd	4.75	5.0	5.5	Volts
Vin (1)	2.2			Volts
Vin (0)			0.8	Volts
Iin (any other pin)	-1.0		+1.0	µA
Vout (1)(Iout = -1mA)	2.4			Volts
Vout (0)(Iout = +2mA)			0.4	Volts
Idd (Active)		30		mA
Idd (Deselected)		1.0		mA
Tcycle			70	nS
Cin (any pin)		10		pF

OPERATING MODE

CE	OE	WR	MODE	OUTPUT	Idd
H	X	X	Unsel.	Hi-Z	Deselected
L	H	H	Unsel.	Hi-Z	Active
L	L	H	Read	Dout	Active
L	X	L	Write	Din	Active

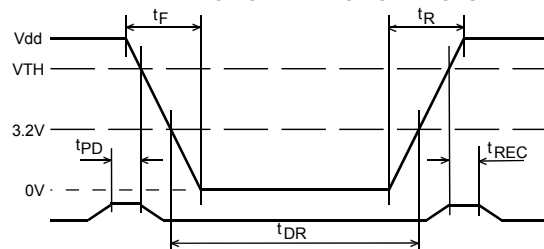
PIN CONNECTIONS

A14	1	28	Vdd
A12	2	27	WR
A7	3	26	A13
A6	4	25	A8
A5	5	24	A9
A4	6	23	A11
A3	7	22	OE
A2	8	21	A10
A1	9	20	CE
A0	10	19	D7
D0	11	18	D6
D1	12	17	D5
D2	13	16	D4
GND	14	15	D3

PIN DESIGNATIONS

Pin	Function
A0-A12	Address I/P's
D0-D7	Data in/out
OE	Output Enable
CE	Chip Enable
WR	Write Enable
Vdd	+5Volt Power
GND	Ground

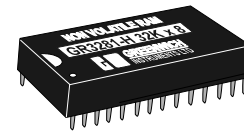
DATA RETENTION OPERATING CONDITIONS



Symbol	Parameter	Min	Typ	Max	Units
Vdd	Operating supply voltage	4.75	5.0	5.50	Volts
VTH	Data retention voltage		4.5		Volts
tF	Vdd slew to 0V	15			µS
tR	Vdd slew 0V to 5.0V	15			µS
tREC	CE to O/P valid from power up			15	µS
tDR	Data retention time		10		Years
tPD	CE at Vin(1) before power down	0			µS

GR3281H (32K x 8) NON-VOLATILE RAM

GREENWICH
INSTRUMENTS LTD



ABSOLUTE MAXIMUM RATINGS

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Tcycle			70	nS
Cin (any pin)		10		pF

OPERATING MODE

CE	OE	WR	MODE	OUTPUT	Idd
H	X	X	Unsel.	Hi-Z	Deselected
L	H	H	Unsel.	Hi-Z	Active
L	L	H	Read	Dout	Active
L	X	L	Write	Din	Active

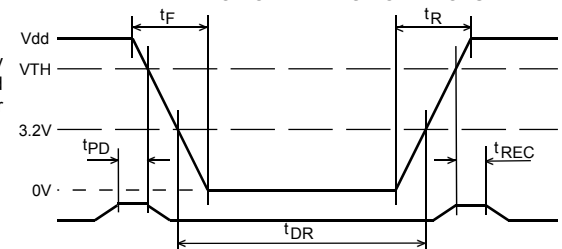
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GND	14	15	D3

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