

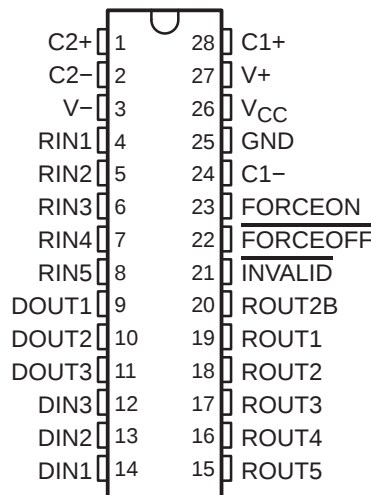
# SN65C3243, SN75C3243

## 3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS

SLLS353D – JUNE 1999 – REVISED MARCH 2004

- Operate With 3-V to 5.5-V  $V_{CC}$  Supply
- Always-Active Noninverting Receiver Output (ROUT2B)
- Low Standby Current . . . 1  $\mu$ A Typical
- External Capacitors . . .  $4 \times 0.1 \mu$ F
- Accept 5-V Logic Input With 3.3-V Supply
- Inter-Operable With SN65C3238, SN75C3238
- Support Operation From 250 kbit/s to 1 Mbit/s
- RS-232 Bus-Pin ESD Protection Exceeds  $\pm 15$ -kV Using Human-Body Model (HBM)
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- Applications
  - Battery-Powered Systems, PDAs, Notebooks, Laptops, Palmtop PCs, and Hand-Held Equipment

DB, DW, OR PW PACKAGE  
(TOP VIEW)



### description/ordering information

The SN65C3243 and SN75C3243 consist of three line drivers, five line receivers, and a dual charge-pump circuit with  $\pm 15$ -kV ESD protection pin-to-pin (serial-port connection pins, including GND). These devices provide the electrical interface between an asynchronous communication controller and the serial-port connector. The charge pump and four small external capacitors allow operation from a single 3-V to 5.5-V supply. In addition, these devices include an always-active noninverting output (ROUT2B), which allows applications using the ring indicator to transmit data while the devices are powered down. The devices operate at data signaling rates up to 1 Mbit/s and an increased slew-rate range of 24 V/ $\mu$ s to 150 V/ $\mu$ s.

### ORDERING INFORMATION

| $T_A$         | PACKAGE <sup>†</sup> |              | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|---------------|----------------------|--------------|-----------------------|------------------|
| –0°C to 70°C  | SOIC (DW)            | Tube of 20   | SN75C3243DW           | 75C3243          |
|               |                      | Reel of 1000 | SN75C3243DWR          |                  |
|               | SSOP (DB)            | Reel of 2000 | SN75C3243DBR          | 75C3243          |
|               | TSSOP (PW)           | Tube of 50   | SN75C3243PW           | CA3243           |
|               |                      | Reel of 2000 | SN75C3243PWR          |                  |
| –40°C to 85°C | SOIC (DW)            | Tube of 20   | SN65C3243DW           | 65C3243          |
|               |                      | Reel of 1000 | SN65C3243DWR          |                  |
|               | SSOP (DB)            | Reel of 2000 | SN65C3243DBR          | 65C3243          |
|               | TSSOP (PW)           | Tube of 50   | SN65C3243PW           | 65C3243          |
|               |                      | Reel of 2000 | SN65C3243PWR          |                  |

<sup>†</sup> Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).



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**description/ordering information (continued)**

Flexible control options for power management are available when the serial port is inactive. The auto-powerdown feature functions when FORCEON is low and  $\overline{\text{FORCEOFF}}$  is high. During this mode of operation, if the devices do not sense a valid RS-232 signal, the driver outputs are disabled. If  $\overline{\text{FORCEOFF}}$  is set low, both drivers and receivers (except ROUT2B) are shut off, and the supply current is reduced to 1  $\mu\text{A}$ . Disconnecting the serial port or turning off the peripheral drivers causes the auto-powerdown condition to occur.

Auto-powerdown can be disabled when FORCEON and  $\overline{\text{FORCEOFF}}$  are high and should be done when driving a serial mouse. With auto-powerdown enabled, the device is activated automatically when a valid signal is applied to any receiver input. The INVALID output is used to notify the user if an RS-232 signal is present at any receiver input. INVALID is high (valid data) if any receiver input voltage is greater than 2.7 V or less than -2.7 V or has been between -0.3 V and 0.3 V for less than 30  $\mu\text{s}$ . INVALID is low (invalid data) if all receiver input voltages are between -0.3 V and 0.3 V for more than 30  $\mu\text{s}$ . Refer to Figure 5 for receiver input levels.

**Function Tables**
**EACH DRIVER**

| INPUTS |         |                              |                           | OUTPUT<br>DOUT | DRIVER STATUS                                    |
|--------|---------|------------------------------|---------------------------|----------------|--------------------------------------------------|
| DIN    | FORCEON | $\overline{\text{FORCEOFF}}$ | VALID RIN<br>RS-232 LEVEL |                |                                                  |
| X      | X       | L                            | X                         | Z              | Powered off                                      |
| L      | H       | H                            | X                         | H              | Normal operation with<br>auto-powerdown disabled |
| H      | H       | H                            | X                         | L              |                                                  |
| L      | L       | H                            | Yes                       | H              | Normal operation with<br>auto-powerdown enabled  |
| H      | L       | H                            | Yes                       | L              |                                                  |
| L      | L       | H                            | No                        | Z              | Powered off by<br>auto-powerdown feature         |
| H      | L       | H                            | No                        | Z              |                                                  |

H = high level, L = low level, X = irrelevant, Z = high impedance

**EACH RECEIVER**

| INPUTS |                    |                              |                           | OUTPUTS |      | RECEIVER STATUS                                             |
|--------|--------------------|------------------------------|---------------------------|---------|------|-------------------------------------------------------------|
| RIN2   | RIN1,<br>RIN3–RIN5 | $\overline{\text{FORCEOFF}}$ | VALID RIN<br>RS-232 LEVEL | ROUT2B  | ROUT |                                                             |
| L      | X                  | L                            | X                         | L       | Z    | Powered off while<br>ROUT2B is active                       |
| H      | X                  | L                            | X                         | H       | Z    |                                                             |
| L      | L                  | H                            | Yes                       | L       | H    | Normal operation with<br>auto-powerdown<br>disabled/enabled |
| L      | H                  | H                            | Yes                       | L       | L    |                                                             |
| H      | L                  | H                            | Yes                       | H       | H    |                                                             |
| H      | H                  | H                            | Yes                       | H       | L    |                                                             |
| Open   | Open               | H                            | No                        | L       | H    |                                                             |

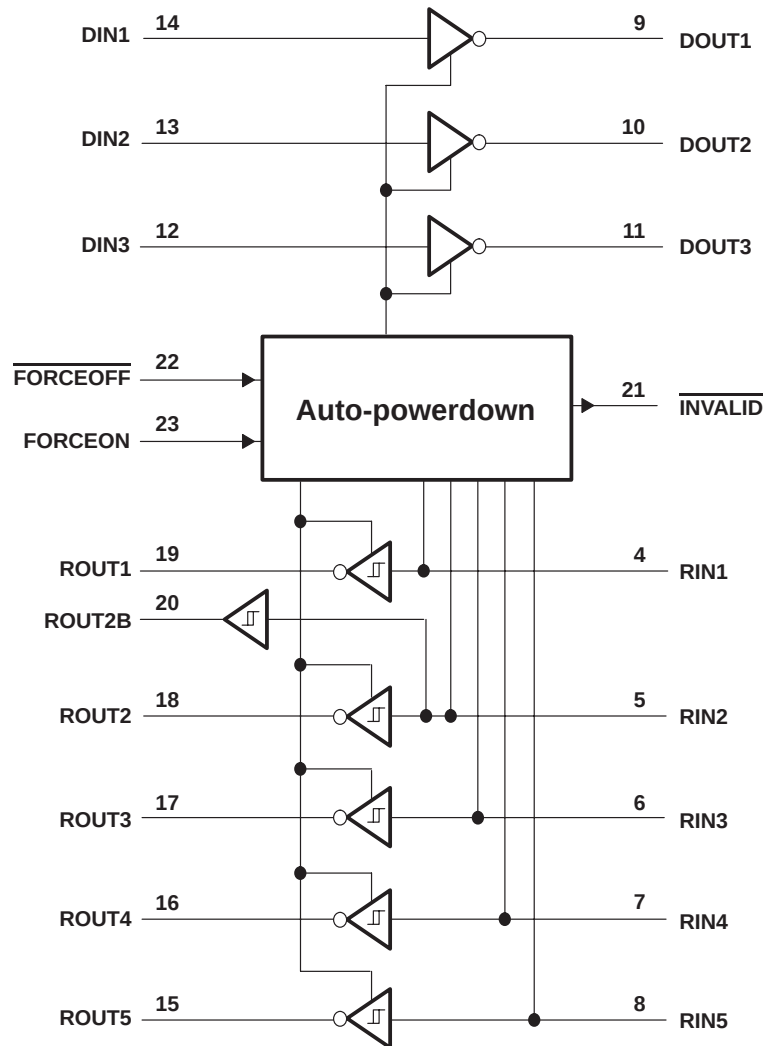
H = high level, L = low level, X = irrelevant, Z = high impedance (off), Open = input disconnected or connected driver off

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**3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS**

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logic diagram (positive logic)



**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)<sup>†</sup>**

|                                                                               |                   |
|-------------------------------------------------------------------------------|-------------------|
| Supply voltage range, $V_{CC}$ (see Note 1)                                   | –0.3 V to 6 V     |
| Positive output supply voltage range, $V_+$ (see Note 1)                      | –0.3 V to 7 V     |
| Negative output supply voltage range, $V_-$ (see Note 1)                      | 0.3 V to –7 V     |
| Supply voltage difference, $V_+ - V_-$ (see Note 1)                           | 13 V              |
| Input voltage range, $V_I$ : Driver ( $\overline{\text{FORCEOFF}}$ , FORCEON) | –0.3 V to 6 V     |
| Receiver                                                                      | –25 V to 25 V     |
| Output voltage range, $V_O$ : Driver                                          | –13.2 V to 13.2 V |
| Package thermal impedance, $\theta_{JA}$ (see Notes 2 and 3): DB package      | 62°C/W            |
| DW package                                                                    | 46°C/W            |
| PW package                                                                    | 62°C/W            |
| Operating virtual junction temperature, $T_J$                                 | 150°C             |
| Storage temperature range, $T_{stg}$                                          | –65°C to 150°C    |

<sup>†</sup> Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. All voltages are with respect to network GND.

2. Maximum power dissipation is a function of  $T_J(\text{max})$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_J(\text{max}) - T_A)/\theta_{JA}$ . Operating at the absolute maximum  $T_J$  of 150°C can affect reliability.

3. The package thermal impedance is calculated in accordance with JESD 51-7.

**recommended operating conditions (see Note 4 and Figure 6)**

|                |                                             |                                             | MIN                      | NOM | MAX | UNIT |
|----------------|---------------------------------------------|---------------------------------------------|--------------------------|-----|-----|------|
| Supply voltage |                                             | $V_{CC} = 3.3 \text{ V}$                    | 3                        | 3.3 | 3.6 | V    |
|                |                                             | $V_{CC} = 5 \text{ V}$                      | 4.5                      | 5   | 5.5 |      |
| $V_{IH}$       | Driver and control high-level input voltage | DIN, $\overline{\text{FORCEOFF}}$ , FORCEON | $V_{CC} = 3.3 \text{ V}$ |     | 2   | V    |
|                |                                             |                                             | $V_{CC} = 5 \text{ V}$   |     | 2.4 |      |
| $V_{IL}$       | Driver and control low-level input voltage  | DIN, $\overline{\text{FORCEOFF}}$ , FORCEON |                          |     | 0.8 | V    |
| $V_I$          | Driver and control input voltage            | DIN, $\overline{\text{FORCEOFF}}$ , FORCEON | 0                        |     | 5.5 | V    |
| $V_I$          | Receiver input voltage                      |                                             | –25                      |     | 25  | V    |
| $T_A$          | Operating free-air temperature              | SN65C3243                                   | –40                      |     | 85  | °C   |
|                |                                             | SN75C3243                                   | 0                        |     | 70  |      |

NOTE 4: Test conditions are C1–C4 = 0.1  $\mu\text{F}$  at  $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$ ; C1 = 0.047  $\mu\text{F}$ , C2–C4 = 0.33  $\mu\text{F}$  at  $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$ .

**electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 6)**

| PARAMETER       |                       |                         | TEST CONDITIONS                                                                                                  | MIN   | TYP‡ | MAX | UNIT |
|-----------------|-----------------------|-------------------------|------------------------------------------------------------------------------------------------------------------|-------|------|-----|------|
| I <sub>I</sub>  | Input leakage current | FORCEOFF, FORCEON       |                                                                                                                  | ±0.01 | ±1   |     | μA   |
| I <sub>CC</sub> | Supply current        | Auto-powerdown disabled | No load,<br>FORCEOFF and FORCEON = V <sub>CC</sub>                                                               | 0.3   | 1    |     | mA   |
|                 |                       | Powered off             | No load, FORCEOFF = GND                                                                                          | 1     | 10   |     |      |
|                 |                       | Auto-powerdown enabled  | No load, FORCEOFF = V <sub>CC</sub> ,<br>FORCEON = GND,<br>All RIN are open or grounded,<br>All DIN are grounded | 1     | 10   |     | μA   |

<sup>‡</sup> All typical values are at  $V_{CC} = 3.3 \text{ V}$  or  $V_{CC} = 5 \text{ V}$ , and  $T_A = 25^\circ\text{C}$ .

NOTE 4: Test conditions are C1–C4 = 0.1  $\mu\text{F}$  at  $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$ ; C1 = 0.047  $\mu\text{F}$ , C2–C4 = 0.33  $\mu\text{F}$  at  $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$ .

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## 3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS

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### DRIVER SECTION

**electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 6)**

| PARAMETER                                                 | TEST CONDITIONS                                                                                | MIN                                                      | TYP <sup>†</sup> | MAX | UNIT |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------|-----|------|
| V <sub>OH</sub> High-level output voltage                 | All DOUT at R <sub>L</sub> = 3 kΩ to GND                                                       | 5                                                        | 5.4              |     | V    |
| V <sub>OL</sub> Low-level output voltage                  | All DOUT at R <sub>L</sub> = 3 kΩ to GND                                                       | –5                                                       | –5.4             |     | V    |
| V <sub>O</sub> Output voltage (mouse driveability)        | DIN1 = DIN2 = GND, DIN3 = V <sub>CC</sub> ,<br>3-kΩ to GND at DOUT3,<br>DOUT1 = DOUT2 = 2.5 mA | ±5                                                       |                  |     | V    |
| I <sub>IH</sub> High-level input current                  | V <sub>I</sub> = V <sub>CC</sub>                                                               |                                                          | ±0.01            | ±1  | μA   |
| I <sub>IL</sub> Low-level input current                   | V <sub>I</sub> = GND                                                                           |                                                          | ±0.01            | ±1  | μA   |
| I <sub>OS</sub> Short-circuit output current <sup>‡</sup> | V <sub>CC</sub> = 3.6 V, V <sub>O</sub> = 0 V                                                  |                                                          | ±35              | ±60 | mA   |
|                                                           | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 0 V                                                  |                                                          | ±35              | ±75 |      |
| r <sub>o</sub> Output resistance                          | V <sub>CC</sub> , V <sub>I</sub> , and V <sub>O</sub> = 0 V, V <sub>O</sub> = ±2 V             | 300                                                      | 10M              |     | Ω    |
| I <sub>off</sub> Output leakage current                   | FORCEOFF = GND                                                                                 | V <sub>O</sub> = ±12 V, V <sub>CC</sub> = 3 V to 3.6 V   |                  | ±25 | μA   |
|                                                           |                                                                                                | V <sub>O</sub> = ±10 V, V <sub>CC</sub> = 4.5 V to 5.5 V |                  | ±25 |      |

<sup>†</sup> All typical values are at V<sub>CC</sub> = 3.3 V or V<sub>CC</sub> = 5 V, and T<sub>A</sub> = 25°C.

<sup>‡</sup> Short-circuit durations should be controlled to prevent exceeding the device absolute power dissipation ratings, and not more than one output should be shorted at a time.

NOTE 4. Test conditions are C1–C4 = 0.1 μF at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047 μF, C2–C4 = 0.33 μF at V<sub>CC</sub> = 5 V ± 0.5 V.

**switching characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 6)**

| PARAMETER                                          | TEST CONDITIONS                                                                            | MIN                                                        | TYP <sup>†</sup> | MAX  | UNIT   |
|----------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------|------|--------|
| Maximum data rate (see Figure 1)                   | R <sub>L</sub> = 3 kΩ,<br>One DOUT switching                                               | C <sub>L</sub> = 1000 pF                                   |                  | 250  | kbit/s |
|                                                    |                                                                                            | C <sub>L</sub> = 250 pF, V <sub>CC</sub> = 3 V to 4.5 V    |                  | 1000 |        |
|                                                    |                                                                                            | C <sub>L</sub> = 1000 pF, V <sub>CC</sub> = 4.5 V to 5.5 V |                  | 1000 |        |
| t <sub>sk(p)</sub> Pulse skew <sup>§</sup>         | C <sub>L</sub> = 150 pF to 2500 pF, R <sub>L</sub> = 3 kΩ to 7 kΩ, See Figure 2            |                                                            | 25               |      | ns     |
| SR(tr) Slew rate, transition region (see Figure 1) | C <sub>L</sub> = 150 pF to 1000 pF, R <sub>L</sub> = 3 kΩ to 7 kΩ, V <sub>CC</sub> = 3.3 V | 24                                                         |                  | 150  | V/μs   |

<sup>†</sup> All typical values are at V<sub>CC</sub> = 3.3 V or V<sub>CC</sub> = 5 V, and T<sub>A</sub> = 25°C.

<sup>§</sup> Pulse skew is defined as |t<sub>PLH</sub> – t<sub>PHL</sub>| of each channel of the same device.

NOTE 4. Test conditions are C1–C4 = 0.1 μF at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047 μF, C2–C4 = 0.33 μF at V<sub>CC</sub> = 5 V ± 0.5 V.



## RECEIVER SECTION

electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 6)

| PARAMETER                                                                | TEST CONDITIONS                | MIN                     | TYP <sup>†</sup>        | MAX | UNIT |
|--------------------------------------------------------------------------|--------------------------------|-------------------------|-------------------------|-----|------|
| V <sub>OH</sub> High-level output voltage                                | I <sub>OH</sub> = -1 mA        | V <sub>CC</sub> - 0.6 V | V <sub>CC</sub> - 0.1 V |     | V    |
| V <sub>OL</sub> Low-level output voltage                                 | I <sub>OL</sub> = 1.6 mA       |                         |                         | 0.4 | V    |
| V <sub>IT+</sub> Positive-going input threshold voltage                  | V <sub>CC</sub> = 3.3 V        |                         | 1.6                     | 2.4 | V    |
|                                                                          | V <sub>CC</sub> = 5 V          |                         | 1.9                     | 2.4 |      |
| V <sub>IT-</sub> Negative-going input threshold voltage                  | V <sub>CC</sub> = 3.3 V        | 0.6                     | 1.1                     |     | V    |
|                                                                          | V <sub>CC</sub> = 5 V          | 0.8                     | 1.4                     |     |      |
| V <sub>hys</sub> Input hysteresis (V <sub>IT+</sub> - V <sub>IT-</sub> ) |                                |                         | 0.5                     |     | V    |
| I <sub>off</sub> Output leakage current (except ROUT2B)                  | FORCEOFF = 0 V                 |                         | ±0.05                   | ±10 | μA   |
| r <sub>i</sub> Input resistance                                          | V <sub>I</sub> = ±3 V to ±25 V | 3                       | 5                       | 7   | kΩ   |

<sup>†</sup> All typical values are at V<sub>CC</sub> = 3.3 V or V<sub>CC</sub> = 5 V, and T<sub>A</sub> = 25°C.

NOTE 4. Test conditions are C1-C4 = 0.1 μF at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047 μF, C2-C4 = 0.33 μF at V<sub>CC</sub> = 5 V ± 0.5 V.

switching characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4)

| PARAMETER                                                          | TEST CONDITIONS                                              | TYP <sup>†</sup> | UNIT |
|--------------------------------------------------------------------|--------------------------------------------------------------|------------------|------|
| t <sub>PLH</sub> Propagation delay time, low- to high-level output | C <sub>L</sub> = 150 pF, See Figure 3                        | 150              | ns   |
| t <sub>PHL</sub> Propagation delay time, high- to low-level output | C <sub>L</sub> = 150 pF, See Figure 3                        | 150              | ns   |
| t <sub>en</sub> Output enable time                                 | C <sub>L</sub> = 150 pF, R <sub>L</sub> = 3 kΩ, See Figure 4 | 200              | ns   |
| t <sub>dis</sub> Output disable time                               | C <sub>L</sub> = 150 pF, R <sub>L</sub> = 3 kΩ, See Figure 4 | 200              | ns   |
| t <sub>sk(p)</sub> Pulse skew <sup>‡</sup>                         | See Figure 3                                                 | 50               | ns   |

<sup>†</sup> All typical values are at V<sub>CC</sub> = 3.3 V or V<sub>CC</sub> = 5 V, and T<sub>A</sub> = 25°C.

<sup>‡</sup> Pulse skew is defined as |t<sub>PLH</sub> - t<sub>PHL</sub>| of each channel of the same device.

NOTE 4. Test conditions are C1-C4 = 0.1 μF at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047 μF, C2-C4 = 0.33 μF at V<sub>CC</sub> = 5 V ± 0.5 V.

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## 3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS

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### AUTO-POWERDOWN SECTION

**electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 5)**

| PARAMETER               |                                                                | TEST CONDITIONS                                                        | MIN                   | MAX | UNIT |
|-------------------------|----------------------------------------------------------------|------------------------------------------------------------------------|-----------------------|-----|------|
| V <sub>T+(valid)</sub>  | Receiver input threshold for INVALID high-level output voltage | FORCEON = GND,<br>FORCEOFF = V <sub>CC</sub>                           |                       | 2.7 | V    |
| V <sub>T-(valid)</sub>  | Receiver input threshold for INVALID high-level output voltage | FORCEON = GND,<br>FORCEOFF = V <sub>CC</sub>                           | -2.7                  |     | V    |
| V <sub>T(invalid)</sub> | Receiver input threshold for INVALID low-level output voltage  | FORCEON = GND,<br>FORCEOFF = V <sub>CC</sub>                           | -0.3                  | 0.3 | V    |
| V <sub>OH</sub>         | INVALID high-level output voltage                              | I <sub>OH</sub> = -1 mA, FORCEON = GND,<br>FORCEOFF = V <sub>CC</sub>  | V <sub>CC</sub> - 0.6 |     | V    |
| V <sub>OL</sub>         | INVALID low-level output voltage                               | I <sub>OL</sub> = 1.6 mA, FORCEON = GND,<br>FORCEOFF = V <sub>CC</sub> |                       | 0.4 | V    |

**switching characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 5)**

| PARAMETER            |                                                   | TYP <sup>†</sup> | UNIT |
|----------------------|---------------------------------------------------|------------------|------|
| t <sub>valid</sub>   | Propagation delay time, low- to high-level output | 1                | μs   |
| t <sub>invalid</sub> | Propagation delay time, high- to low-level output | 30               | μs   |
| t <sub>en</sub>      | Supply enable time                                | 100              | μs   |

<sup>†</sup> All typical values are at V<sub>CC</sub> = 3.3 V or V<sub>CC</sub> = 5 V, and T<sub>A</sub> = 25°C.

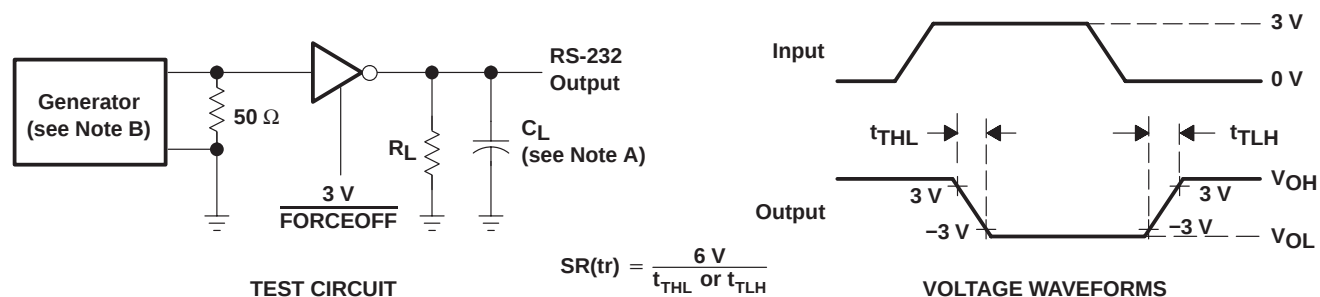


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## 3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS

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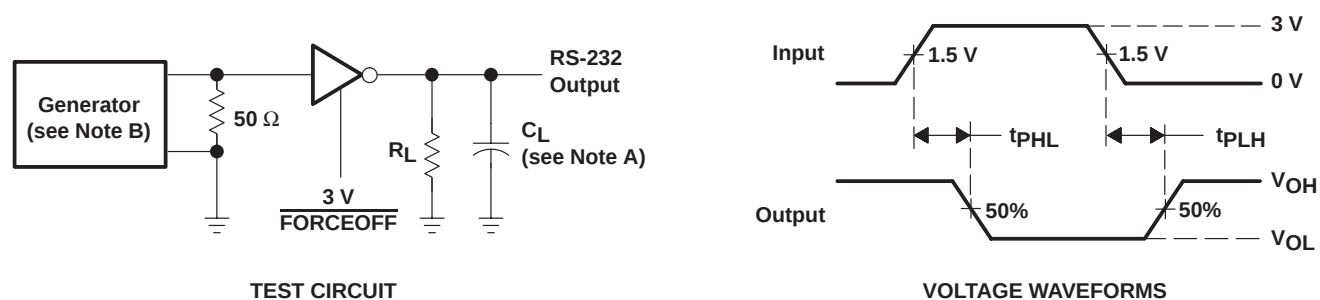
### PARAMETER MEASUREMENT INFORMATION



NOTES: A.  $C_L$  includes probe and jig capacitance.

B. The pulse generator has the following characteristics: PRR = 1 Mbit/s,  $Z_O = 50 \Omega$ , 50% duty cycle,  $t_r \leq 10$  ns,  $t_f \leq 10$  ns.

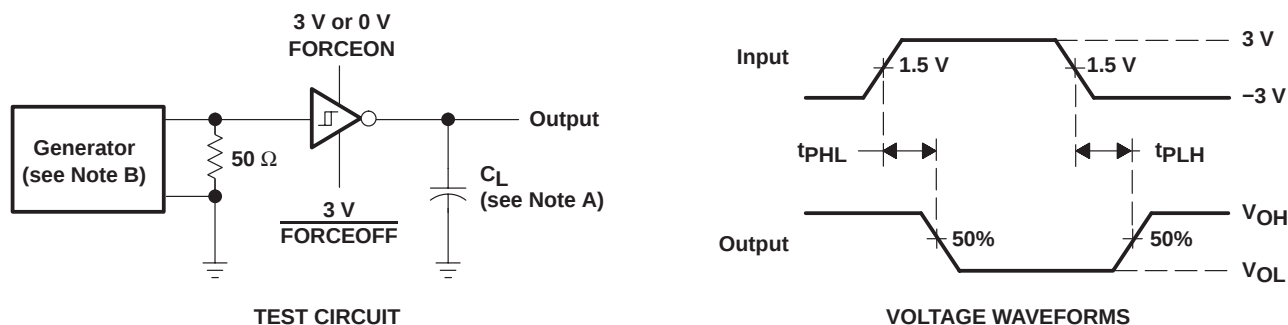
Figure 1. Driver Slew Rate



NOTES: A.  $C_L$  includes probe and jig capacitance.

B. The pulse generator has the following characteristics: PRR = 1 Mbit/s,  $Z_O = 50 \Omega$ , 50% duty cycle,  $t_r \leq 10$  ns,  $t_f \leq 10$  ns.

Figure 2. Driver Pulse Skew



NOTES: A.  $C_L$  includes probe and jig capacitance.

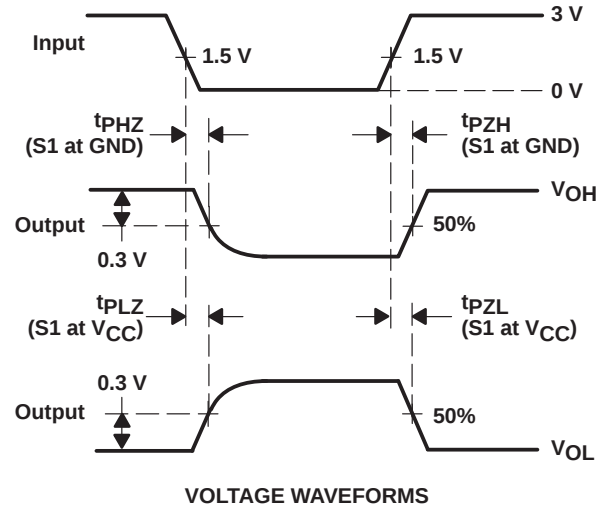
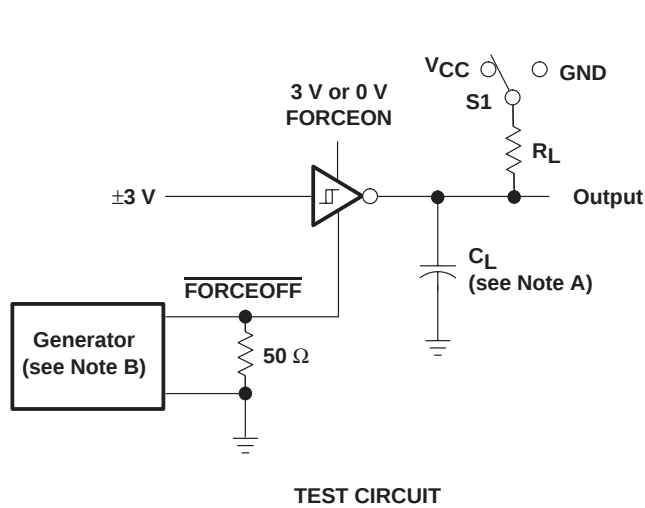
B. The pulse generator has the following characteristics:  $Z_O = 50 \Omega$ , 50% duty cycle,  $t_r \leq 10$  ns,  $t_f \leq 10$  ns.

Figure 3. Receiver Propagation Delay Times

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## PARAMETER MEASUREMENT INFORMATION



- NOTES:
- A.  $C_L$  includes probe and jig capacitance.
  - B. The pulse generator has the following characteristics:  $Z_O = 50\ \Omega$ , 50% duty cycle,  $t_r \leq 10\ \text{ns}$ ,  $t_f \leq 10\ \text{ns}$ .
  - C.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .
  - D.  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .

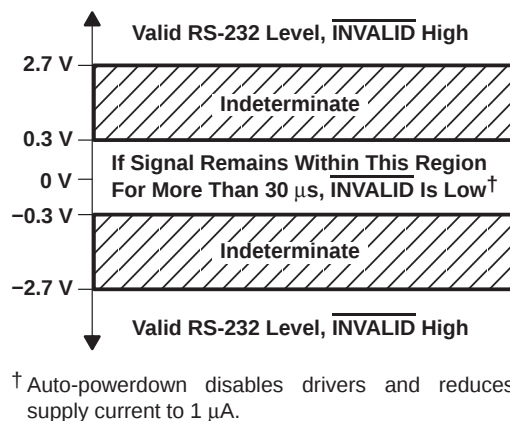
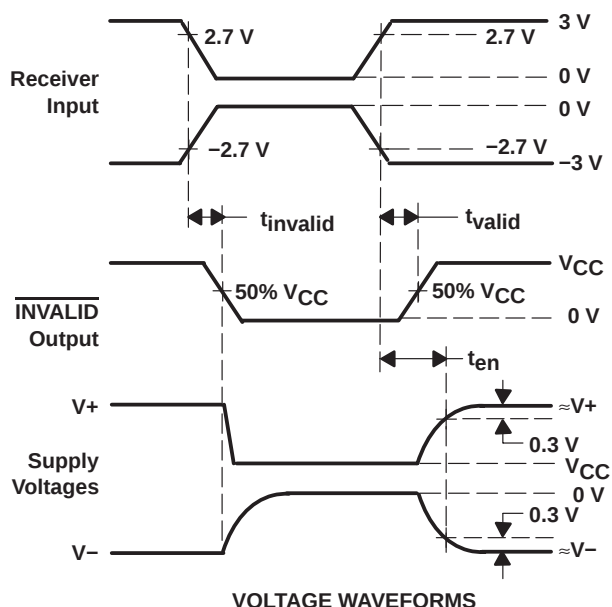
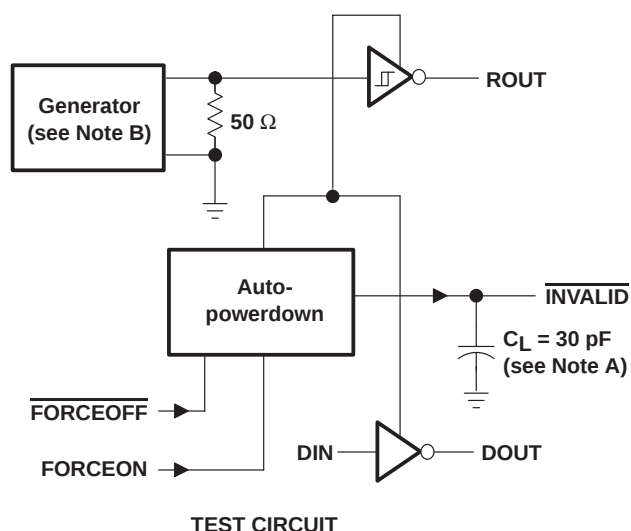
Figure 4. Receiver Enable and Disable Times

# SN65C3243, SN75C3243

## 3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS

SLLS353D – JUNE 1999 – REVISED MARCH 2004

### PARAMETER MEASUREMENT INFORMATION



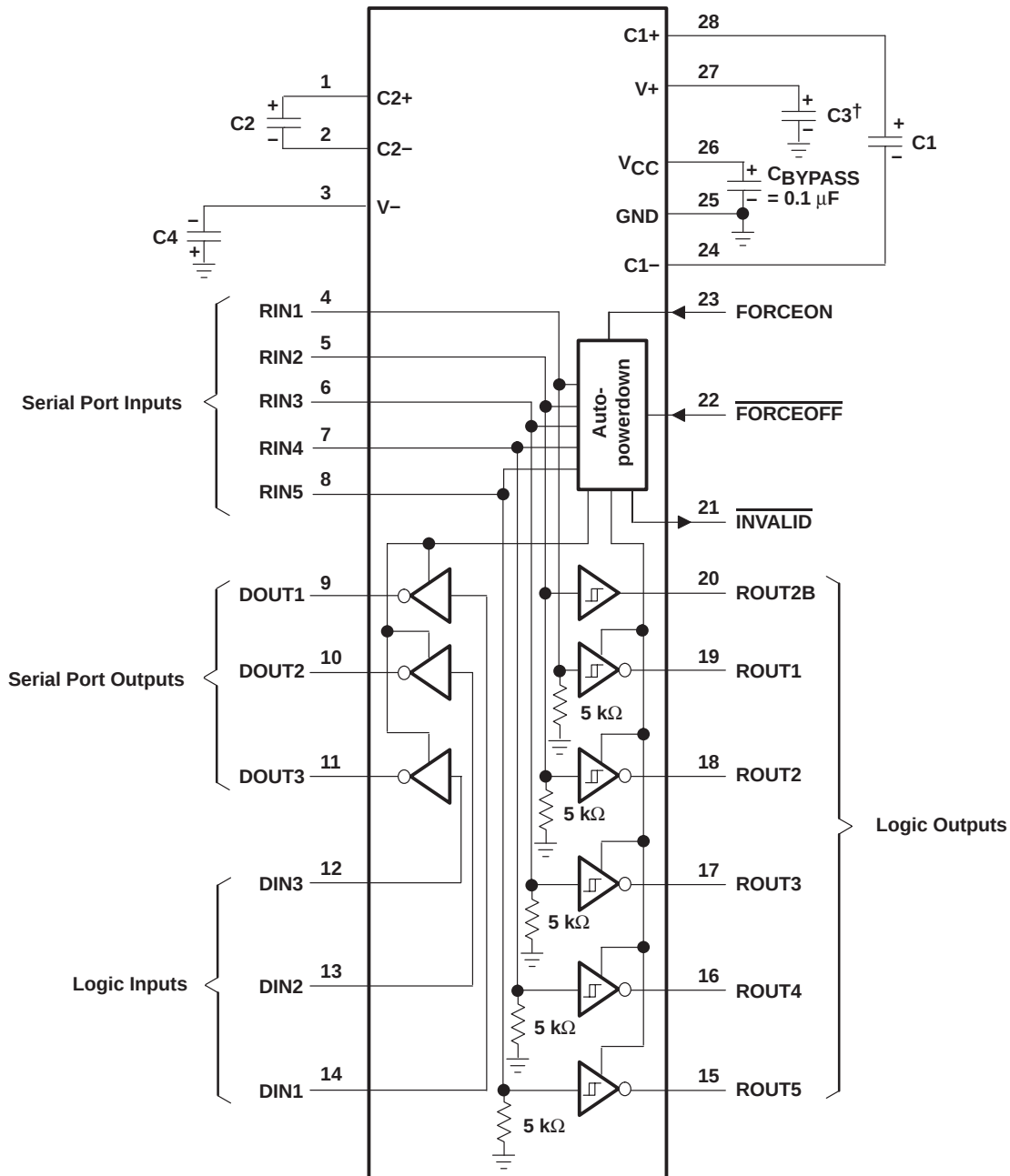
- NOTES: A.  $C_L$  includes probe and jig capacitance.  
B. The pulse generator has the following characteristics: PRR = 5 kbit/s,  $Z_O = 50 \Omega$ , 50% duty cycle,  $t_r \leq 10 \text{ ns}$ ,  $t_f \leq 10 \text{ ns}$ .

Figure 5.  $\overline{\text{INVALID}}$  Propagation Delay Times and Supply Enabling Time

# SN65C3243, SN75C3243 3-V TO 5.5-V MULTICHANNEL COMPATIBLE RS-232 LINE DRIVERS/RECEIVERS

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## APPLICATION INFORMATION



† C3 can be connected to  $V_{CC}$  or GND.

NOTE A: Resistor values shown are nominal.

$V_{CC}$  vs CAPACITOR VALUES

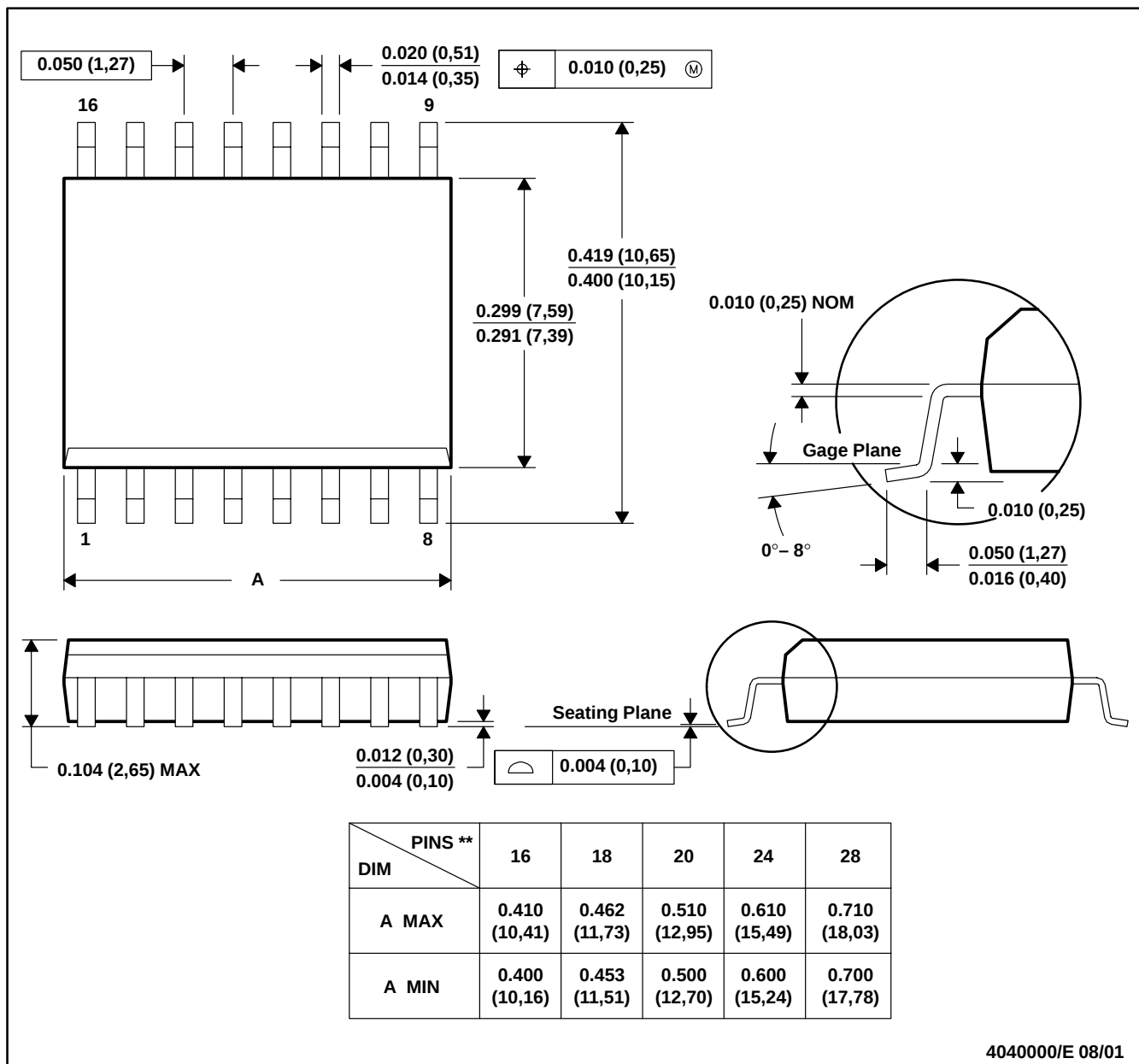
| $V_{CC}$          | C1            | C2, C3, and C4 |
|-------------------|---------------|----------------|
| 3.3 V $\pm$ 0.3 V | 0.1 $\mu$ F   | 0.1 $\mu$ F    |
| 5 V $\pm$ 0.5 V   | 0.047 $\mu$ F | 0.33 $\mu$ F   |
| 3 V to 5.5 V      | 0.1 $\mu$ F   | 0.47 $\mu$ F   |

Figure 6. Typical Operating Circuit and Capacitor Values

## DW (R-PDSO-G\*\*)

## PLASTIC SMALL-OUTLINE PACKAGE

16 PINS SHOWN



- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
  - Falls within JEDEC MS-013

## DB (R-PDSO-G\*\*)

## PLASTIC SMALL-OUTLINE

28 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.  
 D. Falls within JEDEC MO-150

## PW (R-PDSO-G\*\*)

## PLASTIC SMALL-OUTLINE PACKAGE

14 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.  
 D. Falls within JEDEC MO-153

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