#### 查询SN65C23243供应商

# 专业PCB打样ISN65C23243计SN75C23243 3-V TO 5.5-V DUAL RS-232 PORT

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| ip and Single-Supply Interface for<br>PC/AT Serial Ports   | DGG OR DL PACKAGE<br>(TOP VIEW)                      |
|--|--|
| cceed the Requirements of<br>32-F and ITU v.28 Standards   |  |
| /ith 3-V to 5.5-V V <sub>CC</sub> Supply   | RINJA 3 46 ROUTJA                                    |
| ctive Noninverting Receiver  | RIN2A 4 45 ROUT2A                                    |
|  |  |
| p To 250 kbit/s  |  |
| by Current 1 μA Typical  |  |
| apacitors $4 \times 0.22  \mu F$   |  |
| and the second se  |  |
|  |  |
| Flexible Power Down of Either  | $C2 - \begin{bmatrix} 11 & 38 \end{bmatrix} V - $    |
| t  | C2+ 12 37 V+   |
| use Driveability   | GND [] 13 36 ] C1+                                   |
| 2/AT Serial Ports<br>ed the Requirements of<br>and ITU v.28 Standards<br>3-V to 5.5-V V <sub>CC</sub> Supply<br>e Noninverting Receiver<br>T2) Per Port<br>o 250 kbit/s<br>Current 1 $\mu$ A Typical<br>acitors 4 × 0.22 $\mu$ F<br>ogic Input With 3.3-V Supply<br>kible Power Down of Either<br>Driveability<br>Pin ESD Protection Exceeds<br>Human-Body Model (HBM)<br>wered Systems, Notebooks,<br>almtop PCs, and Hand-Held<br>ing information<br>243 and SN75C23243 consist of<br>containing three line drivers and<br>rs, and a dual charge-pump circuit  | V <sub>CC</sub> [14 35] C1-                          |
| ing Human-Body Model (HBM) 🛛 🛛 🦰   | FORCEOFFB [15 34] GND                                |
| ins and a lab  |  |
| Powered Systems, Notebooks,  |  |
| s, Palmtop PCs, and Hand-Held  | DOUT3B   18 31   DIN3B<br>INVB   19 30   ROUT2B      |
| ent de la grade de la constance de | RIN1B 20 29 ROUT1B                                   |
|  | RIN2B 21 28 ROUTE                                    |
| dering information   | RIN3B 22 27 ROUT3B                                   |
| 22242 and SNZEC22242 appoint of  | RIN3B [] 22 27 [] ROUT3B<br>RIN4B [] 23 26 [] ROUT4B |
|  | RIN5B 24 25 ROUT5B                                   |
|  |  |
| ESD protection pin to pin (corial port   |  |

Single-Chip Two IBM™

- Meet or Exc TIA/EIA-232
- **Operate Wi**
- Always-Act Output (RO
- **Operate Up**
- Low Stand
- **External Ca**
- Accept 5-V
- Allow for F Serial Port
- Serial-Mou
- **RS-232 Bus** ±15 kV Usir
- Application
  - Battery-F Laptops. Equipme

#### description/ord

The SN65C2 two ports, ea five line receivers, and a dual charge-pump circuit with ±15-kV ESD protection pin to pin (serial-port

connection pins, including GND). These devices meet the requirements of TIA/EIA-232-F and provide the electrical interface between an asynchronous communication controller and the serial-port connector. This combination of drivers and receivers matches that needed for two typical serial ports used in an IBM PC/AT, or compatible. 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 (ROUT2) per port, 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 250 kbit/s and a maximum of 30-V/ $\mu$ s driver output slew-rate.

| Τ <sub>Α</sub> | PACKAGE <sup>†</sup> |              | ORDERABLE<br>PART NUMBER | TOP-SIDE<br>MARKING |  |  |  |  |
|----------------|----------------------|--------------|--------------------------|---------------------|--|--|--|--|
|                |                      |              | SN75C23243DL             | 75000040            |  |  |  |  |
| –0°C to 70°C   | SSOP (DL)            | Reel of 1000 | SN75C23243DLR            | 75C23243            |  |  |  |  |
|                | TSSOP (DGG)          | Reel of 2000 | SN75C23243DGGR           | 75C23243            |  |  |  |  |
| and the        | D-C.CO               | Tube of 25   | SN65C23243DL             | 05000040            |  |  |  |  |
| -40°C to 85°C  | SSOP (DL)            | Reel of 1000 | SN65C23243DLR            | 65C23243            |  |  |  |  |
| 12-W           | TSSOP (DGG)          | Reel of 2000 | SN65C23243DGGR           | 65C23243            |  |  |  |  |

#### ORDERING INFORMATION

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

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### description/ordering information (continued)

Flexible control options for power management are available when either or both serial ports are inactive. The auto-powerdown feature functions when FORCEON is low and FORCEOFF is high. During this mode of operation, if the device does not sense a valid RS-232 signal, the driver outputs of its respective port are disabled. If FORCEOFF is set low, both drivers and receivers (except ROUT2) are shut off, and the supply current is reduced to 1  $\mu$ 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 FORCEOFF are high and should be done when driving a serial mouse. With auto-powerdown enabled, the RS-232 port is activated automatically when a valid signal is applied to any respective receiver input. The INV output is used to notify the user if an RS-232 signal is present at any receiver input. INV 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  $\mu$ s. INV is low (invalid data) if all receiver input voltages are between -0.3 V and 0.3 V for more than 30  $\mu$ s. Refer to Figure 5 for receiver input levels.

|     |         |          | EACH DRIVER<br>(each port) |        |                         |
|-----|---------|----------|----------------------------|--------|-------------------------|
|     |         | INPUTS   |                            | OUTPUT |                         |
| DIN | FORCEON | FORCEOFF | VALID RIN<br>RS-232 LEVEL  | DOUT   | DRIVER STATUS           |
| Х   | Х       | L        | Х                          | Z      | Powered off             |
| L   | Н       | Н        | Х                          | Н      | Normal operation with   |
| н   | Н       | Н        | Х                          | L      | auto-powerdown disabled |
| L   | L       | н        | Yes                        | Н      | Normal operation with   |
| н   | L       | Н        | Yes                        | L      | auto-powerdown enabled  |
| L   | L       | Н        | No                         | Z      | Powered off by          |
| Н   | L       | Н        | No                         | Z      | auto-powerdown feature  |

# **Function Tables**

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

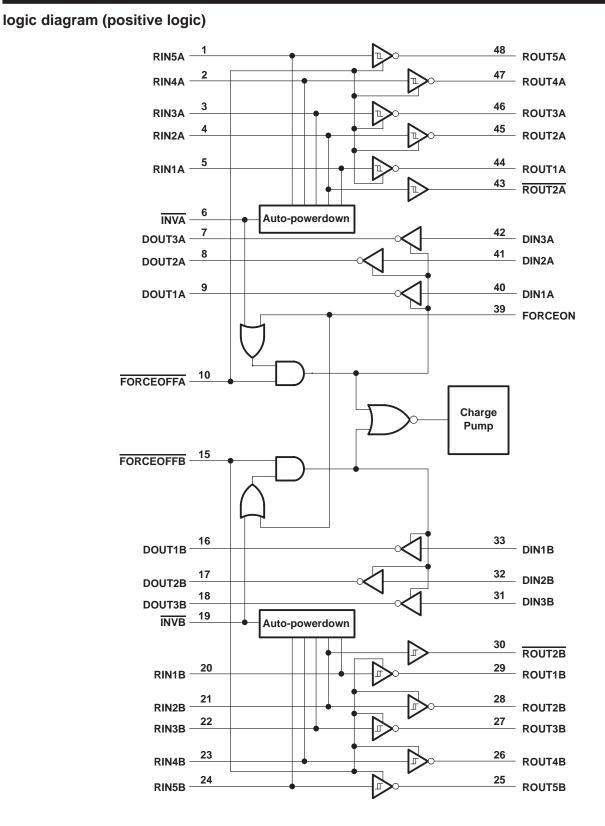
# EACH RECEIVER

|      |                    |          | (each port                | )       |      |                       |
|------|--------------------|----------|---------------------------|---------|------|-----------------------|
|      | INPUTS             |          |                           | OUTPUTS |      |                       |
| RIN2 | RIN1,<br>RIN3-RIN5 | FORCEOFF | VALID RIN<br>RS-232 LEVEL | ROUT2   | ROUT | RECEIVER STATUS       |
| L    | Х                  | L        | Х                         | L       | Z    | Powered off while     |
| н    | Х                  | L        | Х                         | Н       | Z    | ROUT2 is active       |
| L    | L                  | Н        | Yes                       | L       | Н    |                       |
| L    | Н                  | Н        | Yes                       | L       | L    | Normal operation with |
| н    | L                  | Н        | Yes                       | Н       | Н    | auto-powerdown        |
| н    | Н                  | Н        | Yes                       | н       | L    | disabled/enabled      |
| Open | Open               | н        | No                        | L       | Н    |                       |

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



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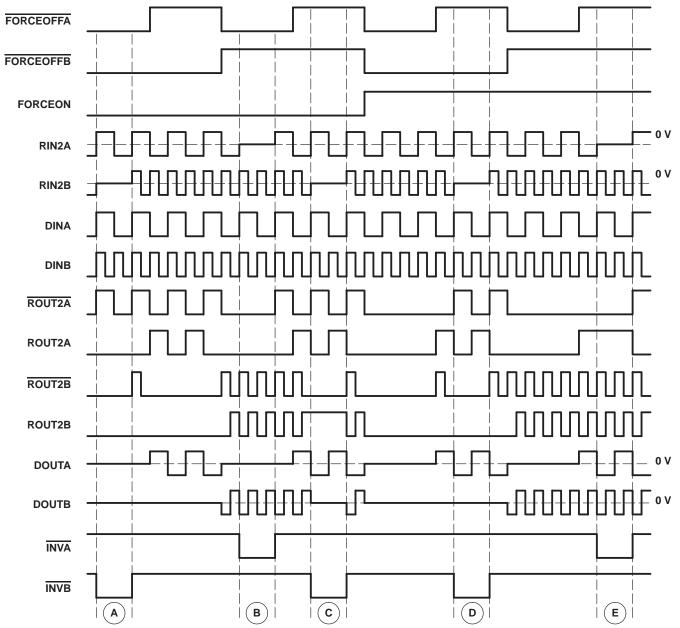




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### timing

Figure 1 shows how the two independent serial ports can be enabled or disabled. As shown by the logic states, depending on the FORCEOFF, FORCEON, and receiver input levels, either port can be powered down. Intermediate receiver input levels indicate a 0-V input. Also, it is assumed a pulldown resistor to ground is used for the receiver outputs. The INV pin goes low when its respective receiver input does not supply a valid RS-232 level. For simplicity, voltage levels, timing differences, and input/output edge rates are not shown.



NOTES: A. Ports A and B manually powered off

- B. Port A manually powered off, port B in normal operation with auto-powerdown enabled
- C. Port B powered off by auto-powerdown, port A in normal operation with auto-powerdown enabled
- D. Port A in normal operation with auto-powerdown disabled, port B manually powered off
- E. Ports A and B in normal operation with auto-powerdown disabled

Figure 1. Timing Diagram



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

| Supply voltage range, V <sub>CC</sub> (see Note 1)                        | $\ldots$ –0.3 V to 7 V                    |
|---|---|
| Negative output supply voltage, V– (see Note 1)                           |   |
| Supply voltage difference, V+ – V– (see Note 1)                           |   |
| Input voltage range, VI: Driver (FORCEOFF, FORCEON)                       | –0.3 V to 6 V                             |
| Receiver  | –25 V to 25 V                             |
| Output voltage range, V <sub>O</sub> : Driver                             | 13.2 V to 13.2 V                          |
| Receiver (INV)  | $\dots$ –0.3 V to V <sub>CC</sub> + 0.3 V |
| Package thermal impedance, $\theta_{JA}$ (see Notes 2 and 3): DGG package |   |
| DL package  | 63°C/W                                    |
| Operating virtual junction temperature, T <sub>J</sub>                    | 150°C                                     |
| Storage temperature range, T <sub>stg</sub>                               |   |

<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  $T_J(max)$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_J(max) - T_A)/\theta_{JA}$ . 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 7)

|   |                        |                         |     |     | MAX | UNIT |
|---|------------------------|-------------------------|-----|-----|-----|------|
| Supply voltage  |                        | V <sub>CC</sub> = 3.3 V | 3   | 3.3 | 3.6 |      |
|   |                        | $V_{CC} = 5 V$          | 4.5 | 5   | 5.5 | V    |
| Driver and control high-level input voltage, $V_{IH}$ |                        | V <sub>CC</sub> = 3.3 V | 2   |     |     | N/   |
|   | DIN, FORCEOFF, FORCEON | $V_{CC} = 5 V$          | 2.4 |     |     | V    |
| Driver and control low-level input voltage, $V_{IL}$  | DIN, FORCEOFF, FORCEON |                         |     |     | 0.8 | V    |
| Driver and control input voltage, VI                  | DIN, FORCEOFF, FORCEON |                         | 0   |     | 5.5 | V    |
| Receiver input voltage, VI                            | RIN                    |                         | -25 |     | 25  | V    |
|   |                        | SN75C23243              | 0   |     | 70  | °C   |
| Operating free-air temperature, T <sub>A</sub>        |                        | SN65C23243              | -40 |     | 85  | 50   |

NOTE 4: Test conditions are C1–C4 = 0.22  $\mu$ F at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047  $\mu$ F, C2–C4 = 0.33  $\mu$ F at V<sub>CC</sub> = 5 V ± 0.5 V.

# electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 7)

| PARAMETER |                         |                         | TEST CONDITIONS  | MIN | TYP‡  | MAX | UNIT |
|-----------|-------------------------|-------------------------|--|-----|-------|-----|------|
| Ц         | Input leakage current   | FORCEOFF, FORCEON       |  |     | ±0.01 | ±1  | μA   |
|           |                         | Auto-powerdown disabled | No load, FORCEOFF and FORCEON at $V_{CC}$  |     | 0.6   | 2   | mA   |
| Icc       | Supply current          | Powered off             | No load, FORCEOFF at GND   |     | 1     | 20  |      |
|           | (T <sub>A</sub> = 25°C) | Auto-powerdown enabled  | No load, <del>FORCEOFF</del> at V <sub>CC</sub> ,<br>FORCEON at GND,<br>All RIN are open or grounded |     | 1     | 20  | μΑ   |

<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 = 0.22  $\mu$ F at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047  $\mu$ F, C2–C4 = 0.33  $\mu$ F at V<sub>CC</sub> = 5 V ± 0.5 V.



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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 7)

|                 | PARAMETER                              | TE  | ST CONDITION  | S                         | MIN  | TYP†  | MAX | UNIT |
|-----------------|--|---|---|---------------------------|------|-------|-----|------|
| Vон             | High-level output voltage              | All DOUT at $R_L = 3 \ k\Omega$ to  | All DOUT at $R_L = 3 \text{ k}\Omega$ to GND                        |                           | 5    | 5.4   |     | V    |
| VOL             | Low-level output voltage               | All DOUT at $R_L = 3 k\Omega$ to GND  |   | -5                        | -5.4 |       | V   |      |
| VO              | Output voltage<br>(mouse driveability) | DIN1 = DIN2 = GND, DIN3 = $V_{CC}$ ,<br>B-k $\Omega$ to GND at DOUT3, DOUT1 = DOUT2 = -2.5 mA |   | ±5                        |      |       | V   |      |
| ЧΗ              | High-level input current               | $V_{I} = V_{CC}$  |   |                           |      | ±0.01 | ±1  | μA   |
| ۱ <sub>IL</sub> | Low-level input current                | V <sub>I</sub> at GND   |   |                           |      | ±0.01 | ±1  | μA   |
|                 |  | V <sub>CC</sub> = 3.6 V,  | VO = 0 V  |                           |      | 105   | 100 |      |
| los             | Short-circuit output current‡          | V <sub>CC</sub> = 5.5 V,  | VO = 0 V  |                           |      | ±35   | ±60 | mA   |
| r <sub>o</sub>  | Output resistance                      | $V_{CC}$ , V+, and V- = 0 V,  | $V_{O} = \pm 2 V$   |                           | 300  | 10M   |     | Ω    |
| 1               |  |   | $V_{O} = \pm 12 \text{ V},  V_{CC} = 3 \text{ V to } 3.6 \text{ V}$ |                           |      | ±25   |     |      |
| loff            | Output leakage current                 | FORCEOFF = GND  | V <sub>O</sub> = ±10 V,   | $V_{CC}$ = 4.5 V to 5.5 V |      |       | ±25 | μA   |

<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> =  $25^{\circ}$ 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 = 0.22  $\mu$ F at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047  $\mu$ F, C2–C4 = 0.33  $\mu$ F 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 7)

|                    | PARAMETER                    | TEST CONDITIONS                                    |  |     | TYP† | MAX | UNIT   |
|--------------------|------------------------------|--|--|-----|------|-----|--------|
|                    | Maximum data rate            | C <sub>L</sub> = 1000 pF,<br>One DOUT switching,   | R <sub>L</sub> = 3 kΩ,<br>See Figure 1               | 250 |      |     | kbit/s |
| <sup>t</sup> sk(p) | Pulse skew§                  | C <sub>L</sub> = 150 pF to 2500 pF                 | $R_L = 3 k\Omega$ to 7 kΩ,<br>See Figure 2           |     | 100  |     | ns     |
| SR(tr)             | Slew rate, transition region | V <sub>CC</sub> = 3.3 V,                           | C <sub>L</sub> = 150 pF to 1000 pF                   | 6   |      | 30  | V/us   |
| SK(II)             | (see Figure 1)               | $V_{CC} = 3.3$ V,<br>R <sub>L</sub> = 3 kΩ to 7 kΩ | $C_{L} = 150 \text{ pF} \text{ to } 2500 \text{ pF}$ | 4   |      | 30  | 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> =  $25^{\circ}$ C.

§ Pulse skew is defined as |tpLH - tpHL| of each channel of the same device.

NOTE 4: Test conditions are C1–C4 =  $0.22 \,\mu$ F at V<sub>CC</sub> =  $3.3 \,V \pm 0.3 \,V$ ; C1 =  $0.047 \,\mu$ F, C2–C4 =  $0.33 \,\mu$ F at V<sub>CC</sub> =  $5 \,V \pm 0.5 \,V$ .



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# **RECEIVER SECTION**

#### electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 7)

|                   | PARAMETER  | TEST CONDITIONS                        | MIN                     | TYP†                    | MAX | UNIT |
|-------------------|--|--|-------------------------|-------------------------|-----|------|
| VOH               | High-level output voltage                              | $I_{OH} = -1 \text{ mA}$               | V <sub>CC</sub> – 0.6 V | V <sub>CC</sub> – 0.1 V |     | V    |
| VOL               | Low-level output voltage                               | I <sub>OL</sub> = 1.6 mA               |                         |                         | 0.4 | V    |
| N/                | De sitter and se investitions had de site as           | $V_{CC} = 3.3 V$                       |                         | 1.6                     | 2.4 |      |
| VIT+              | Positive-going input threshold voltage                 | $V_{CC} = 5 V$                         |                         | 1.9                     | 2.4 | V    |
| V                 | Negative-going input threshold voltage                 | V <sub>CC</sub> = 3.3 V                | 0.6                     | 1.1                     |     | V    |
| V <sub>IT</sub> – |  | $V_{CC} = 5 V$                         | 0.8                     | 1.4                     |     | V    |
| V <sub>hys</sub>  | Input hysteresis (V <sub>IT+</sub> – V <sub>IT</sub> ) |  |                         | 0.5                     |     | V    |
| loff              | Output leakage current (except ROUT2B)                 | FORCEOFF = 0 V                         |                         | ±0.05                   | ±10 | μΑ   |
| ri                | Input resistance                                       | $V_{I} = \pm 3 V \text{ to } \pm 25 V$ | 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 =  $0.22 \,\mu$ F at V<sub>CC</sub> =  $3.3 \,V \pm 0.3 \,V$ ; C1 =  $0.047 \,\mu$ F, C2–C4 =  $0.33 \,\mu$ F at V<sub>CC</sub> =  $5 \,V \pm 0.5 \,V$ .

#### switching characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Note 4 and Figure 7)

| PARAMETER          |   | TEST CONDITIONS  | ΜΙΝ ΤΥΡ <sup>†</sup> ΜΑΧ | UNIT |
|--------------------|---|--|--------------------------|------|
| <sup>t</sup> PLH   | Propagation delay time, low- to high-level output |  | 150                      | ns   |
| <sup>t</sup> PHL   | Propagation delay time, high- to low-level output | C <sub>L</sub> = 150 pF, See Figure 4                          | 150                      | ns   |
| ten                | Output enable time                                |  | 200                      | ns   |
| <sup>t</sup> dis   | Output disable time                               | $C_L = 150 \text{ pF}, R_L = 3 \text{ k}\Omega$ , See Figure 5 | 200                      | ns   |
| <sup>t</sup> sk(p) | Pulse skew <sup>‡</sup>                           | See Figure 4   | 50                       | ns   |

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

<sup>+</sup> Pulse skew is defined as  $|t_{PLH} - t_{PHL}|$  of each channel of the same device. NOTE 4: Test conditions are C1-C4 = 0.22  $\mu$ F at V<sub>CC</sub> = 3.3 V ± 0.3 V; C1 = 0.047  $\mu$ F, C2-C4 = 0.33  $\mu$ F at V<sub>CC</sub> = 5 V ± 0.5 V.



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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 6)

|                        | PARAMETER   | TEST CONDITIONS  | MIN                   | MAX | UNIT |
|------------------------|---|--|-----------------------|-----|------|
| V <sub>T+(valid)</sub> | Receiver input threshold<br>for INV high-level output voltage | $\frac{FORCEON}{FORCEOFF} = V_{CC}$                                      |                       | 2.7 | V    |
| VT-(valid)             | Receiver input threshold<br>for INV high-level output voltage | $\frac{FORCEON}{FORCEOFF} = V_{CC}$                                      | -2.7                  |     | V    |
| VT(invalid)            | Receiver input threshold for INV low-level output voltage     | $\frac{FORCEON = GND,}{FORCEOFF} = V_{CC}$                               | -0.3                  | 0.3 | V    |
| V <sub>OH</sub>        | INV high-level output voltage                                 | $I_{OH} = -1 \text{ mA}$ , FORCEON = GND,<br>FORCEOFF = V <sub>CC</sub>  | V <sub>CC</sub> – 0.6 |     | V    |
| VOL                    | INV low-level output voltage                                  | $I_{OL} = 1.6 \text{ mA}$ , 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 6)

|                 | PARAMETER   | MIN TYP <sup>†</sup> | MAX | UNIT |
|-----------------|---|----------------------|-----|------|
| tvalid          | Propagation delay time, low- to high-level output | 1                    |     | μs   |
| tinvalid        | 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.



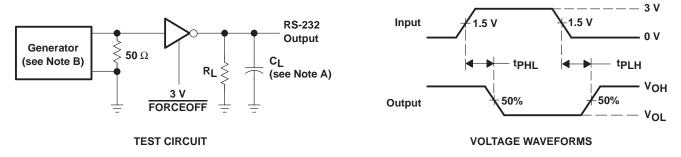
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#### PARAMETER MEASUREMENT INFORMATION 3 V Input **RS-232** 0 V Output Ş Generator **50** Ω $C_L$ (see Note B) <sup>t</sup>THL <sup>t</sup>TLH RL (see Note A) ۷он 3 V 3 V 2 Output FORCEOFF -3 VOL $\text{SR(tr)} = \frac{6 \text{ V}}{t_{\text{THL}} \text{ or } t_{\text{TLH}}}$ **TEST CIRCUIT VOLTAGE WAVEFORMS**

NOTES: A. CL includes probe and jig capacitance.

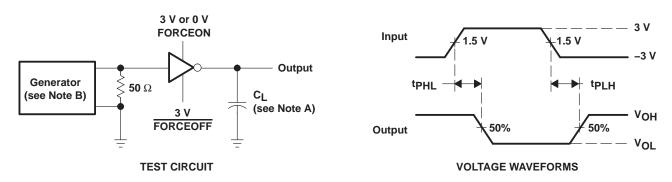
B. The pulse generator has the following characteristics: PRR = 250 kbit/s,  $Z_{\Omega}$  = 50  $\Omega$ , 50% duty cycle,  $t_{r} \le 10$  ns,  $t_{f} \le 10$  ns.

#### Figure 2. Driver Slew Rate





#### Figure 3. Driver Pulse Skew



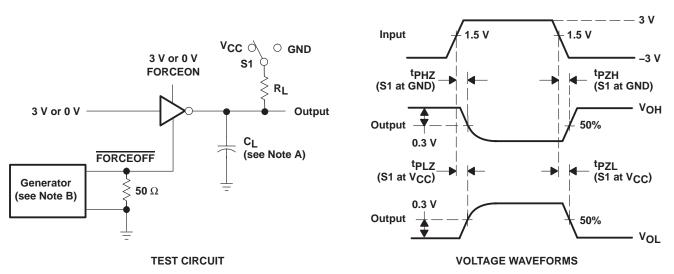
NOTES: A. C<sub>1</sub> includes probe and jig capacitance.

B. The pulse generator has the following characteristics:  $Z_{O} = 50 \Omega$ , 50% duty cycle,  $t_{f} \le 10$  ns,  $t_{f} \le 10$  ns.

Figure 4. Receiver Propagation Delay Times



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# PARAMETER MEASUREMENT INFORMATION

NOTES: A. CL includes probe and jig capacitance.

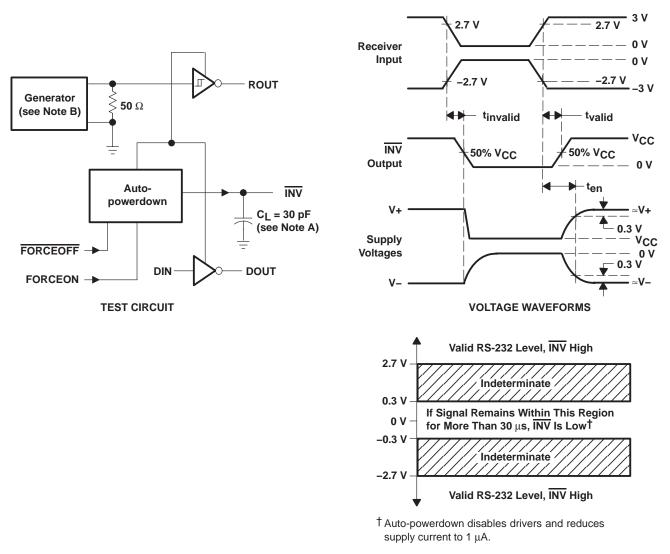
B. The pulse generator has the following characteristics:  $Z_O = 50 \Omega$ , 50% duty cycle,  $t_f \le 10$  ns.  $t_f \le 10$  ns.

- 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 5. Receiver Enable and Disable Times



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# PARAMETER MEASUREMENT INFORMATION

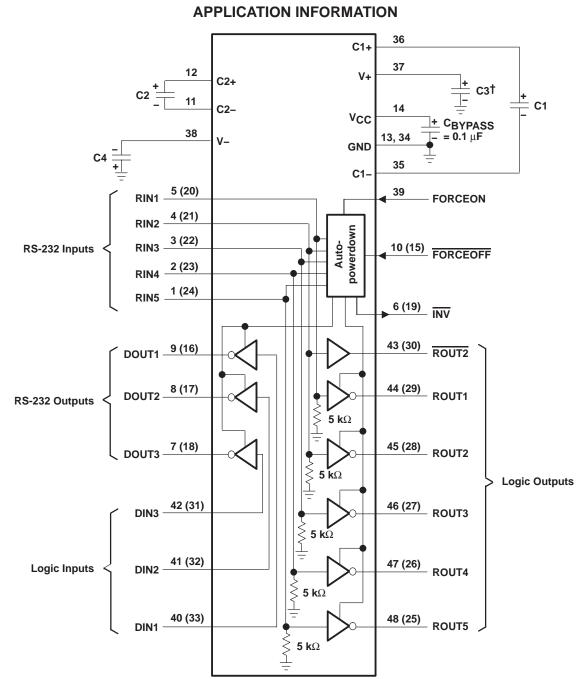
NOTES: A.  $\ensuremath{\mathsf{C}_L}$  includes probe and jig capacitance.

B. The pulse generator has the following characteristics: PRR = 5 kbit/s,  $Z_O = 50 \Omega$ , 50% duty cycle,  $t_r \le 10$  ns.  $t_f \le 10$  ns.

### Figure 6. INV Propagation Delay Times and Supply Enabling Time



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 $^{\dagger}$  C3 can be connected to V<sub>CC</sub> or GND.

NOTES: A. Resistor values shown are nominal.

B. Numbers in parentheses are for B section.

#### V<sub>CC</sub> vs CAPACITOR VALUES

| Vcc           | C1                      | C2, C3, and C4         |
|---------------|-------------------------|------------------------|
| ₩00           |                         | 62, 63, and 64         |
| 3.3 V ± 0.3 V | <b>0.22</b> μ <b>F</b>  | <b>0.22</b> μ <b>F</b> |
| 5 V ± 0.5 V   | <b>0.047</b> μ <b>F</b> | <b>0.33</b> μF         |
| 3 V to 5.5 V  | <b>0.22</b> μ <b>F</b>  | 1 μF                   |

Figure 7. Typical Operating Circuit and Capacitor Values

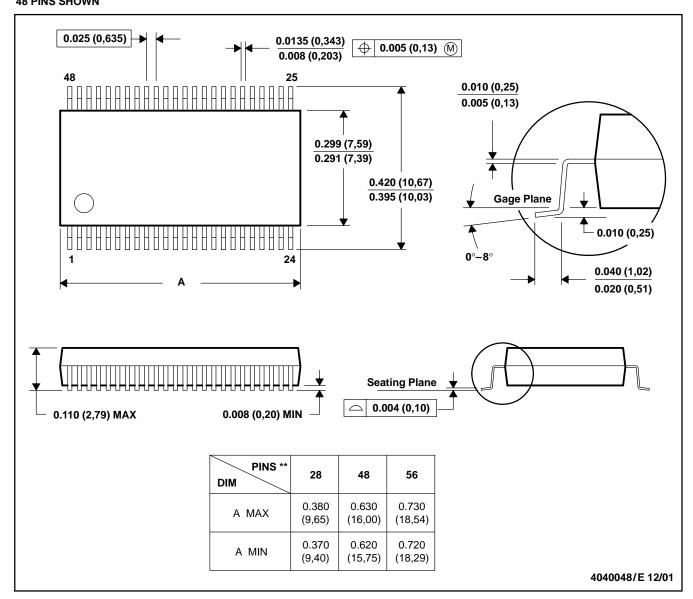


# **MECHANICAL DATA**

MSSO001C - JANUARY 1995 - REVISED DECEMBER 2001

#### PLASTIC SMALL-OUTLINE PACKAGE

# DL (R-PDSO-G\*\*) 48 PINS SHOWN



NOTES: A. All linear dimensions are in inches (millimeters).

- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
- D. Falls within JEDEC MO-118

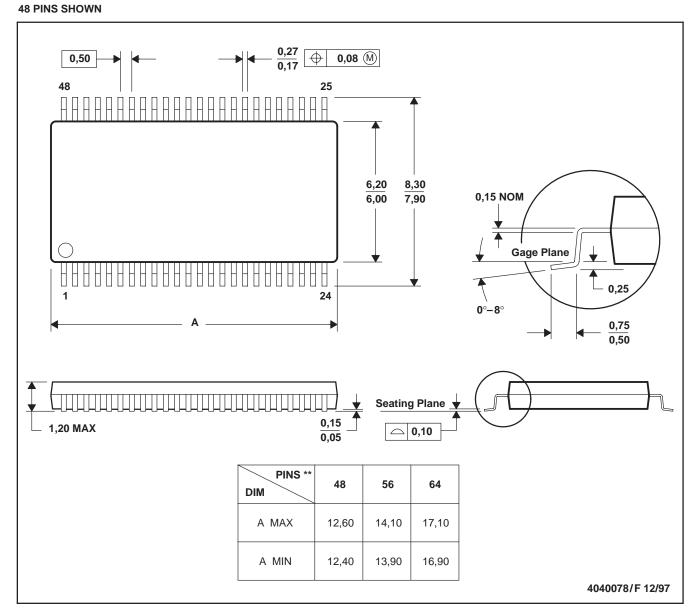


# **MECHANICAL DATA**

MTSS003D - JANUARY 1995 - REVISED JANUARY 1998

# PLASTIC SMALL-OUTLINE PACKAGE

DGG (R-PDSO-G\*\*)



NOTES: A. All linear dimensions are in millimeters.

B. This drawing is subject to change without notice.

C. Body dimensions do not include mold protrusion not to exceed 0,15.

D. Falls within JEDEC MO-153



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