



**THE DATASHEET OF
SN75173D**



SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

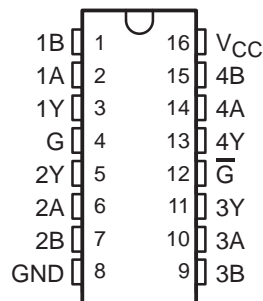
- Meet or Exceed the Requirements of TIA/EIA-422-B, TIA/EIA-423-B, and TIA/EIA-485-A and ITU Recommendations V.10, V.11, X.26, and X.27
- Designed for Multipoint Bus Transmission on Long Bus Lines in Noisy Environments
- 3-State Outputs
- Common-Mode Input Voltage Range of -12 V to 12 V
- Input Sensitivity . . . $\pm 200\text{ mV}$
- Input Hysteresis . . . 50 mV Typ
- High Input Impedance . . . $12\text{ k}\Omega\text{ Min}$
- Operate From Single 5-V Supply
- Low Power Requirements
- Pin-to-Pin Replacement for AM26LS32

description

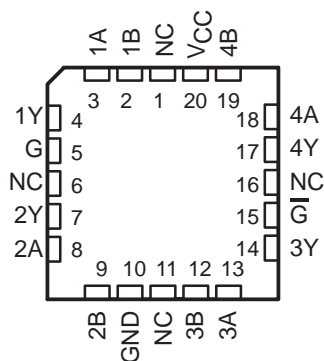
The SN55173, SN65173, and SN75173 are monolithic quadruple differential line receivers with 3-state outputs. They are designed to meet the requirements of TIA/EIA-422-B, TIA/EIA-423-B, TIA/EIA-485-A, and several ITU recommendations. The standards are for balanced multipoint bus transmission at rates up to 10 megabits per second. The four receivers share two OR enable inputs, one active when high, the other active when low. These devices feature high input impedance, input hysteresis for increased noise immunity, and input sensitivity of $\pm 200\text{ mV}$ over a common-mode input voltage range of -12 V to 12 V . Fail-safe design specifies that if the inputs are open circuited, the outputs are always high. The SN65173 and SN75173 are designed for optimum performance when used with the SN75172 or SN75174 quad differential line drivers.

The SN55173 is characterized over the full military temperature range of -55°C to 125°C . The SN65173 is characterized for operation from -40°C to 85°C . The SN75173 is characterized for operation from 0°C to 70°C .

SN55173 . . . J PACKAGE
SN65173, SN75173 . . . D OR N PACKAGE
(TOP VIEW)



SN55173 . . . FK PACKAGE
(TOP VIEW)



NC—No internal connection

**THE SN55173 IS NOT RECOMMENDED
FOR NEW DESIGNS.**



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.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS
INSTRUMENTS**

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 2000, Texas Instruments Incorporated

SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

AVAILABLE OPTIONS

T _A	PACKAGED DEVICES			
	PLASTIC SMALL OUTLINE (D)	PLASTIC CHIP CARRIER (FK)	CERAMIC DIP (J)	PLASTIC DIP (N)
0°C to 70°C	SN75173D	—	—	SN75173N
–40°C to 85°C	SN65173D	—	—	SN65173N
–55°C to 125°C	—	SN55173FK	SN55173J	—

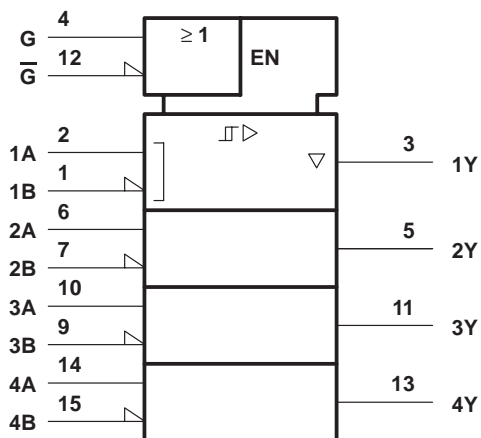
The D package is available taped and reeled. Add the suffix R to the device type (e.g., SN75173DR).

FUNCTION TABLE (each receiver)

DIFFERENTIAL A–B	ENABLES		OUTPUT Y
	G	\bar{G}	
$V_{ID} \geq 0.2 V$	H	X	H
	X	L	H
$-0.2 V < V_{ID} < 0.2 V$	H	X	?
	X	L	?
$V_{ID} \leq -0.2 V$	H	X	L
	X	L	L
X	L	H	Z
Open circuit	X	L	H
	H	X	H

H = high level, L = low level, ? = indeterminate, X = irrelevant, Z = high impedance (off)

logic symbol †

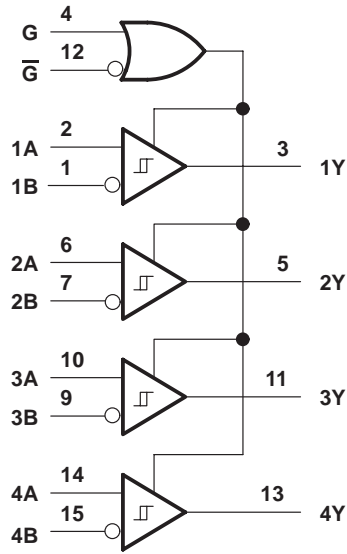


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12. Pin numbers shown are for the D, J, and N packages.

SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

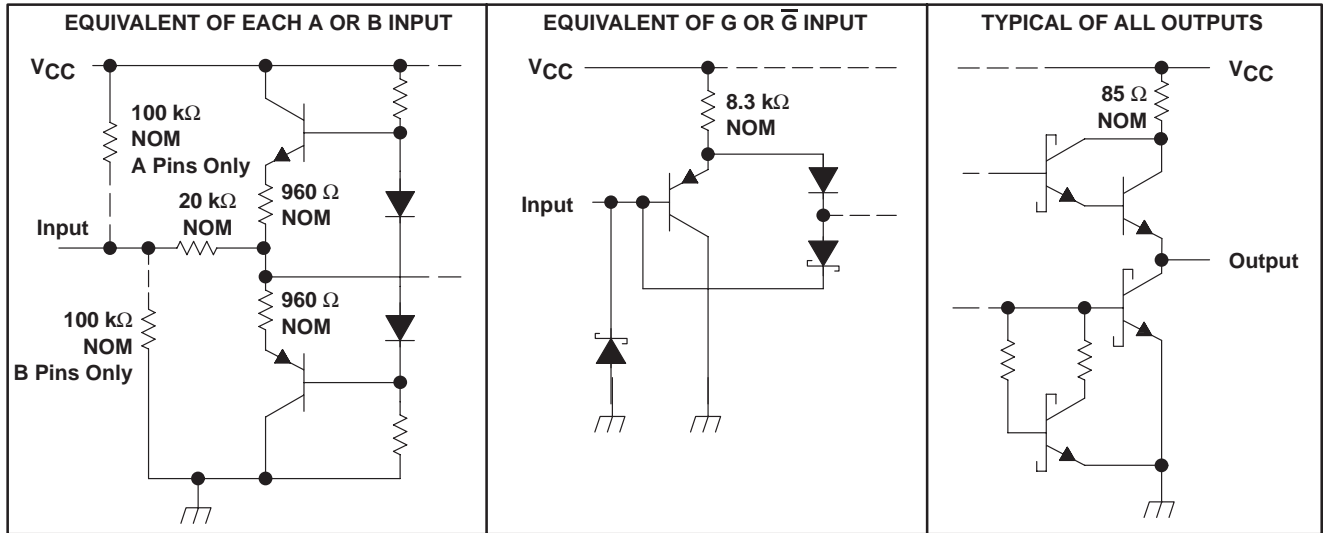
SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

logic diagram (positive logic)



Pin numbers shown are for the D, J, and N packages.

schematics of inputs and outputs



SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage (V_I or B inputs)	± 25 V
Differential input voltage, V_{ID} (see Note 2)	± 25 V
Enable input voltage, V_I	7 V
Low-level output current, I_{OL}	50 mA
Package thermal impedance, θ_{JA} (see Note 3): D package	73°C/W
N package	67°C/W
Continuous total dissipation	See Dissipation Rating Table
Case temperature for 60 seconds, T_C : FK package	260°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or N package	260°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J package	300°C
Storage temperature range, T_{stg}	-65°C to 150°C

† 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 voltage values, except differential input voltage, are with respect to network ground terminal.
 2. Differential input voltage is measured at the noninverting input with respect to the corresponding inverting input.
 3. The package thermal impedance is calculated in accordance with JESD 51.

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR	$T_A = 70^\circ\text{C}$ POWER RATING	$T_A = 125^\circ\text{C}$ POWER RATING
FK	1375 mW	11 mW/°C	880 mW	275 mW
J	1375 mW	11 mW/°C	880 mW	275 mW

recommended operating conditions

		MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	SN55173	4.5	5	5.5	V
	SN65173, SN75173	4.75	5	5.25	V
Common-mode input voltage, V_{IC}				± 12	V
Differential input voltage, V_{ID}				± 12	V
High-level enable-input voltage, V_{IH}		2			V
Low-level enable-input voltage, V_{IL}				0.8	V
High-level output current, I_{OH}				-400	μA
Low-level output current, I_{OL}				16	mA
Operating free-air temperature, T_A	SN55173	-55		125	°C
	SN65173	-40		85	
	SN75173	0		70	



SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

electrical characteristics over recommended ranges of common-mode input voltage, supply voltage, and operating free-air temperature

PARAMETER		TEST CONDITIONS		MIN	TYP [†]	MAX	UNIT
V _{IT+}	Positive-going input threshold voltage	V _O = 2.7 V,	I _O = -0.4 mA			0.2	V
V _{IT-}	Negative-going input threshold voltage	V _O = 0.5 V,	I _O = 16 mA	-0.2 [‡]			V
V _{hys}	Hysteresis (V _{IT+} - V _{IT-})	See Figure 4			50		mV
V _{IK}	Enable-input clamp voltage	I _I = -18 mA				-1.5	V
V _{OH}	High-level output voltage	V _{ID} = 200 mV,	I _{OH} = -400 μA	SN55173		2.5	V
				SN65173, SN75173		2.7	V
V _{OL}	Low-level output voltage	V _{ID} = -200 mV,	See Figure 1	I _{OL} = 8 mA		0.45	V
				I _{OL} = 16 mA		0.5	
I _{OZ}	High-impedance-state output current	V _O = 0.4 V to 2.4 V				±20	μA
I _I	Line input current	Other input at 0 V,	See Note 3	V _I = 12 V		1	mA
				V _I = -7 V		-0.8	
I _{IH}	High-level enable-input current	V _{IH} = 2.7 V				20	μA
I _{IL}	Low-level enable-input current	V _{IL} = 0.4 V				-100	μA
r _i	Input resistance				12		kΩ
I _{OS}	Short-circuit output current			-15		-85	mA
I _{CC}	Supply current	Outputs disabled				70	mA

[†] All typical values are at V_{CC} = 5 V, T_A = 25°C.

[‡] The algebraic convention, in which the less positive (more negative) limit is designated as minimum, is used in this data sheet for threshold voltage levels only.

NOTE 3: Refer to TIA/EIA-422-B and TIA/EIA-423-B for exact conditions.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

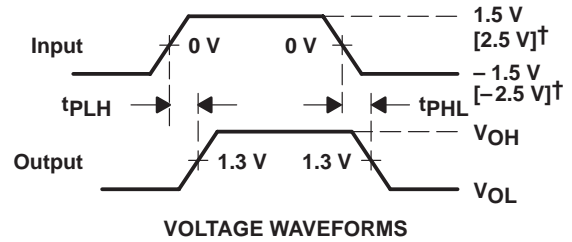
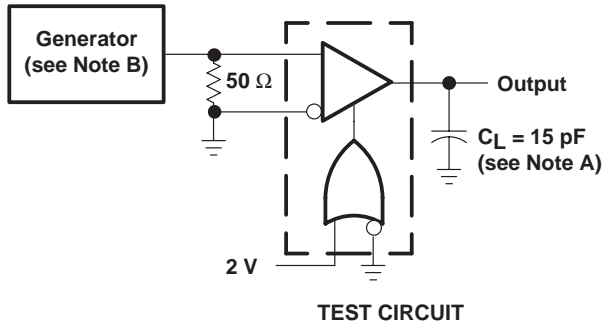
PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
t _{PLH}	Propagation delay time, low-to-high-level output	V _{ID} = -1.5 V to 1.5 V,			20	35	ns
t _{PHL}	Propagation delay time, high-to-low-level output	C _L = 15 pF,	See Figure 1		22	35	
t _{pZH}	Output enable time to high level	C _L = 15 pF,	See Figure 2		17	22	ns
t _{pZL}	Output enable time to low level	C _L = 15 pF,	See Figure 3		20	25	ns
t _{PHZ}	Output disable time from high level	C _L = 5 pF,	See Figure 2		21	30	ns
t _{P LZ}	Output disable time from low level	C _L = 5 pF,	See Figure 3		30	40	ns



SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

PARAMETER MEASUREMENT INFORMATION

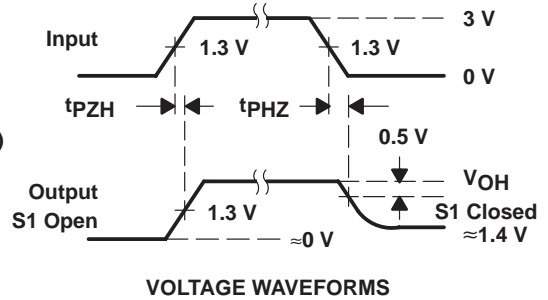
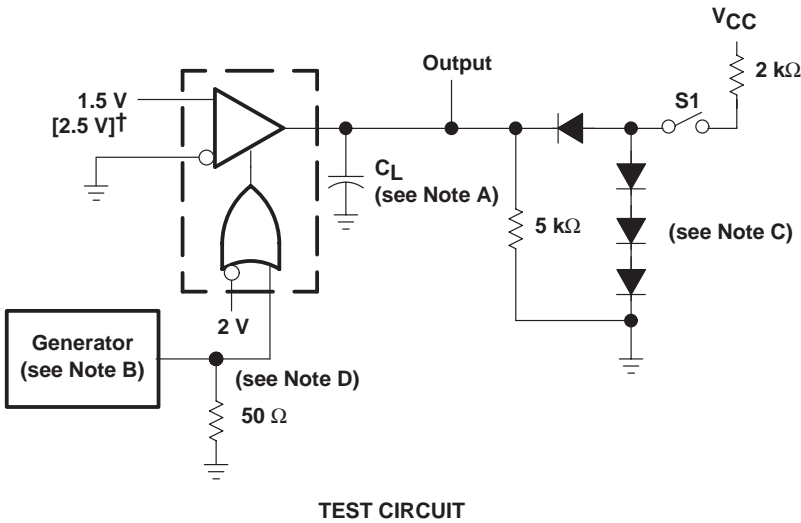


† Voltage for the SN55173 only.

NOTES: A. C_L includes probe and jig capacitance.

B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, duty cycle = 50%, $t_r \leq 6$ ns, $t_f \leq 6$ ns, $Z_0 = 50 \Omega$.

Figure 1. t_{PLH} , t_{PHL} Test Circuit and Voltage Waveforms



† Voltage for the SN55173 only.

NOTES: A. C_L includes probe and jig capacitance.

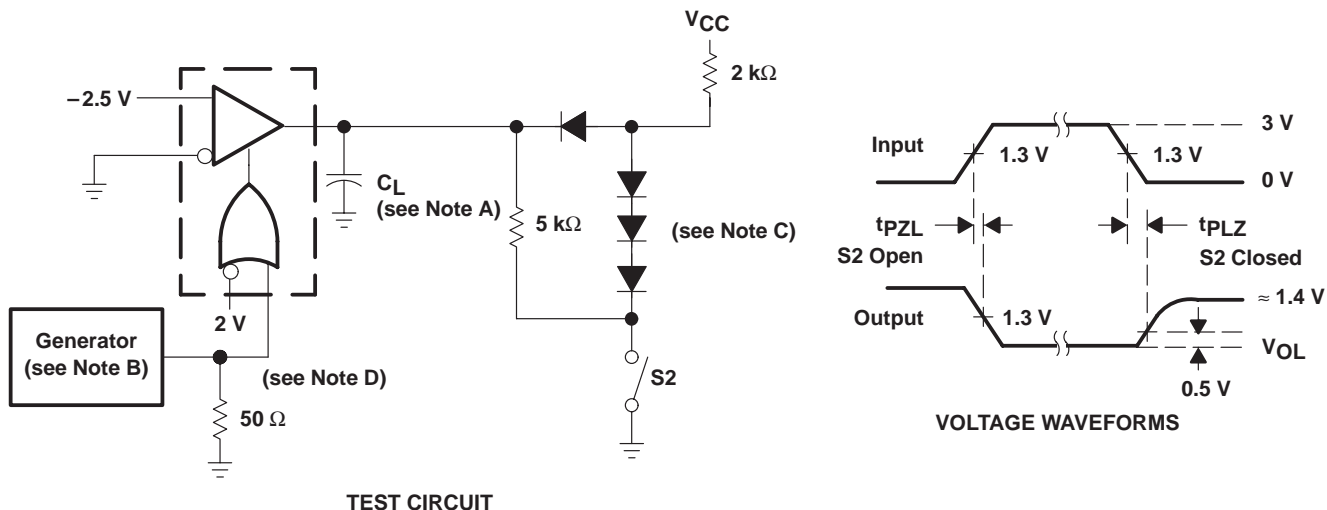
B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, duty cycle = 50%, $t_r \leq 6$ ns, $t_f \leq 6$ ns, $Z_0 = 50 \Omega$.

C. All diodes are 1N916, or equivalent.

D. To test the active-low enable \overline{G} , ground G and apply an inverted input waveform to \overline{G} .

Figure 2. t_{PHZ} , t_{PZH} Test Circuit and Voltage Waveforms

PARAMETER MEASUREMENT INFORMATION



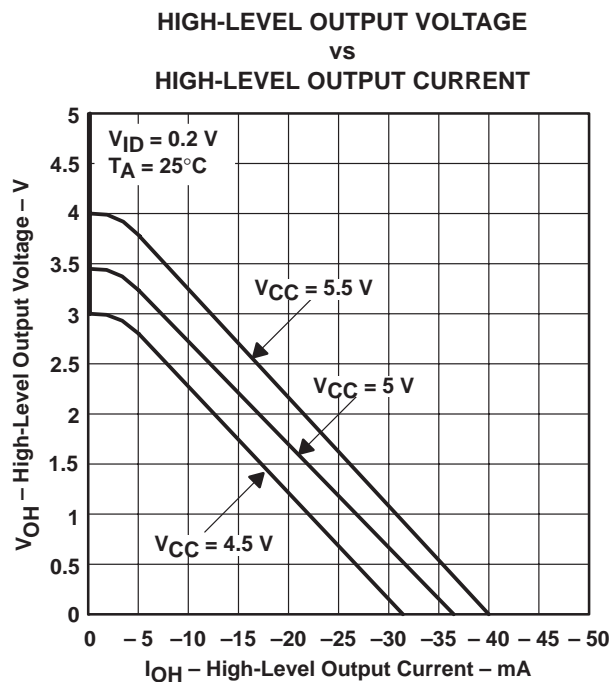
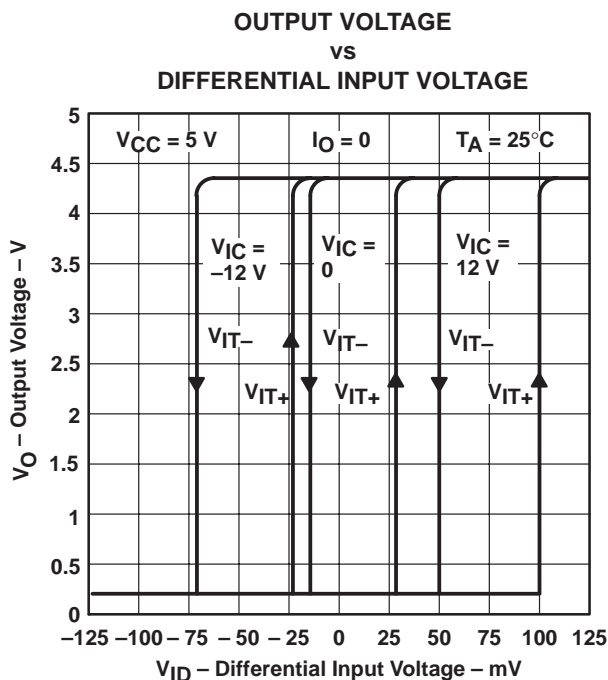
- NOTES: A. C_L includes probe and jig capacitance.
 B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, duty cycle = 50%, $t_r \leq 6$ ns, $t_f \leq 6$ ns, $Z_O = 50 \Omega$.
 C. All diodes are 1N916, or equivalent.
 D. To test the active-low enable \overline{G} , ground G and apply an inverted input waveform to \overline{G} .

Figure 3. t_{pZL} , t_{pLZ} Test Circuit and Voltage Waveforms

SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

TYPICAL CHARACTERISTICS†



† Operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied.

TYPICAL CHARACTERISTICS†

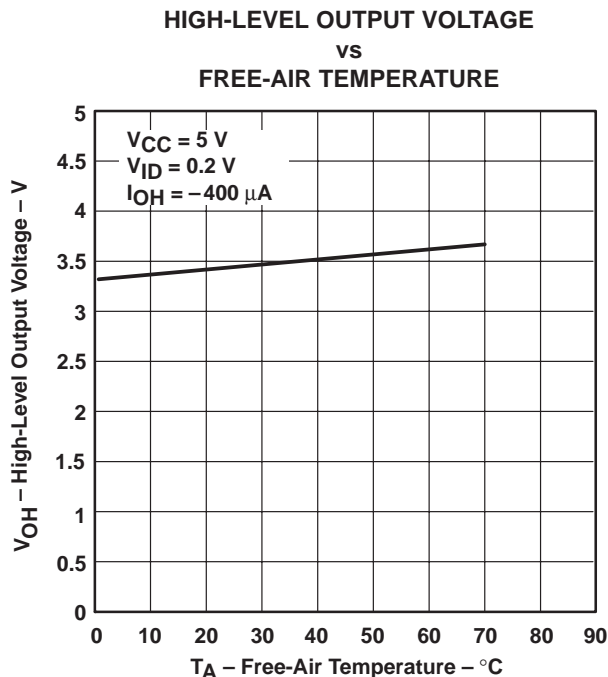


Figure 6

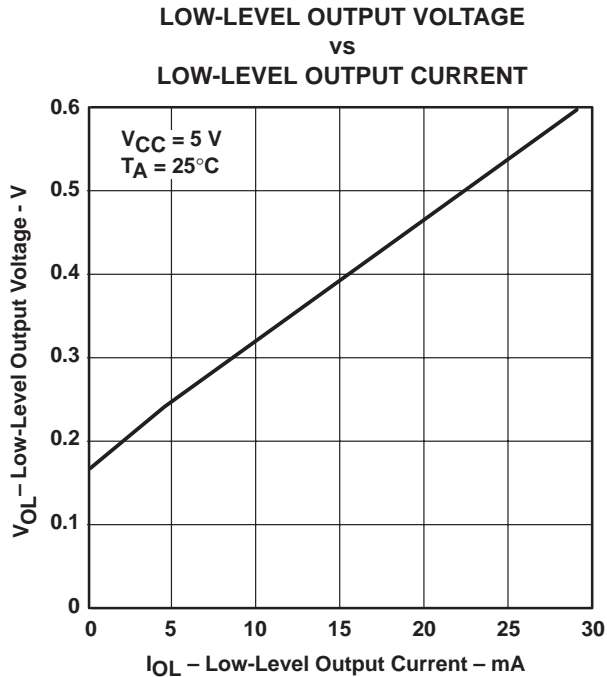


Figure 7

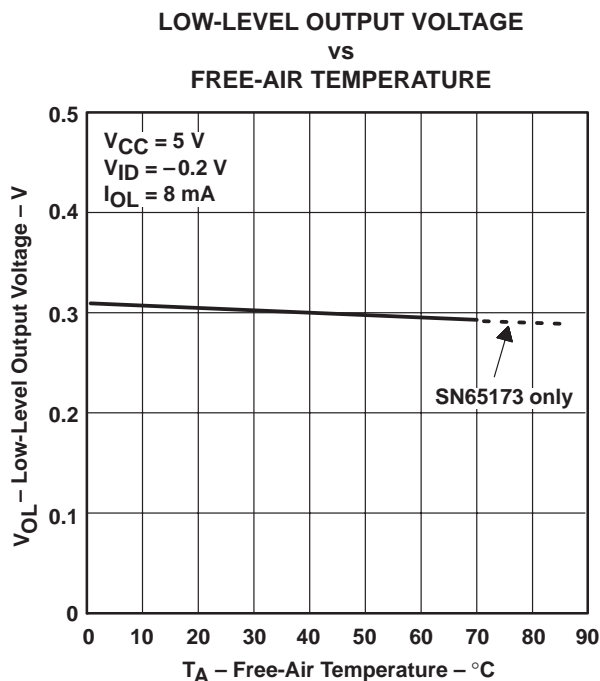


Figure 8

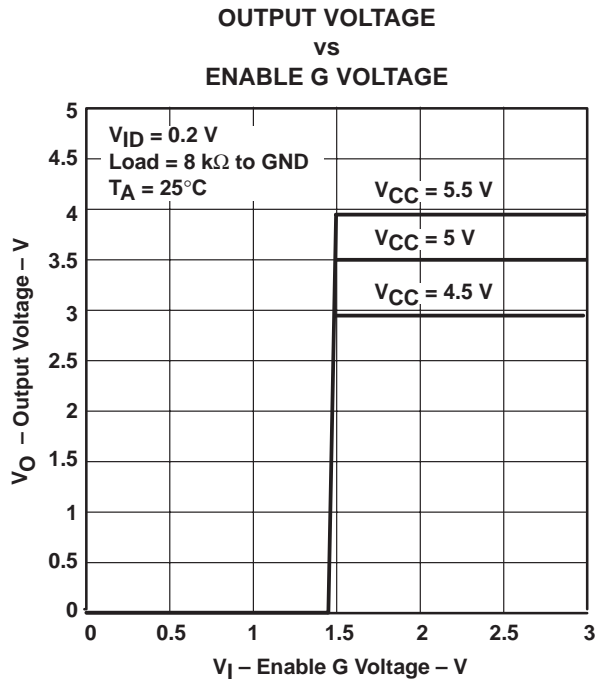


Figure 9

† Operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied.

SN55173, SN65173, SN75173 QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS144E – OCTOBER 1980 – REVISED APRIL 2000

TYPICAL CHARACTERISTICS

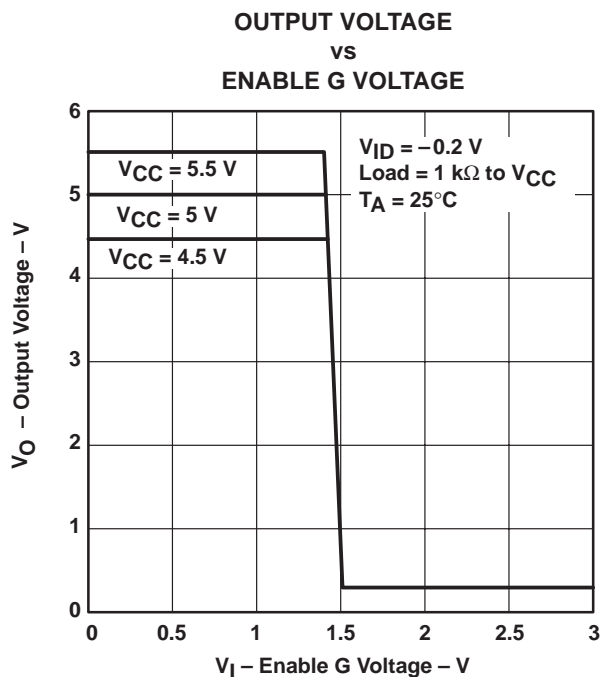


Figure 10

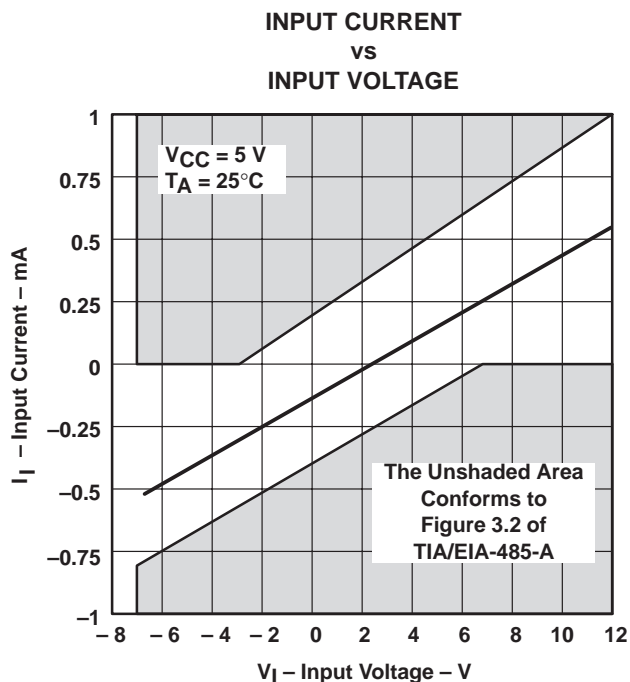
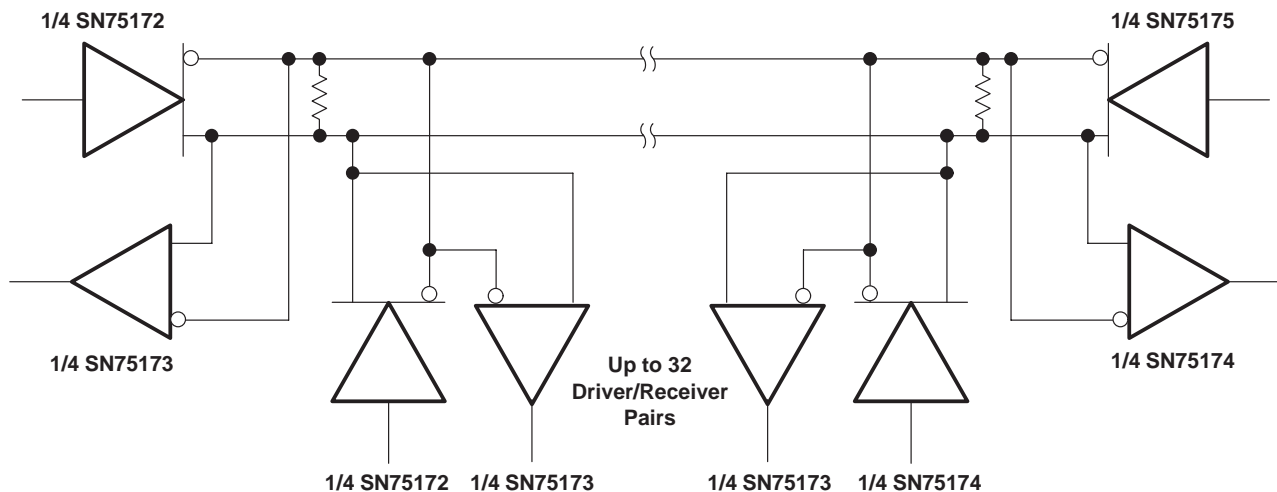


Figure 11

APPLICATION INFORMATION



NOTE A: The line should be terminated at both ends in its characteristic impedance. Stub lengths off the main line should be kept as short as possible.

Figure 12. Typical Application Circuit

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN55173J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	-55 to 125	SN55173J	Samples
SN75173D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173	Samples
SN75173DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173	Samples
SN75173N	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN75173N	Samples
SN75173NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173	Samples
SNJ55173J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	-55 to 125	SNJ55173J	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.

OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device 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 Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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.

OTHER QUALIFIED VERSIONS OF SN55173, SN75173 :

- Catalog: [SN75173](#)
- Military: [SN55173](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION
REEL DIMENSIONS

TAPE DIMENSIONS


A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

TAPE AND REEL INFORMATION

*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
SN75173DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN75173NSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	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)
SN75173DR	SOIC	D	16	2500	333.2	345.9	28.6
SN75173NSR	SO	NS	16	2000	367.0	367.0	38.0

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.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



4211283-4/E 08/12

- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-7351 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

MECHANICAL DATA

NS (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.

J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



DIM \ PINS **	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



4040083/F 03/03

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package is hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 - E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

IMPORTANT NOTICE

Texas Instruments Incorporated (TI) reserves 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.

TI's published terms of sale for semiconductor products (<http://www.ti.com/sc/docs/stdterms.htm>) apply to the sale of packaged integrated circuit products that TI has qualified and released to market. Additional terms may apply to the use or sale of other types of TI products and services.

Reproduction of significant portions of TI information in TI 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 reproduced documentation. Information of third parties may be subject to additional restrictions. Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyers and others who are developing systems that incorporate TI products (collectively, "Designers") understand and agree that Designers remain responsible for using their independent analysis, evaluation and judgment in designing their applications and that Designers have full and exclusive responsibility to assure the safety of Designers' applications and compliance of their applications (and of all TI products used in or for Designers' applications) with all applicable regulations, laws and other applicable requirements. Designer represents that, with respect to their applications, Designer has all the necessary expertise to create and implement safeguards that (1) anticipate dangerous consequences of failures, (2) monitor failures and their consequences, and (3) lessen the likelihood of failures that might cause harm and take appropriate actions. Designer agrees that prior to using or distributing any applications that include TI products, Designer will thoroughly test such applications and the functionality of such TI products as used in such applications.

TI's provision of technical, application or other design advice, quality characterization, reliability data or other services or information, including, but not limited to, reference designs and materials relating to evaluation modules, (collectively, "TI Resources") are intended to assist designers who are developing applications that incorporate TI products; by downloading, accessing or using TI Resources in any way, Designer (individually or, if Designer is acting on behalf of a company, Designer's company) agrees to use any particular TI Resource solely for this purpose and subject to the terms of this Notice.

TI's provision of TI Resources does not expand or otherwise alter TI's applicable published warranties or warranty disclaimers for TI products, and no additional obligations or liabilities arise from TI providing such TI Resources. TI reserves the right to make corrections, enhancements, improvements and other changes to its TI Resources. TI has not conducted any testing other than that specifically described in the published documentation for a particular TI Resource.

Designer is authorized to use, copy and modify any individual TI Resource only in connection with the development of applications that include the TI product(s) identified in such TI Resource. NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT OF TI OR ANY THIRD PARTY IS GRANTED HEREIN, including but not limited to any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information regarding or referencing third-party products or services does not constitute a license to use such products or services, or a warranty or endorsement thereof. Use of TI Resources 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.

TI RESOURCES ARE PROVIDED "AS IS" AND WITH ALL FAULTS. TI DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, REGARDING RESOURCES OR USE THEREOF, INCLUDING BUT NOT LIMITED TO ACCURACY OR COMPLETENESS, TITLE, ANY EPIDEMIC FAILURE WARRANTY AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS. TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY DESIGNER AGAINST ANY CLAIM, INCLUDING BUT NOT LIMITED TO ANY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON ANY COMBINATION OF PRODUCTS EVEN IF DESCRIBED IN TI RESOURCES OR OTHERWISE. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, DIRECT, SPECIAL, COLLATERAL, INDIRECT, PUNITIVE, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES IN CONNECTION WITH OR ARISING OUT OF TI RESOURCES OR USE THEREOF, AND REGARDLESS OF WHETHER TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Unless TI has explicitly designated an individual product as meeting the requirements of a particular industry standard (e.g., ISO/TS 16949 and ISO 26262), TI is not responsible for any failure to meet such industry standard requirements.

Where TI specifically promotes products as facilitating functional safety or as compliant with industry functional safety standards, such products are intended to help enable customers to design and create their own applications that meet applicable functional safety standards and requirements. Using products in an application does not by itself establish any safety features in the application. Designers must ensure compliance with safety-related requirements and standards applicable to their applications. Designer may not use any TI products in life-critical medical equipment unless authorized officers of the parties have executed a special contract specifically governing such use. Life-critical medical equipment is medical equipment where failure of such equipment would cause serious bodily injury or death (e.g., life support, pacemakers, defibrillators, heart pumps, neurostimulators, and implantables). Such equipment includes, without limitation, all medical devices identified by the U.S. Food and Drug Administration as Class III devices and equivalent classifications outside the U.S.

TI may expressly designate certain products as completing a particular qualification (e.g., Q100, Military Grade, or Enhanced Product). Designers agree that it has the necessary expertise to select the product with the appropriate qualification designation for their applications and that proper product selection is at Designers' own risk. Designers are solely responsible for compliance with all legal and regulatory requirements in connection with such selection.

Designer will fully indemnify TI and its representatives against any damages, costs, losses, and/or liabilities arising out of Designer's non-compliance with the terms and provisions of this Notice.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View SN75173D 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