

# PY264

## 8K x 8 REPROGRAMMABLE PROM



### FEATURES

- EPROM Technology for reprogramming
- High Speed
  - 35/45/55 ns (Commercial)
  - 35/45/55 ns (Military)
- Low Power Operation:
  - 660 mW Commercial
  - 770 mW Military
- Single 5V±10% Power Supply
- Windowed devices for reprogramming
- Fully TTL Compatible Inputs and Outputs
- Standard Pinout (JEDEC Approved):
  - 24-Pin 600 mil Windowed CERDIP
  - 24-Pin 600 mil Non-Windowed Plastic DIP



### DESCRIPTION

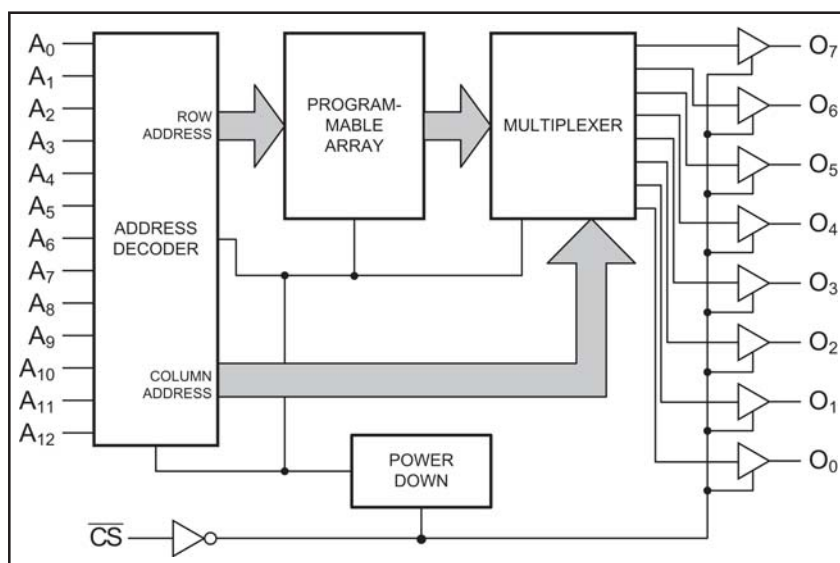
The PY264 is an 8Kx8 CMOS PROM. The device is available in windowed packages which when exposed to UV light, the memory content in the PROM is erased and can be reprogrammed. EPROM technology is used in the memory cells for programming. The EPROM requires a 12.5V for programming. Devices are tested to insure that performance of the device meets the DC and AC specification limits after customer programming.

To perform a read operation from the device,  $\overline{CS}$  is LOW. The memory contents in the address established by the Address pins ( $A_0$  to  $A_{12}$ ) will become available on the outputs ( $O_0$  to  $O_7$ ).

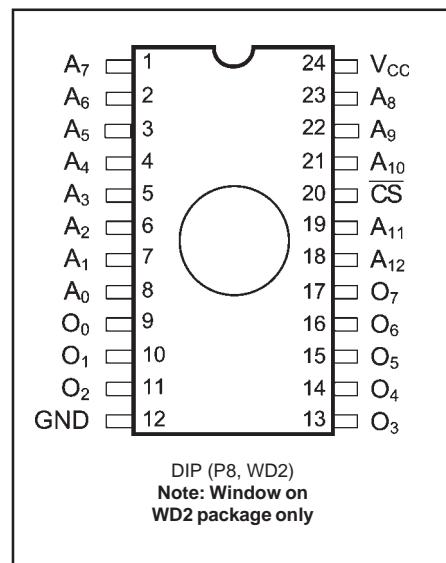
The PY264 is available in 24-pin 600 mil Ceramic DIPs (Windowed) and Plastic DIPs (Non-Windowed).



### FUNCTIONAL BLOCK DIAGRAM



### PIN CONFIGURATION



**MAXIMUM RATINGS<sup>(1)</sup>**

Symbol	Parameter	Value	Unit
$V_{CC}$	Power Supply Pin with Respect to GND	-0.5 to +7	V
$V_{TERM}$	Terminal Voltage with Respect to GND (up to 7.0V)	-0.5 to $V_{CC} + 0.5$	V
$V_{PP}$	Program Voltage	13	V

Symbol	Parameter	Value	Unit
$T_A$	Operating Temperature	-55 to +125	°C
$T_{BIAS}$	Temperature Under Bias	-55 to +125	°C
$T_{STG}$	Storage Temperature	-65 to +150	°C
$P_T$	Power Dissipation	1.0	W
$I_{OUT}$	DC Output Current	50	mA

**RECOMMENDED OPERATING CONDITIONS**

Grade <sup>(2)</sup>	Ambient Temp	Gnd	Vcc
Commercial	0°C to 70°C	0V	5.0V ±10%
Military	-55°C to +125°C	0V	5.0V ±10%

**CAPACITANCES<sup>(4)</sup>**
 $(V_{CC} = 5.0V, T_A = 25°C, f = 1.0MHz)$ 

Symbol	Parameter	Conditions	Typ.	Unit
$C_{IN}$	Input Capacitance	$V_{IN} = 0V$	10	pF
$C_{OUT}$	Output Capacitance	$V_{OUT} = 0V$	10	pF

**DC ELECTRICAL CHARACTERISTICS**

 Over recommended operating temperature and supply voltage<sup>(2)</sup>

Symbol	Parameter	Test Conditions	PY264		Unit	
			Min	Max		
$V_{IH}$	Input High Voltage		2.0	$V_{CC}$	V	
$V_{IL}$	Input Low Voltage		-0.5 <sup>(3)</sup>	0.8	V	
$V_{HC}$	CMOS Input High Voltage		$V_{CC} - 0.2$	$V_{CC} + 0.5$	V	
$V_{LC}$	CMOS Input Low Voltage		-0.5 <sup>(3)</sup>	0.2	V	
$V_{OL}$	Output Low Voltage (TTL Load)	$I_{OL} = +16\text{ mA}, V_{CC} = \text{Min.}$		0.4	V	
$V_{OH}$	Output High Voltage (TTL Load)	$I_{OH} = -4\text{ mA}, V_{CC} = \text{Min.}$	2.4		V	
$I_{LI}$	Input Leakage Current	$V_{CC} = \text{Max.}$ $V_{IN} = \text{GND to } V_{CC}$	-10	+10	µA	
$I_{LO}$	Output Leakage Current	$V_{CC} = \text{Max.}, \overline{CE} = V_{IH}$ $V_{OUT} = \text{GND to } V_{CC}$	<b>COM</b>	-10	+10	µA
			<b>MIL</b>	-40	+40	µA
$V_{PP}$	Programming Supply Voltage		12	13	V	
$I_{PP}$	Programming Supply Current			50	mA	
$V_{IHP}$	Input HIGH Programming Voltage		4.75		V	
$V_{ILP}$	Input LOW Programming Voltage			0.4	V	

**POWER DISSIPATION CHARACTERISTICS VS. SPEED**

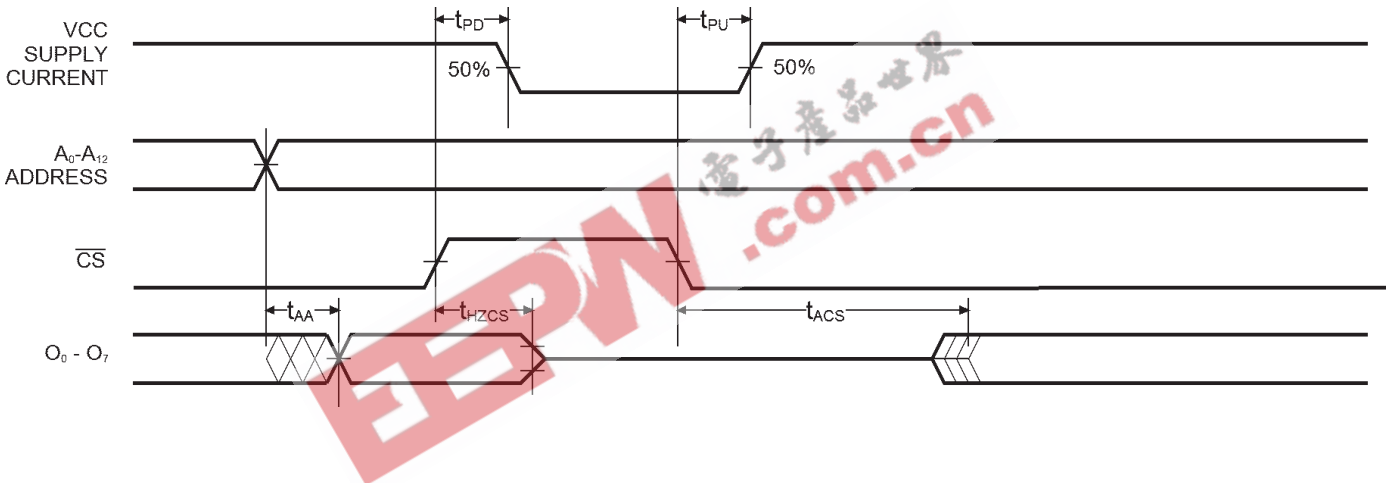
Symbol	Parameter	Temperature Range	-35	-45	-55	Unit
$I_{CC}$	Dynamic Operating Current*	Commercial	100	100	100	mA
		Military	120	120	120	mA

### AC ELECTRICAL CHARACTERISTICS—READ CYCLE

( $V_{CC} = 5V \pm 10\%$ , All Temperature Ranges)<sup>(2)</sup>

Symbol	Parameter	-35		-45		-55		Unit
		Min	Max	Min	Max	Min	Max	
$t_{AA}$	Address to Output Valid		35		45		55	ns
$t_{HZCS1}$	Chip Select Inactive to High Z		20		30		35	ns
$t_{ACS1}$	Chip Select Active to Output Valid		20		30		35	ns
$t_{HZCS2}$	Chip Select Inactive to High Z		35		45		55	ns
$t_{ACS2}$	Chip Select Active to Output Valid		35		45		55	ns
$t_{PU}$	Chip Select Active to Power-Up	0		0		0		ns
$t_{PD}$	Chip Slect Inactive to Power-Down		35		45		55	ns

### TIMING WAVEFORM OF READ CYCLE



**Notes:**

1. Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage 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 operational sections of this specification is not implied. Exposure to MAXIMUM rating conditions for extended periods may affect reliability.
2. Extended temperature operation guaranteed with 400 linear feet per minute of air flow.
3. Transient inputs with  $V_{IL}$  and  $I_{IL}$  not more negative than  $-3.0V$  and  $-100mA$ , respectively, are permissible for pulse widths up to 20ns.
4. This parameter is sampled and not 100% tested.

## DEVICE ERASURE

If the device is subjected to wavelengths of light below 4000 Angstroms, device erasure will commence. It is therefore recommended to use an opaque label over the window in the event the device will be exposed to lighting for a long time. The UV dose for erasure requires a wavelength of 2,537 Angstroms for a minimum dose of

25 Wsec/cm<sup>2</sup>. If using a UV lamp of 12 mW/cm<sup>2</sup>, the exposure time is estimated to be 35 minutes. Devices should be positioned within 1 inch of the lamp during the erasure process. Permanent damage can occur to the devices if exposed to UV light for an extended period of time.

## READ MODE

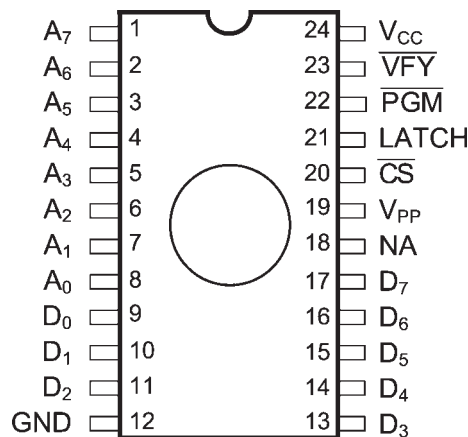
Reading the addressed content is the normal operating mode for a programmed device. Signals are at normal TTL levels. Addressing is applied to the 13 address pins

and  $\overline{CS}$  is LOW. Under these conditions, the addressed location contents are presented to the output pins.

## MODE SELECTION

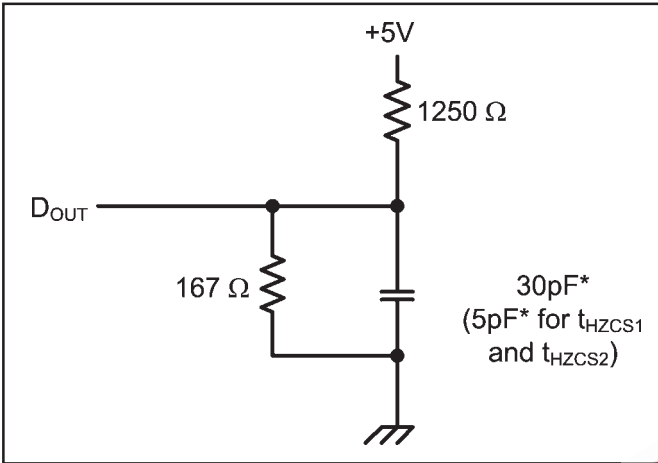
Mode	Pin Function							
	Read or Output Disable	A <sub>12</sub>	A <sub>11</sub>	A <sub>10</sub>	A <sub>9</sub>	A <sub>8</sub>	$\overline{CS}$	O <sub>7</sub> -O <sub>0</sub>
	Program	NA	V <sub>pp</sub>	LATCH	PGM	$\overline{VFY}$	$\overline{CS}$	D <sub>7</sub> -D <sub>0</sub>
Read		A <sub>12</sub>	A <sub>11</sub>	A <sub>10</sub>	A <sub>9</sub>	A <sub>8</sub>	V <sub>IL</sub>	O <sub>7</sub> -O <sub>0</sub>
Output Disable		A <sub>12</sub>	A <sub>11</sub>	A <sub>10</sub>	A <sub>9</sub>	A <sub>8</sub>	V <sub>IH</sub>	High Z
Program		V <sub>ILP</sub>	V <sub>pp</sub>	V <sub>ILP</sub>	V <sub>ILP</sub>	V <sub>IHP</sub>	V <sub>ILP</sub>	D <sub>7</sub> -D <sub>0</sub>
Program Inhibit		V <sub>ILP</sub>	V <sub>pp</sub>	V <sub>ILP</sub>	V <sub>IHP</sub>	V <sub>IHP</sub>	V <sub>ILP</sub>	High Z
Program Verify		V <sub>ILP</sub>	V <sub>pp</sub>	V <sub>ILP</sub>	V <sub>IHP</sub>	V <sub>ILP</sub>	V <sub>ILP</sub>	O <sub>7</sub> -O <sub>0</sub>
Blank Check		V <sub>ILP</sub>	V <sub>pp</sub>	V <sub>ILP</sub>	V <sub>IHP</sub>	V <sub>ILP</sub>	V <sub>ILP</sub>	O <sub>7</sub> -O <sub>0</sub>

## PROGRAMMING PINOUTS



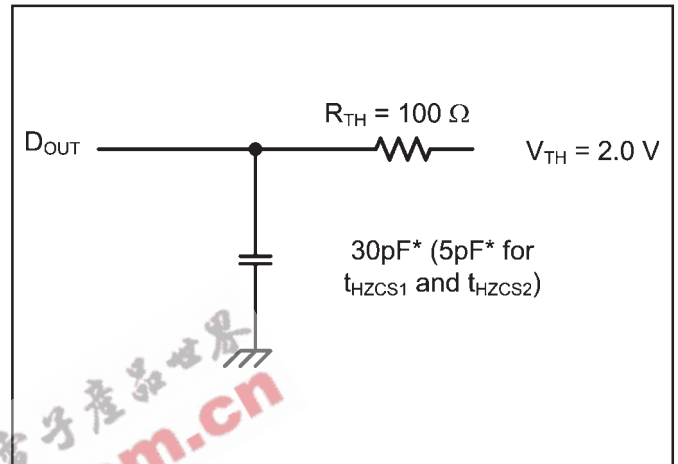
**AC TEST CONDITIONS**

Input Pulse Levels	GND to 3.0V
Input Rise and Fall Times	3ns
Input Timing Reference Level	1.5V
Output Timing Reference Level	1.5V
Output Load	See Figures 1 and 2



**Figure 1. Output Load**

\* including scope and test fixture.



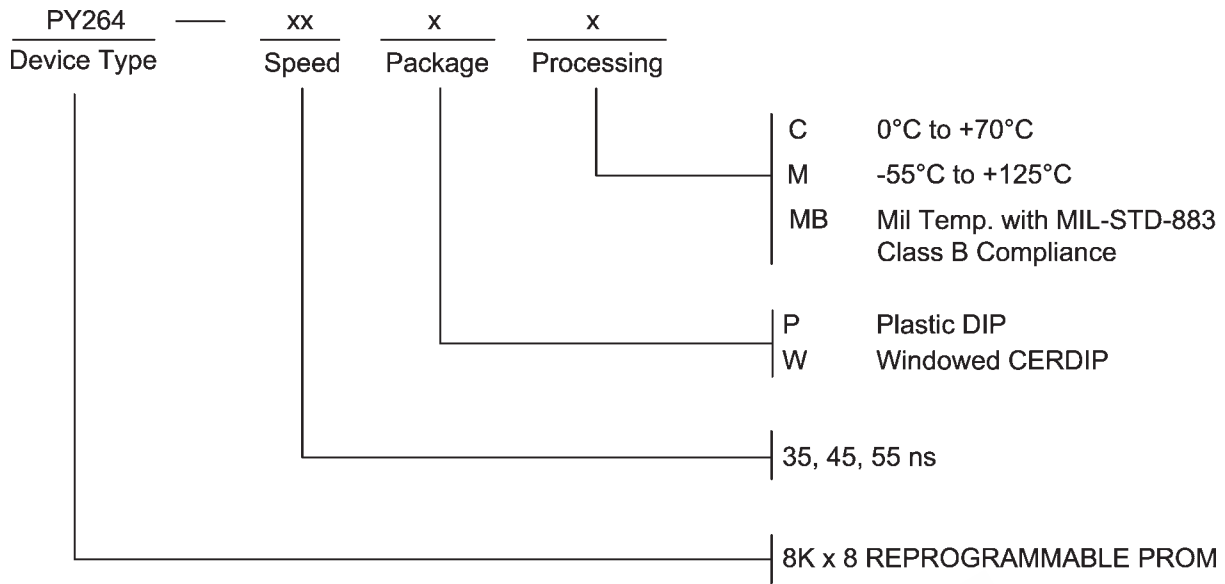
**Figure 2. Thevenin Equivalent**

**Note:**

Because of the ultra-high speed of the PY264, care must be taken when testing this device; an inadequate setup can cause a normal functioning part to be rejected as faulty. Long high-inductance leads that cause

supply bounce must be avoided by bringing the  $V_{CC}$  and ground planes directly up to the contactor fingers. A 0.01  $\mu$ F high frequency capacitor is also required between  $V_{CC}$  and ground.

### ORDERING INFORMATION



### SELECTION GUIDE

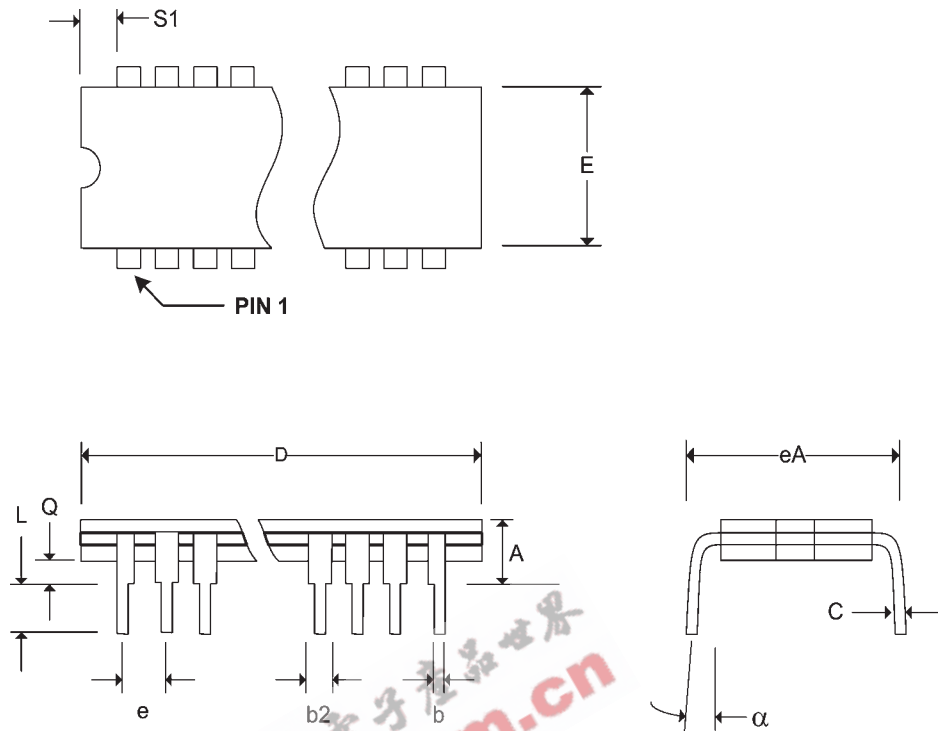
The PY264 is available in the following temperature, speed and package options.

Temperature Range	Package	35	45	55
		Commercial	Plastic DIP Windowed CERDIP	-35PC N/A
Military Temperature	Windowed CERDIP	N/A	-45WM	-55WM
Military Processed*	Windowed CERDIP	N/A	-45WMB	-55WMB

\* Military temperature range with MIL-STD-883, Class B processing.  
N/A = Not Available

Pkg #	<b>WD2</b>	
# Pins	24 (600 mil)	
Symbol	<b>Min</b>	<b>Max</b>
A	0.175	0.225
b	0.015	0.020
b2	0.045	0.065
C	0.009	0.012
D	-	1.280
E	0.505	0.550
eA	0.600 BSC	
e	0.100 BSC	
L	0.125	0.200
Q	0.015	0.060
S1	0.005	-
$\alpha$	0°	15°
WD	0.280	

**CERAMIC DUAL IN-LINE PACKAGE (WINDOWED)**



Pkg #	<b>P8</b>	
# Pins	24 (600 mil)	
Symbol	<b>Min</b>	<b>Max</b>
A	0.155	0.200
A1	0.015	0.060
b	0.015	0.020
b2	0.055	0.065
C	0.009	0.012
D	1.230	1.260
E1	0.530	0.550
E	0.570	0.625
e	0.100 BSC	
eB	0.610	0.685
L	0.115	0.160
$\alpha$	0°	15°

**PLASTIC DUAL IN-LINE PACKAGE (NON-WINDOWED)**

