



**THE DATASHEET OF
DS91M124TMA/NOPB**



DS91M124 125 MHz 1:4 M-LVDS Repeater with LVCMOS Input

Check for Samples: [DS91M124](#)

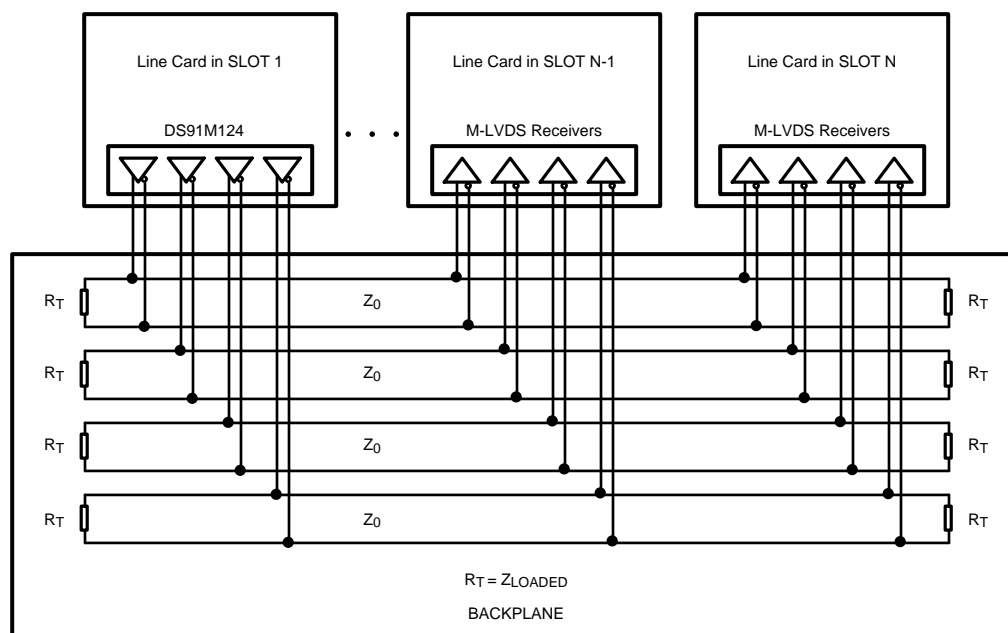
FEATURES

- DC - 125 MHz / 250 Mbps Low Jitter, Low Skew, Low Power Operation
- Independent Driver Enable Pins
- Conforms to TIA/EIA-899 M-LVDS Standard
- Controlled Transition Times Minimize Reflections
- 8 kV ESD on M-LVDS I/O Pins Protects Adjoining Components
- Flow-Through Pinout Simplifies PCB Layout
- Industrial Operating Temperature Range (–40°C to +85°C)
- Available in a Space Saving SOIC-16 Package

APPLICATIONS

- Multidrop / Multipoint Clock and Data Distribution
- High-Speed, Low Power, Short-Reach Alternative to TIA/EIA-485/422
- Clock Distribution in AdvancedTCA (ATCA) and MicroTCA (μTCA) Backplanes

Typical Application



DESCRIPTION

The DS91M124 is a 1:4 M-LVDS repeater for driving and distributing clock or data signals to up to four multipoint networks.

M-LVDS (Multipoint LVDS) is a new family of bus interface devices based on LVDS technology specifically designed for multipoint and multidrop cable and backplane applications. It differs from standard LVDS in providing increased drive current to handle double terminations that are required in multipoint applications. Controlled transition times minimize reflections that are common in multipoint configurations due to unterminated stubs.

A single DS91M124 channel is a 1:4 repeater that accepts LVTTTL/LVCMOS signals at the driver inputs and converts them to differential M-LVDS signal levels. It features independent driver enable pins for each driver output.

The DS91M124 has a flow-through pinout for easy PCB layout. It provides a new alternative for high speed multipoint interface applications. It is packaged in a space saving SOIC-16 package.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

All trademarks are the property of their respective owners.

Pin Diagram

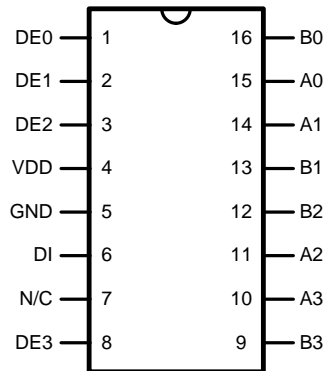
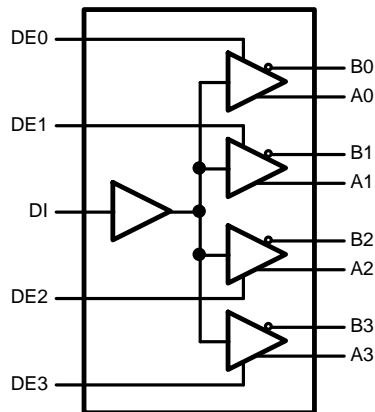


Figure 1. SOIC Package
See Package Number D0016A

Logic Diagram



Pin Descriptions

| Number | Name | I/O, Type | Description |
|----------------|-----------------|-----------|---|
| 1, 2, 3, 8 | DE | I, LVCMOS | Driver enable pin: When a DE pin is low, the corresponding driver output is disabled. When a DE pin is high, the corresponding driver output is enabled. There is a 300 kΩ pull-down resistor on each DE pin. |
| 6 | DI | I, LVCMOS | Driver input pin. |
| 5 | GND | Power | Ground pin. |
| 10, 11, 14, 15 | A | O, M-LVDS | Non-inverting driver output pins. |
| 9, 12, 13, 16 | B | O, M-LVDS | Inverting driver output pins. |
| 4 | V _{DD} | Power | Power supply pin, +3.3V ± 0.3V |
| 7 | N/C | N/A | NO CONNECT pin. |



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

Absolute Maximum Ratings ⁽¹⁾⁽²⁾

| | |
|---|------------------------------|
| Power Supply Voltage | -0.3V to +4V |
| LVC MOS Input Voltage | -0.3V to ($V_{DD} + 0.3V$) |
| M-LVDS Output Voltage | -1.9V to +5.5V |
| M-LVDS Output Short Circuit Current Duration | Continuous |
| Junction Temperature | +140°C |
| Storage Temperature Range | -65°C to +150°C |
| Lead Temperature Range | |
| Soldering (4 sec.) | +260°C |
| Maximum Package Power Dissipation @ +25°C | |
| D0016A Package | 2.21W |
| Derate D0016A Package | 19.2 mW/°C above +25°C |
| Package Thermal Resistance (4-Layer, 2 oz. Cu, JEDEC) | |
| θ_{JA} | +52°C/W |
| θ_{JC} | +19°C/W |
| ESD Susceptibility | |
| HBM ⁽³⁾ | ≥8 kV |
| MM ⁽⁴⁾ | ≥250V |
| CDM ⁽⁵⁾ | ≥1250V |

- (1) "Absolute Maximum Ratings" indicate limits beyond which damage to the device may occur, including inoperability and degradation of device reliability and/or performance. Functional operation of the device and/or non-degradation at the Absolute Maximum Ratings or other conditions beyond those indicated in the Recommended Operating Conditions is not implied. The Recommended Operating Conditions indicate conditions at which the device is functional and the device should not be operated beyond such conditions.
- (2) If Military/Aerospace specified devices are required, please contact the Texas Instruments Sales Office/ Distributors for availability and specifications.
- (3) Human Body Model, applicable std. JESD22-A114C
- (4) Machine Model, applicable std. JESD22-A115-A
- (5) Field Induced Charge Device Model, applicable std. JESD22-C101-C

Recommended Operating Conditions

| | Min | Typ | Max | Units |
|---|------|-----|----------|-------|
| Supply Voltage, V_{DD} | 3.0 | 3.3 | 3.6 | V |
| Voltage at Any Bus Terminal (Separate or Common-Mode) | -1.4 | | +3.8 | V |
| LVTTTL Input Voltage High V_{IH} | 2.0 | | V_{DD} | V |
| LVTTTL Input Voltage Low V_{IL} | 0 | | 0.8 | V |
| Operating Free Air | | | | |
| Temperature T_A | -40 | +25 | +85 | °C |

DC Electrical Characteristics

Over supply voltage and operating temperature ranges, unless otherwise specified. ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾

| Parameter | | Test Conditions | Min | Typ | Max | Units |
|----------------------------------|--|--|--------------|---------|-------------|---------|
| LVC MOS DC Specifications | | | | | | |
| V_{IH} | High-Level Input Voltage | | 2.0 | | V_{DD} | V |
| V_{IL} | Low-Level Input Voltage | | GND | | 0.8 | V |
| I_{IH} | High-Level Input Current | $V_{IH} = 3.6V$ | -15 | ± 1 | 15 | μA |
| I_{IL} | Low-Level Input Current | $V_{IL} = 0V$ | -15 | ± 1 | 15 | μA |
| V_{CL} | Input Clamp Voltage | $I_{IN} = -18\text{ mA}$ | -1.5 | | | V |
| M-LVDS DC Specifications | | | | | | |
| $ V_{AB} $ | Differential Output Voltage Magnitude | $R_L = 50\Omega, C_L = 5\text{ pF}$ | 480 | | 650 | mV |
| ΔV_{AB} | Change in Differential Output Voltage Magnitude Between Logic States | Figure 2 Figure 4 | -50 | | 50 | mV |
| $V_{OS(SS)}$ | Steady-State Common-Mode Output Voltage | Figure 2 | 0.30 | 1.6 | 2.10 | V |
| $ \Delta V_{OS(SS)} $ | Change in Steady-State Common-Mode Output Voltage Between Logic States | Figure 3 $R_L = 50\Omega$ | 0 | | 50 | mV |
| $V_{A(OC)}$ | Maximum Steady-State Open-Circuit Output Voltage | Figure 5 | 0 | | 2.4 | V |
| $V_{B(OC)}$ | Maximum Steady-State Open-Circuit Output Voltage | | 0 | | 2.4 | V |
| $V_{P(H)}$ | Voltage Overshoot, Low-to-High Level Output ⁽⁵⁾ | $R_L = 50\Omega, C_L = 5\text{ pF}$ $C_D = 0.5\text{ pF}$ Figure 7 Figure 8 | | | $1.2V_{SS}$ | V |
| $V_{P(L)}$ | Voltage Overshoot, High-to-Low Level Output ⁽⁵⁾ | | $-0.2V_{SS}$ | | | V |
| I_{OS} | Output Short-Circuit Current ⁽⁶⁾ | Figure 6 | -43 | | 43 | mA |
| I_A | Driver High-Impedance Output Current | $V_A = 3.8V, V_B = 1.2V$ | 0 | | 32 | μA |
| | | $V_A = 0V\text{ or }2.4V, V_B = 1.2V$ | -20 | | 20 | μA |
| | | $V_A = -1.4V, V_B = 1.2V$ | -32 | | 0 | μA |
| I_B | Driver High-Impedance Output Current | $V_A = 3.8V, V_B = 1.2V$ | 0 | | 32 | μA |
| | | $V_A = 0V\text{ or }2.4V, V_B = 1.2V$ | -20 | | 20 | μA |
| | | $V_A = -1.4V, V_B = 1.2V$ | -32 | | 0 | μA |
| I_{AB} | Driver High-Impedance Output Differential Current ($I_A - I_B$) | $V_A = V_B, -1.4V \leq V \leq 3.8V$ | -4 | | 4 | μA |
| $I_{A(OFF)}$ | Driver High-Impedance Output Power-Off Current | $V_A = 3.8V, V_B = 1.2V$ $DE_n = 0V$ $0V \leq V_{DD} \leq 1.5V$ | 0 | | 32 | μA |
| | | $V_A = 0V\text{ or }2.4V, V_B = 1.2V$ $DE_n = 0V$ $0V \leq V_{DD} \leq 1.5V$ | -20 | | 20 | μA |
| | | $V_A = -1.4V, V_B = 1.2V$ $DE_n = 0V$ $0V \leq V_{DD} \leq 1.5V$ | -32 | | 0 | μA |

- (1) The Electrical Characteristics tables list ensured specifications under the listed Recommended Operating Conditions except as otherwise modified or specified by the Electrical Characteristics Conditions and/or Notes. Typical specifications are estimations only and are not ensured.
- (2) Current into device pins is defined as positive. Current out of device pins is defined as negative. All voltages are referenced to ground except V_{OD} and ΔV_{OD} .
- (3) Typical values represent most likely parametric norms for $V_{DD} = +3.3V$ and $T_A = +25^\circ C$, and at the Recommended Operation Conditions at the time of product characterization and are not ensured.
- (4) C_L includes fixture capacitance and C_D includes probe capacitance.
- (5) Specification is ensured by characterization and is not tested in production.
- (6) Output short circuit current (I_{OS}) is specified as magnitude only, minus sign indicates direction only.

DC Electrical Characteristics (continued)

 Over supply voltage and operating temperature ranges, unless otherwise specified. ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾

| Parameter | | Test Conditions | Min | Typ | Max | Units |
|----------------------|--|---|-----|-----|-----|-------|
| I _{B(OFF)} | Driver High-Impedance Output Power-Off Current | V _A = 3.8V, V _B = 1.2V DE _n = 0V 0V ≤ V _{DD} ≤ 1.5V | 0 | | 32 | μA |
| | | V _A = 0V or 2.4V, V _B = 1.2V DE _n = 0V 0V ≤ V _{DD} ≤ 1.5V | -20 | | 20 | μA |
| | | V _A = -1.4V, V _B = 1.2V DE _n = 0V 0V ≤ V _{DD} ≤ 1.5V | -32 | | 0 | μA |
| I _{AB(OFF)} | Driver High-Impedance Output Power-Off Current (I _{A(OFF)} - I _{B(OFF)}) | V _A = V _B , -1.4V ≤ V ≤ 3.8V DE _n = 0V 0V ≤ V _{DD} ≤ 1.5V | -4 | | 4 | μA |
| C _A | Driver Output Capacitance | V _{DD} = 0V | | 7.8 | | pF |
| C _B | Driver Output Capacitance | | | 7.8 | | pF |
| C _{AB} | Driver Output Differential Capacitance | | | 3 | | pF |
| C _{A/B} | Driver Output Capacitance Balance (C _A /C _B) | | | 1 | | |
| I _{CCL} | Loaded Supply Current Enabled | R _L = 50Ω (All Outputs) DI = V _{DD} or GND DE _n = V _{DD} or GND (All Outputs) | | 65 | 75 | mA |
| I _{CCZ} | No Load Supply Current Disabled | DI = V _{DD} or GND, DE _n = GND (All Outputs) | | 19 | 24 | mA |

Switching Characteristics

 Over supply voltage and operating temperature ranges, unless otherwise specified. ⁽¹⁾⁽²⁾⁽³⁾

| Parameter | | Test Conditions | Min | Typ | Max | Units |
|-------------------|---|--|-----|-----|-----|-------|
| t _{PHL} | Differential Propagation Delay High to Low | R _L = 50Ω C _L = 5 pF, C _D = 0.5 pF Figure 7 Figure 8 | 1.8 | 3.9 | 6.5 | ns |
| t _{PLH} | Differential Propagation Delay Low to High | | 1.8 | 3.9 | 6.5 | ns |
| t _{SKD1} | Differential Pulse Skew t _{PHL} - t _{PLH} ^{(4) (5)} | | 0 | 25 | 100 | ps |
| t _{SKD2} | Channel-to-Channel Skew ^{(4) (6)} | | 0 | 70 | 250 | ps |
| t _{SKD3} | Differential Part-to-Part Skew ^{(4) (7)} (Constant T _A and V _{DD}) | | 0 | 1.5 | 2 | ns |
| t _{SKD4} | Differential Part-to-Part Skew ^{(4) (8)} | | 0 | | 4.7 | ns |
| t _{TLH} | Rise Time ⁽⁴⁾ | | 1.1 | 2.0 | 3.0 | ns |
| t _{THL} | Fall Time ⁽⁴⁾ | | 1.1 | 2.0 | 3.0 | ns |
| t _{PHZ} | Disable Time High to Z | R _L = 50Ω C _L = 5 pF, C _D = 0.5 pF Figure 9 Figure 10 | | 6 | 11 | ns |
| t _{PLZ} | Disable Time Low to Z | | | 6 | 11 | ns |
| t _{PZH} | Enable Time Z to High | | | 6 | 11 | ns |
| t _{PZL} | Enable Time Z to Low | | | 6 | 11 | ns |
| f _{MAX} | Maximum Operating Frequency ⁽⁴⁾ | | 125 | | | MHz |

- The Electrical Characteristics tables list ensured specifications under the listed Recommended Operating Conditions except as otherwise modified or specified by the Electrical Characteristics Conditions and/or Notes. Typical specifications are estimations only and are not ensured.
- Typical values represent most likely parametric norms for V_{DD} = +3.3V and T_A = +25°C, and at the Recommended Operation Conditions at the time of product characterization and are not ensured.
- C_L includes fixture capacitance and C_D includes probe capacitance.
- Specification is ensured by characterization and is not tested in production.
- t_{SKD1}, |t_{PLHD} - t_{PHLD}|, Pulse Skew, is the magnitude difference in differential propagation delay time between the positive going edge and the negative going edge of the same channel.
- t_{SKD2}, Channel-to-Channel Skew, is the difference in propagation delay (t_{PLHD} or t_{PHLD}) among all output channels.
- t_{SKD3}, Part-to-Part Skew, is defined as the difference between the minimum and maximum differential propagation delays. This specification applies to devices at the same V_{DD} and within 5°C of each other within the operating temperature range.
- t_{SKD4}, Part-to-Part Skew, is the differential channel-to-channel skew of any event between devices. This specification applies to devices over recommended operating temperature and voltage ranges, and across process distribution. t_{SKD4} is defined as |Max - Min| differential propagation delay.

Test Circuits and Waveforms

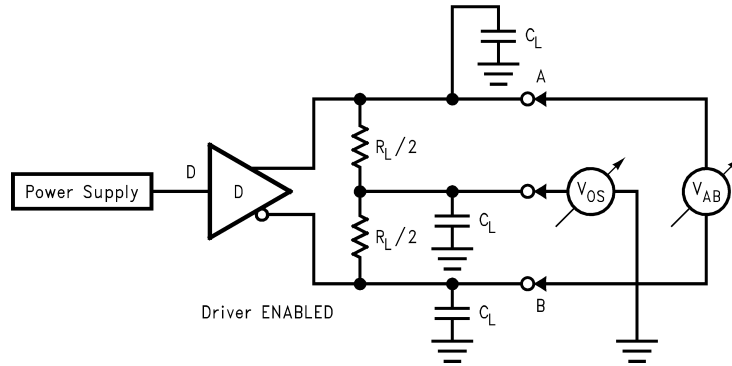


Figure 2. Differential Driver Test Circuit

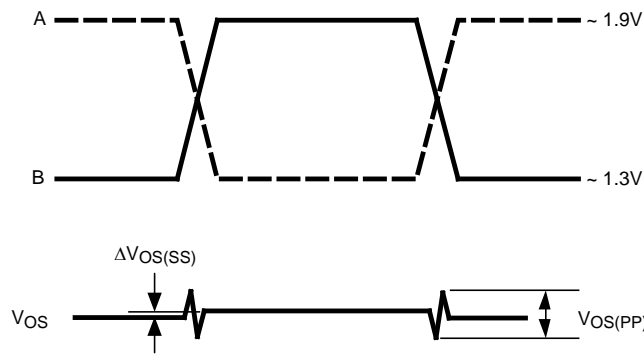


Figure 3. Differential Driver Waveforms

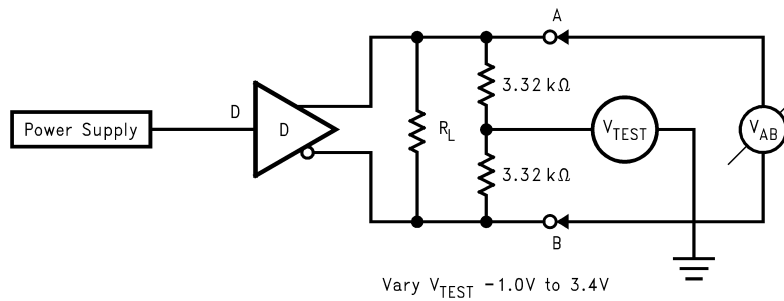


Figure 4. Differential Driver Full Load Test Circuit

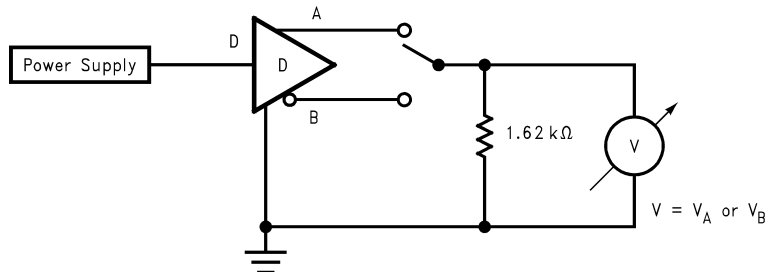


Figure 5. Differential Driver DC Open Test Circuit

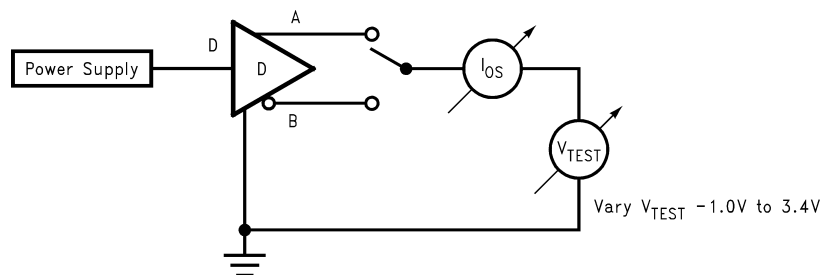


Figure 6. Differential Driver Short-Circuit Test Circuit

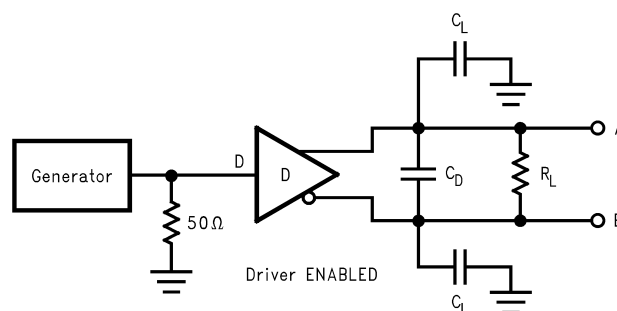


Figure 7. Driver Propagation Delay and Transition Time Test Circuit

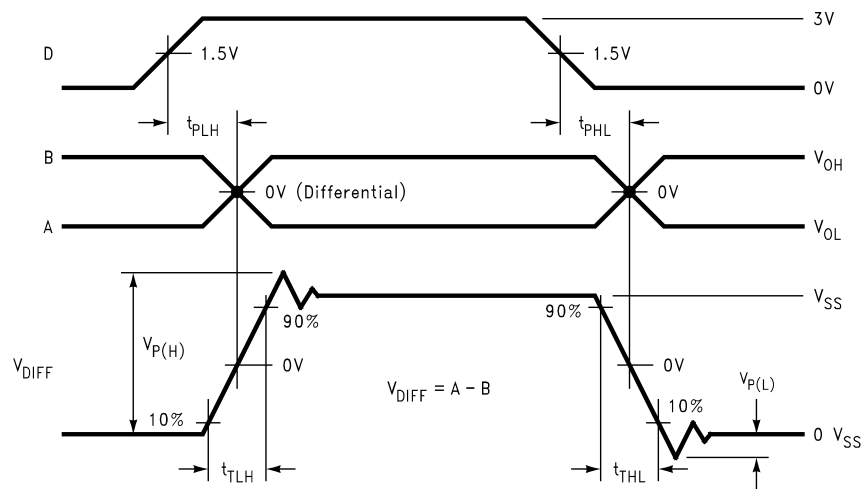


Figure 8. Driver Propagation Delays and Transition Time Waveforms

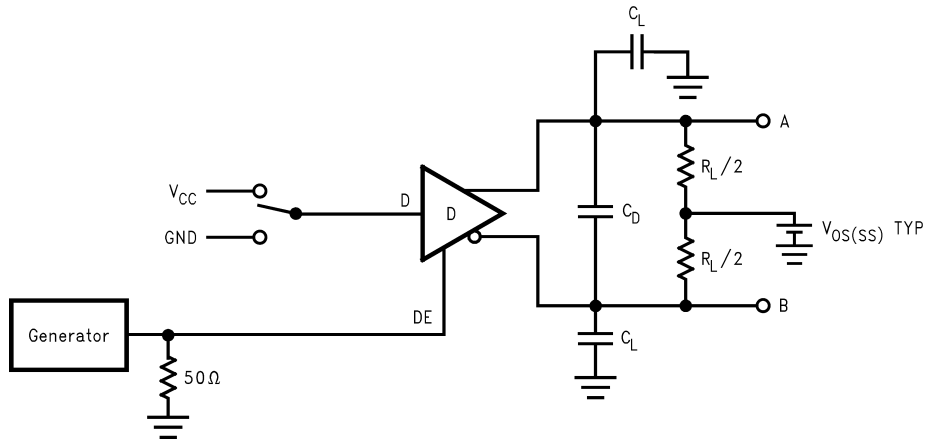


Figure 9. Driver TRI-STATE Delay Test Circuit

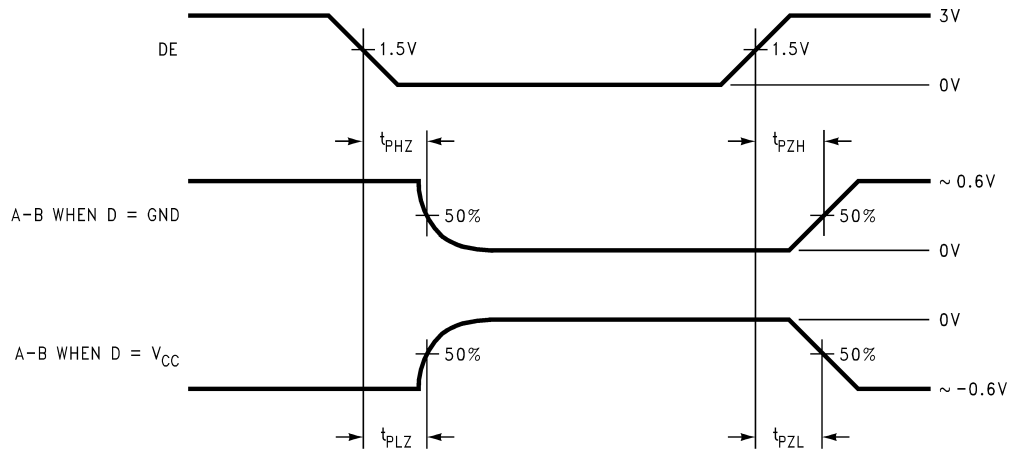


Figure 10. Driver TRI-STATE Delay Waveforms

Typical Performance Characteristics

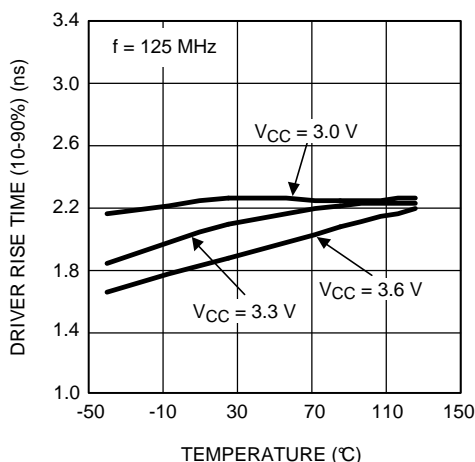


Figure 11. Driver Rise Time as a Function of Temperature

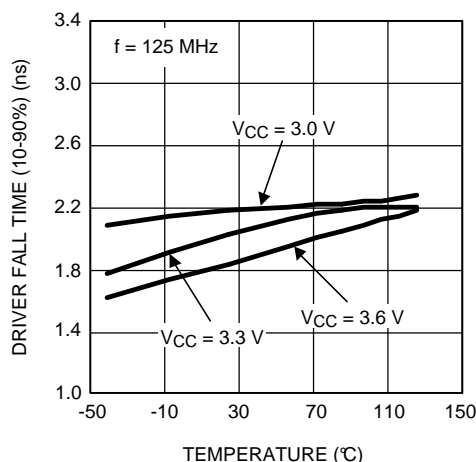


Figure 12. Driver Fall Time as a Function of Temperature

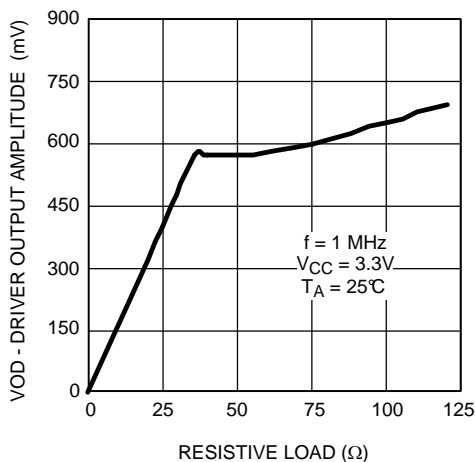


Figure 13. Driver Output Signal Amplitude as a Function of Resistive Load

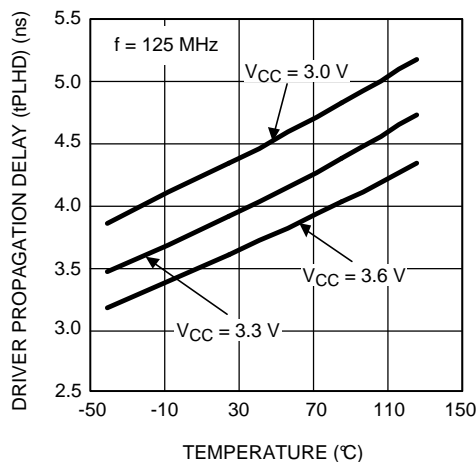


Figure 14. Driver Propagation Delay (tPLHD) as a Function of Temperature

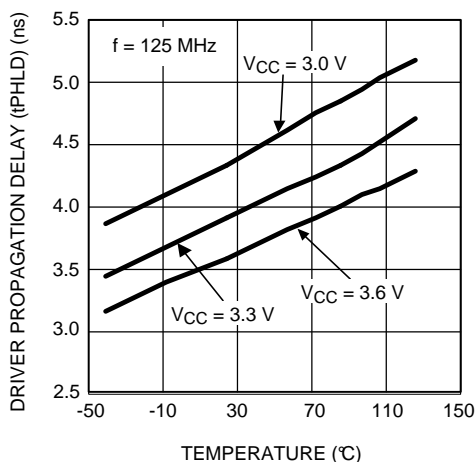


Figure 15. Driver Propagation Delay (tPHLD) as a Function of Temperature

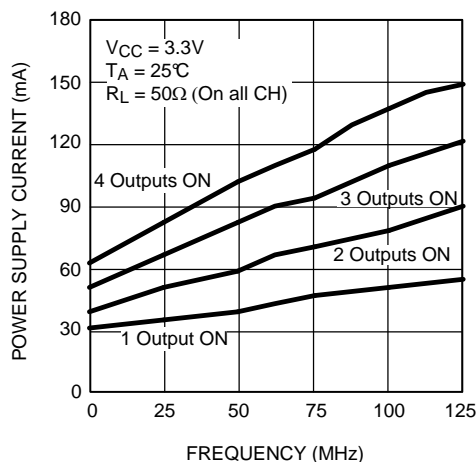


Figure 16. Driver Power Supply Current as a Function of Frequency

REVISION HISTORY

| Changes from Revision D (April 2013) to Revision E | Page |
|--|-------------------|
| • Changed layout of National Data Sheet to TI format | 9 |

PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish | MSL Peak Temp (3) | Op Temp (°C) | Top-Side Markings (4) | Samples |
|-------------------|---------------|--------------|-----------------|------|-------------|-------------------------|------------------|----------------------|--------------|--------------------------|-------------------------|
| DS91M124TMA/NOPB | ACTIVE | SOIC | D | 16 | 48 | Green (RoHS & no Sb/Br) | CU SN | Level-1-260C-UNLIM | -40 to 85 | DS91M124 TMA | Samples |
| DS91M124TMAX/NOPB | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU SN | Level-1-260C-UNLIM | -40 to 85 | DS91M124 TMA | Samples |

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSELETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) Multiple Top-Side Markings will be inside parentheses. Only one Top-Side Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Top-Side Marking for that device.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION



QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-------------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| DS91M124TMAX/NOPB | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.3 | 8.0 | 16.0 | Q1 |

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|-------------------|--------------|-----------------|------|------|-------------|------------|-------------|
| DS91M124TMAX/NOPB | SOIC | D | 16 | 2500 | 367.0 | 367.0 | 35.0 |

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
 - E. Reference JEDEC MS-012 variation AC.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products

| | |
|------------------------------|--|
| Audio | www.ti.com/audio |
| Amplifiers | amplifier.ti.com |
| Data Converters | dataconverter.ti.com |
| DLP® Products | www.dlp.com |
| DSP | dsp.ti.com |
| Clocks and Timers | www.ti.com/clocks |
| Interface | interface.ti.com |
| Logic | logic.ti.com |
| Power Mgmt | power.ti.com |
| Microcontrollers | microcontroller.ti.com |
| RFID | www.ti-rfid.com |
| OMAP Applications Processors | www.ti.com/omap |
| Wireless Connectivity | www.ti.com/wirelessconnectivity |

Applications

| | |
|-------------------------------|--|
| Automotive and Transportation | www.ti.com/automotive |
| Communications and Telecom | www.ti.com/communications |
| Computers and Peripherals | www.ti.com/computers |
| Consumer Electronics | www.ti.com/consumer-apps |
| Energy and Lighting | www.ti.com/energy |
| Industrial | www.ti.com/industrial |
| Medical | www.ti.com/medical |
| Security | www.ti.com/security |
| Space, Avionics and Defense | www.ti.com/space-avionics-defense |
| Video and Imaging | www.ti.com/video |

TI E2E Community

e2e.ti.com

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View DS91M124TMA/NOPB on WIN SOURCE](#)

 [Texas Instruments](#) Information

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management