GR281

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.
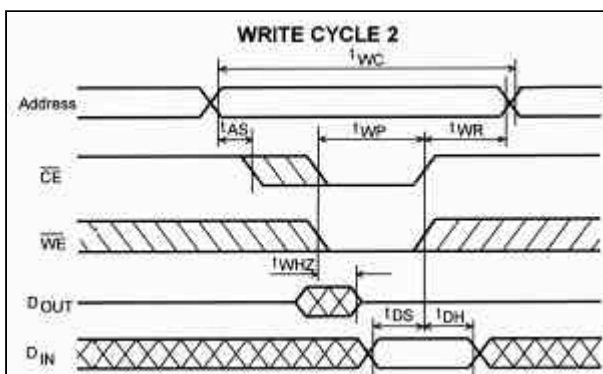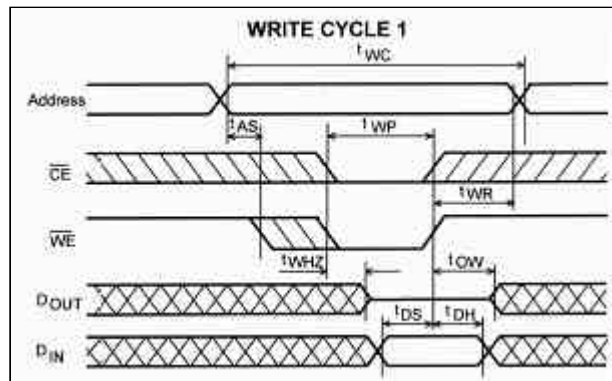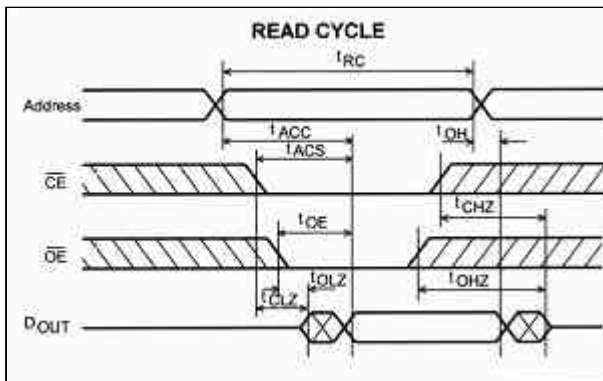
TECHNICAL DATA

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

A7	1	24	Vdd
A6	2	23	A8
A5	3	22	A9
A4	4	21	$\overline{WR}$
A3	5	20	$\overline{OE}$
A2	6	19	A10
A1	7	18	$\overline{CE}$
A0	8	17	D7
D0	9	16	D6
D1	10	15	D5
D2	11	14	D4
GND	12	13	D3

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

WRITE CYCLE 2

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			uS

Symbol	Parameter		Min	Max	
t_R	Vdd slew 0V to 5.0V		15		μS
t_{REC}	CE to O/P valid from power up			15	μS
t_{DR}	Data retention time		10		Years
t_{PD}	CE at Vin(1) before power down		0		μS

TIMING (nS-nano seconds)

	Read Cycle	100mS	
Symbol	Parameter	Min	Max
t_{RC}	Read cycle time	100	
t_{ACC}	Access time		100
t_{ACS}	CE to output valid		100
t_{OE}	OE to output valid		40
t_{CLZ}	CE to output active	10	
t_{OLZ}	OE to output active	10	
t_{OH}	Output hold time	10	
t_{CHZ}	CE to output disable		40
t_{OHZ}	OE to output disable		40

	Write Cycle	100nS	
Symbol	Parameter	Min	Max
t_{WC}	Write cycle time	100	
t_{WP}	Write pulse width	60	
t_{AS}	Address setup time	0	
t_{WR}	Write recovery time	10	
t_{WHZ}	WR to output disable		30
t_{OW}	Output active from WR	10	
t_{DS}	Data setup time	30	
t_{DH}	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.

DIMENSIONS (mm)
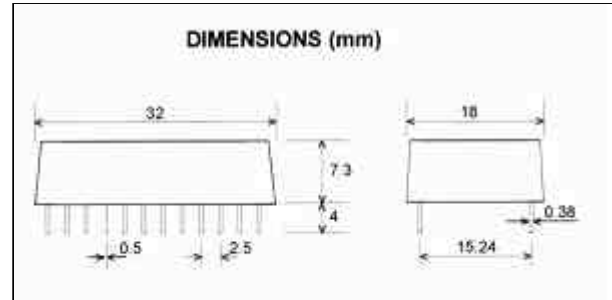
APPLICATION

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.