GR281

.....23rd April 1999

DESCRIPTION

The GR281 is a 2048 word by 8 bits (2K 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 GR281 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 GR281 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 GR281.The GR281 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.

TECHNICAL DATA

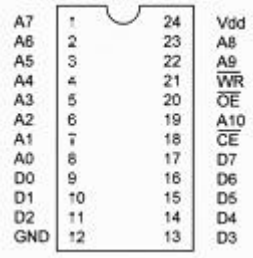
ABSOLUTE MAXIMUM RATINGS

Symbol	Min	Max	Units
Vdd	– 0.3	7.0	Volts
Vi/o	– 0.3	Vdd + 0.3	Volts
Temp	– 20	+70	deg. C

OPERATING MODE

$\overline{CE}$	$\overline{OE}$	$\overline{WR}$	MODE	OUTPUT	Idd
H	X	X	Unsel.	Hi-Z	Standby
L	H	H	Unsel.	Hi-Z	Active
L	L	H	Read	Dout	Active
L	X	L	Write	Din	Active

PIN CONNECTIONS



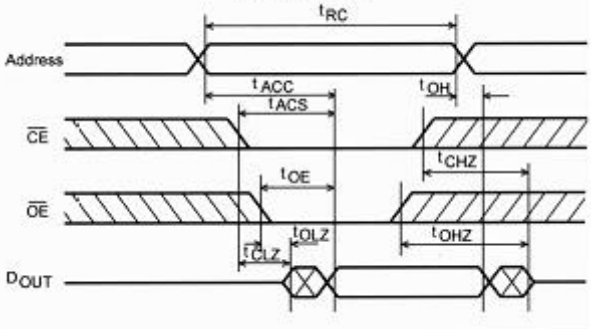
PIN DESIGNATIONS

Pin	Function
A0-A10	Address I/P`s
D0-D7	Data in/out
$\overline{OE}$	Output Enable
$\overline{CE}$	Chip Enable
$\overline{WR}$	Write Input
Vdd	+5Volt Power
GND	Ground

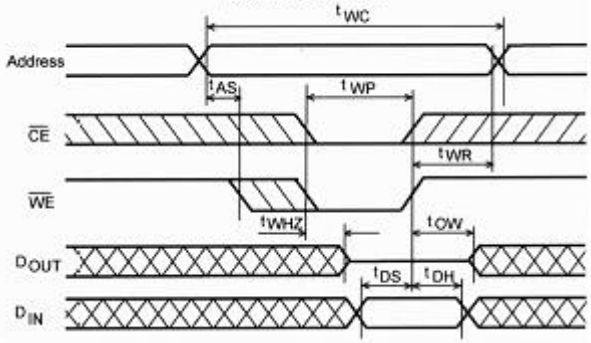
OPERATING CONDITIONS

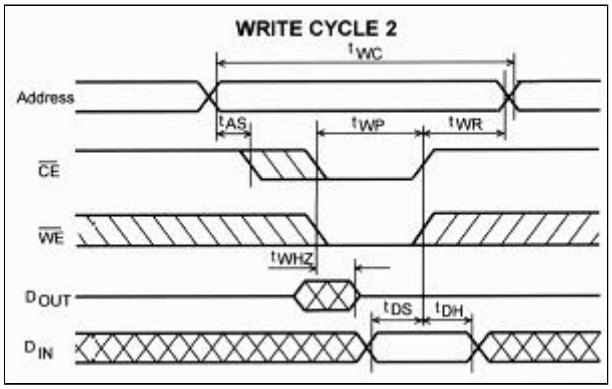
Symbol	Min	Typ	Max	Unit
Vdd	4.75	5.0	5.5	Volts
Vin (1)	2.2		Vdd+0.3	Volts
Vin (0)	–0.3		0.8	Volts
Iin ($\overline{CE}$)			1.0	LSTTL Load
Iin (any other pin)	–1.0		+1.0	µA.
Vout (1)(Iout = –1mA)	2.4			Volts
Vout (0)(Iout = +2mA)			0.4	Volts
Idd (Active)		25		mA.
Idd (Deselected)		1.0		mA.
Tcycle			100	nS.
Cin (any pin)			10	pF

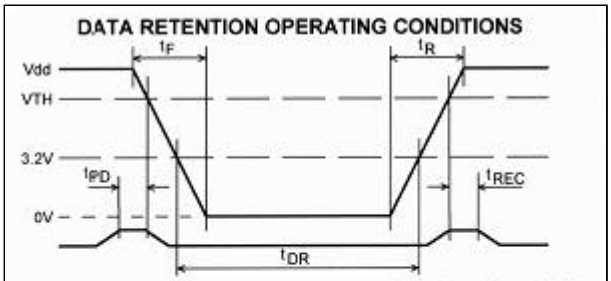
READ CYCLE



WRITE CYCLE 1





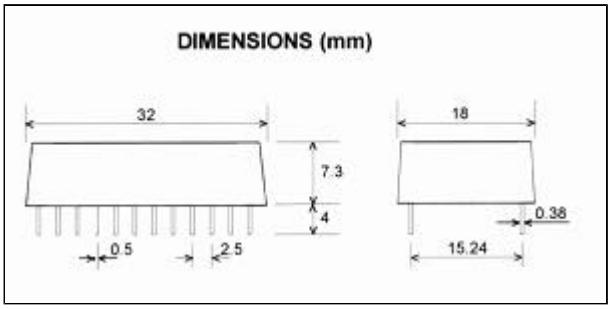


Symbol	Parameter	Min	Typ	Max	Units
Vdd	Operating supply voltage	4.75	5.0	5.50	Volts
VTH	Data retention voltage		4.5		Volts
tF	Vdd slew to 0V	15			µS
tR	Vdd slew 0V to 5.0V	15			µS
tREC	CE to O/P valid from power up			15	µS
tDR	Data retention time		10		Years
tPD	CE at Vin(1) before power down	0			µS

TIMING (nS-nano seconds)

	Read Cycle	100mS	
Symbol	Parameter	Min	Max
tRC	Read cycle time	100	
tACC	Access time		100
tACS	CE to output valid		100
tOE	OE to output valid		40
tCLZ	CE to output active	10	
tOLZ	OE to output active	10	
tOH	Output hold time	10	
tCHZ	CE to output disable		40
tOHZ	OE to output disable		40
	Write Cycle	**100nS**	
Symbol	Parameter	Min	Max
tWC	Write cycle time	100	
tWP	Write pulse width	60	
tAS	Address setup time	0	
tWR	Write recovery time	10	
tWHZ	WR to output disable		30
tOW	Output active from WR	10	
tDS	Data setup time	30	
tDH	Data HOLD TIME	10	

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



APPLICATION

When powered down, the GR281 is transportable and data can be moved from system to system. Being pin compatible with 2716 EPROM makes it ideal for programme development, data collection in data loggers, programme changes in process control, automation and robotics and user definable lookup tables, etc.

Additional information available through our technical sevices department.

Homepage - Memory