

## Absolute Maximum Ratings

| Parameter  | Min. | Max. | Units |
|--|------|------|-------|
| Storage Temperature  | -65  | 150  | °C    |
| Ambient Temperature with Power Applied                             | -40  | 85   | °C    |
| Supply Voltage to Ground Potential (Inputs & V <sub>CC</sub> Only) | -0.5 | 4.6  | V     |
| Supply Voltage to Ground Potential (Outputs & D/O Only)            | -0.5 | 4.6  | V     |
| DC Input Voltage   | -0.5 | 5.5  | V     |
| DC Output Current  | -    | 120  | mA    |
| Power Dissipation  | -    | 0.5  | W     |

Stress beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device.

## DC Electrical Characteristics (Over the Operating Range, T<sub>A</sub> = -40°C to +85°C, V<sub>CC</sub> = 3.3V ±10%)

| Parameters       | Description                         | Test Conditions <sup>(1)</sup>   | Min. | Typ. <sup>(2)</sup> | Max. | Units |
|------------------|-------------------------------------|--|------|---------------------|------|-------|
| V <sub>IH</sub>  | Input HIGH Voltage                  | Guaranteed Logic HIGH Level  | 2.0  |                     |      | V     |
| V <sub>IL</sub>  | Input LOW Voltage                   | Guaranteed Logic LOW Level   | -0.5 |                     | 0.8  | V     |
| I <sub>IH</sub>  | Input HIGH Current                  | V <sub>CC</sub> = Max., V <sub>IN</sub> = V <sub>CC</sub>              |      |                     | ±1   | μA    |
| I <sub>IL</sub>  | Input LOW Current                   | V <sub>CC</sub> = Max., V <sub>IN</sub> = GND                          |      |                     | ±1   |       |
| I <sub>OZH</sub> | High Impedance Output Current       | 0 ≤ A, B ≤ V <sub>CC</sub>   |      |                     | ±1   |       |
| V <sub>IK</sub>  | Clamp Diode Voltage                 | V <sub>CC</sub> = Min., I <sub>IN</sub> = -18 mA                       |      | -0.73               | -1.2 | V     |
| R <sub>ON</sub>  | Switch On Resistance <sup>(4)</sup> | V <sub>CC</sub> = Min., V <sub>IN</sub> = 0.0V, I <sub>ON</sub> = 48mA |      | 5                   | 7    | Ω     |
|                  |                                     | V <sub>CC</sub> = Min., V <sub>IN</sub> = 2.4V, I <sub>ON</sub> = 15mA |      | 8                   | 15   |       |

## Capacitance (T<sub>A</sub> = 25°C, f = 1 MHz)

| Parameters <sup>(5)</sup> | Description                 | Test Conditions      | Typ. | Units |
|---------------------------|-----------------------------|----------------------|------|-------|
| C <sub>IN</sub>           | Input Capacitance           | V <sub>IN</sub> = 0V | 3.5  | pF    |
| C <sub>OFF</sub>          | A/B Capacitance, Switch Off | V <sub>IN</sub> = 0V | 5.0  | pF    |
| C <sub>ON</sub>           | A/B Capacitance, Switch On  | V <sub>IN</sub> = 0V | 10.0 | pF    |

### Notes:

- For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device type.
- Typical values are at V<sub>CC</sub> = 3.3V, T<sub>A</sub> = 25°C ambient and maximum loading.
- Not more than one output should be shorted at one time. Duration of the test should not exceed one second.
- Measured by the voltage drop between A and B pin at indicated current through the switch. ON resistance is determined by the lower of the voltages on the two (A,B) pins.

## Power Supply Characteristics

| Parameters       | Description                    | Test Conditions <sup>(1)</sup> |  | Min. | Typ. <sup>(2)</sup> | Max. | Units |
|------------------|--------------------------------|--------------------------------|--|------|---------------------|------|-------|
| I <sub>CC</sub>  | Quiescent Power Supply Current | V <sub>CC</sub> = Max.         | V <sub>IN</sub> = GND or V <sub>CC</sub> |      | 0.5                 | 1.0  | mA    |
| ΔI <sub>CC</sub> | Supply Current per Input HIGH  | V <sub>CC</sub> = Max.         | V <sub>IN</sub> = 3.0V <sup>(3)</sup>    |      |                     | 2.5  |       |

### Notes:

1. For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device.
2. Typical values are at V<sub>CC</sub> = 3.3V, +25°C ambient.
3. Per TTL driven input (control input only); A and B pins do not contribute to ΔI<sub>CC</sub>.

## Switching Characteristics over 3.3V Operating Range

| Parameters                           | Description                                    | Test Conditions   | P13C32X245 |      | Units |
|--------------------------------------|--|---|------------|------|-------|
|                                      |  |   | Com.       |      |       |
|                                      |  |   | Min.       | Max. |       |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay <sup>(2,3)</sup><br>Ax to Bx | C <sub>L</sub> = 50 pF<br>R <sub>L</sub> = 500Ω             |            | 0.25 | ns    |
| t <sub>PZH</sub><br>t <sub>PZL</sub> | Bus Enable Time<br>BE to Ax or Bx              | C <sub>L</sub> = 50 pF<br>R <sub>L</sub> = 500Ω<br>R = 500Ω | 1.5        | 6.5  |       |
| t <sub>PHZ</sub><br>t <sub>PLZ</sub> | Bus Disable Time<br>BE to Ax or Bx             |   | 1.5        | 5.5  |       |

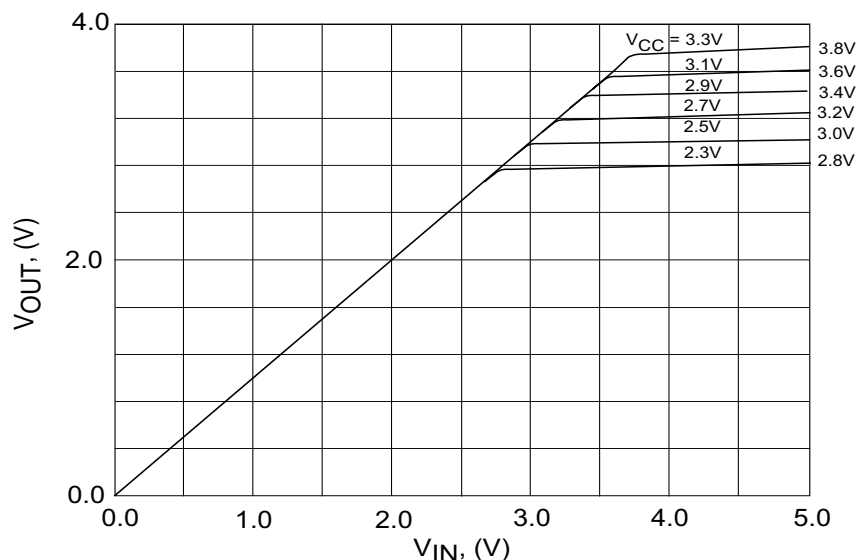
## Switching Characteristics over 2.5V Operating Range

| Parameters                           | Description                                    | Test Conditions   | P13C32X245 |      | Units |
|--------------------------------------|--|---|------------|------|-------|
|                                      |  |   | Com.       |      |       |
|                                      |  |   | Min        | Max  |       |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay <sup>(2,3)</sup><br>Ax to Bx | C <sub>L</sub> = 50 pF<br>R <sub>L</sub> = 500Ω             |            | 0.25 | ns    |
| t <sub>PZH</sub><br>t <sub>PZL</sub> | Bus Enable Time<br>BE to Ax or Bx              | C <sub>L</sub> = 50 pF<br>R <sub>L</sub> = 500Ω<br>R = 500Ω | 1.5        | 9.8  |       |
| t <sub>PHZ</sub><br>t <sub>PLZ</sub> | Bus Disable Time<br>BE to Ax or Bx             |   | 1.5        | 8.3  |       |

### Notes:

1. See test circuit and waveforms.
2. This parameter is guaranteed but not tested on Propagation Delays.
3. The bus switch contributes no propagational delay other than the RC delay of the On-Resistance of the switch and the load capacitance. The time constant for the switch alone is of the order of 0.25 ns for 50 pF load. Since this time constant is much smaller than the rise/fall times of typical driving signals, it adds very little propagational delay to the system. Propagational delay of the bus switch when used in a system is determined by the driving circuit on the driving side of the switch and its interaction with the load on the driven side.

**PI3C32X245**



**Output Voltage vs. Input Voltage over Various Supply Voltages**

**Part Marking**



YY: Date Code (Year)

WW: Date Code (Workweek)

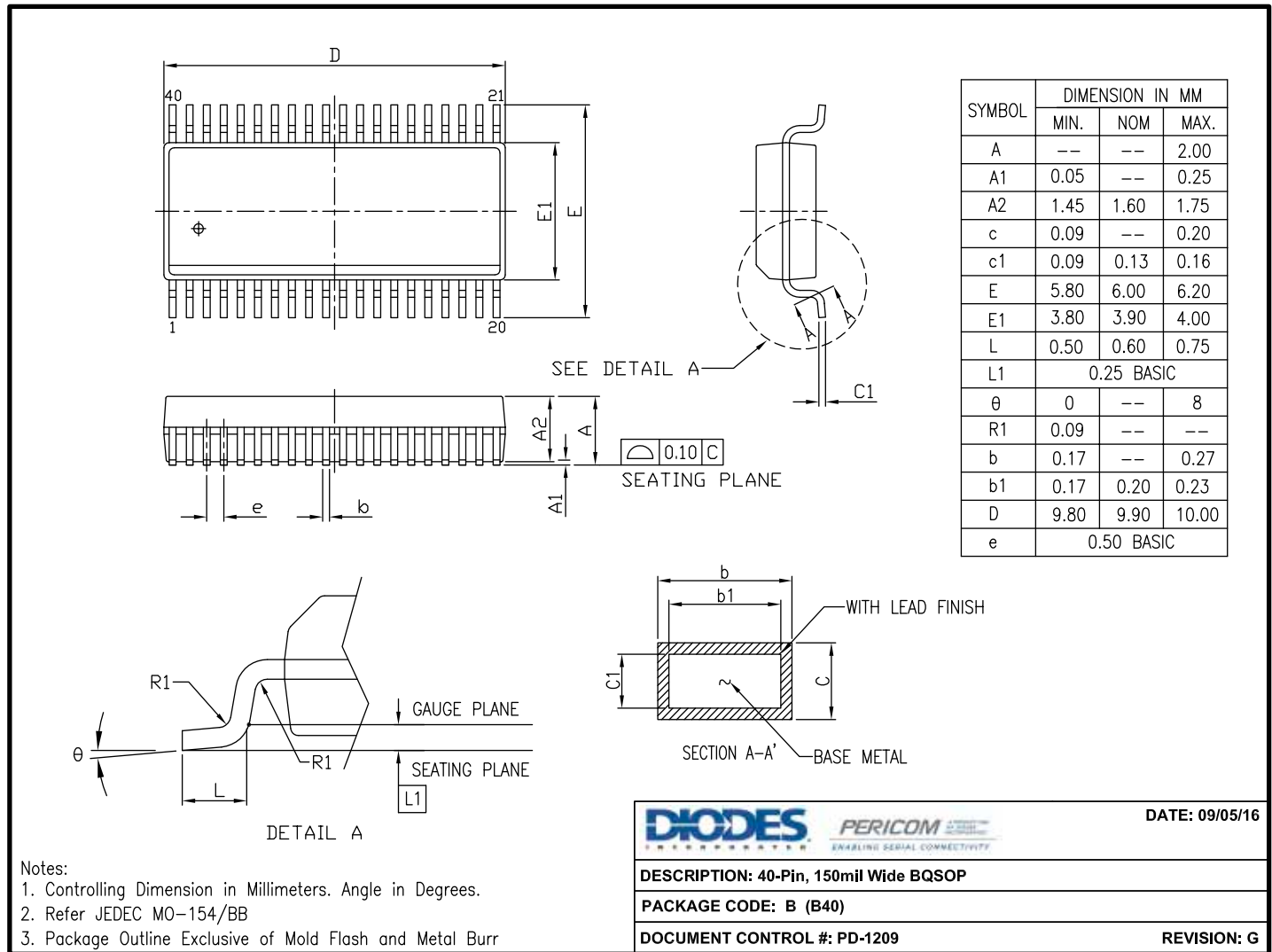
1st X: Assembly Site Code

2nd X: Fab Site Code

The Bar above "I" means Fab3 of MGN

**PI3C32X245**

## Packaging Mechanical: 40-BQSOP (B)



16-0176

### For latest package info.

please check: <http://www.diodes.com/design/support/packaging/pericom-packaging/packaging-mechanicals-and-thermal-characteristics/>

## Ordering Information

| Ordering Code | Package Code | Package Description         |
|---------------|--------------|-----------------------------|
| PI3C32X245BEX | B            | 40-pin, 150mil Wide (BQSOP) |

### Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
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5. X suffix = Tape/Reel

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