

DUAL PERIPHERAL POSITIVE-NAND DRIVER

DESCRIPTION

The SG55452B/SG55462/SG55472 (SG75452B/SG75462/SG75472) series of dual peripheral Positive-NAND drivers are a family of versatile devices designed for use in systems that employ TTL or DTL logic. This family of drivers are direct replacements for the Texas Instruments SN55452B/62/72 (SN75452B/62/72) series. Diode-clamped inputs simplify circuit design. Typical applications include high-speed logic buffers, power drivers, relay drivers, MOS drivers, line drivers, and memory drivers. The SG55452B/SG55462/SG55472 drivers are characterized for operation over the full military ambient temperature range of -55°C to 125°C and the SG75452B/SG75462/SG75472 drivers are characterized for operation from 0°C to 70°C.

FEATURES

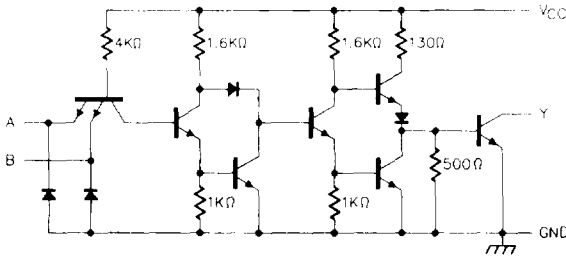
- 300mA output current capability
- High-voltage output
- No output latch-up at 20V
- High speed switching
- TTL or DTL compatible diode-clamped inputs
- Standard supply voltages

HIGH RELIABILITY FEATURES

- SG55452B/SG55462/SG55472

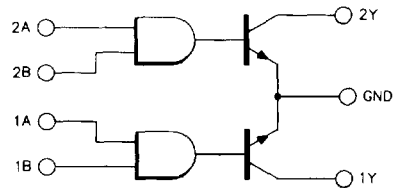
- ◆ Available to MIL-STD-883 and DESC SMD
- ◆ Scheduled for MIL-M-38510 QPL listing
- ◆ SG level "S" processing available

EQUIVALENT CIRCUIT SCHEMATIC (each driver)



BLOCK DIAGRAM

Positive Logic: $Y = AB$



FUNCTION TABLE (each gate)

A	B	Y
L	L	H (off-state)
L	H	H (off-state)
H	L	H (off-state)
H	H	L (on-state)

H = High Level, L = Low Level

6

SG55452B/62/72 SERIES

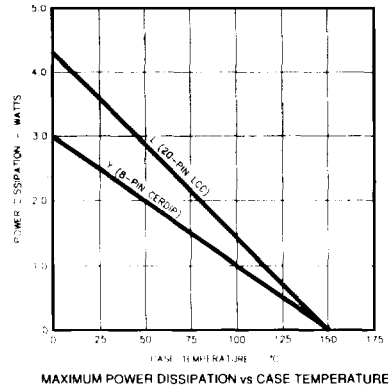
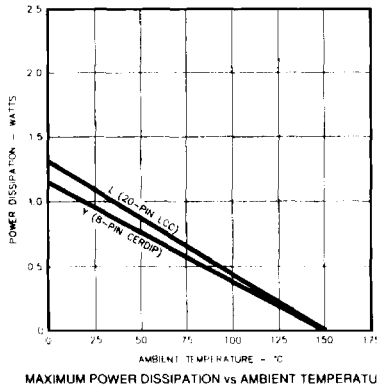
ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage (V_{CC})	7V
Input Voltage	5.5V
Intermitter Voltage	5.5V
Off-state Output Voltage	
X5452B Series	30V
X5462 Series	35V
X5472 Series	70V

Output Current	400mA
Continuous Total Dissipation at (or below)	
25°C Free-Air Temperature	800mW
Operating Junction Temperature	
Hermetic (Y, L Packages)	150°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (1/16 inch from case for soldering 60 sec.)	300°C

Note 1. Exceeding these ratings could cause damage to the device.

THERMAL DERATING CURVES



RECOMMENDED OPERATING CONDITIONS (Notes 2 & 3)

Supply Voltage (V_{CC})	
SG55452B, SG55462, SG55472	4.5V to 5.5V
SG75452B, SG75462, SG55472	4.75V to 5.25V

Operating Ambient Temperature Range	
SG55452B, SG55462, SG55472	-55°C to 125°C
SG75452B, SG75462, SG75472	0°C to 70°C

Note 2. Range over which device is functional.

Note 3. The substrate (pin 8) must always be at the most-negative device voltage for proper operation.

ELECTRICAL SPECIFICATIONS

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG55452B/462/472 with $-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$, and SG75452B/462/472 with $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$. Typical values are tested at $V_{CC} = 5\text{V}$, and $T_A = 25^\circ\text{C}$. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

Parameter	Test Conditions	SG55452B SG55462 SG55472			SG75452B SG75462 SG75472			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
High-level Input Voltage (V_{IH})		2		0.8	2		0.8	V
Low-level Input Voltage (V_{IL})				-1.2			-1.5	V
Input Clamp Voltage (V_{IK})				-1.5			-1.5	V
High-level Output Current (I_{OH})	$V_{CC} = \text{MIN}, I_{IN} = -12\text{mA}$ $V_{CC} = \text{MIN}, V_{IL} = 0.8\text{V}$ $V_{OH} = 30\text{V SGX5452B}$ $V_{OH} = 35\text{V SGX5462}$ $V_{OH} = 70\text{V SGX5472}$			300			100	μA
Low-level Output Voltage (V_{OL})	$V_{CC} = \text{MIN}, V_{IH} = 2.0\text{V}, I_{OL} = 100\text{mA}$ $V_{CC} = \text{MIN}, V_{IH} = 2.0\text{V}, I_{OL} = 300\text{mA}$		0.25	0.5		0.25	0.4	V
Input Current at Max V_{IN} (I_{IN})	$V_{CC} = \text{MAX}, V_{IN} = 5.5\text{V}$			1.0			1.0	mA
High-level Input Current (I_{IH})	$V_{CC} = \text{MAX}, V_{IN} = 2.4\text{V}$			40			40	μA
Low-level Input Current (I_{IL})	$V_{CC} = \text{MAX}, V_{IN} = 0.4\text{V}$		-1.0	-1.6		-1.0	-1.6	mA
Supply Current, Outputs High	$V_{CC} = \text{MAX}, V_{IN} = 0\text{V}$ SGX5452B SGX5462, SGX5472		11	14		11	14	mA
Supply Current, Outputs Low	$V_{CC} = \text{MAX}, V_{IN} = 5\text{V}$ SGX5452B SGX5462, SGX5472		13	17		13	17	mA
			56	71		56	71	mA
			61	76		61	76	mA

SG55452B/62/72 SERIES

SWITCHING SPECIFICATIONS (V_{cc} = 5V, T_A = 25°C)

Parameter	Test Conditions	SG55452B SG75452B			SG55462 SG75462			SG55472 SG75472			Units	
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
Propagation Delay Time, Low-to-High Level Output	I _C = 200mA, C _L = 15pF, R _L = 50Ω		26	35		45	65		45	65	ns	
Propagation Delay Time, High-to-Low Level Output			24	35		30	50		30	50	ns	
Transition Time, Low-to-High Output				5	8		13	25		13	25	ns
Transition Time, High-to-Low Level Output				7	12		10	20		10	20	ns
High-Level Output Voltage After Switching	I _C = 300mA, V _S = 20V SGX5452B V _S = 30V SGX5462 V _S = 55V SGX5472	V _S -6.5			V _S -10			V _S -18			mV mV mV	

CONNECTION DIAGRAMS & ORDERING INFORMATION (See Notes Below)

Package	Part No.	Ambient Temperature Range	Connection Diagram
8-PIN CERAMIC DIP Y - PACKAGE	SG55452BY/883B SG55452BY SG55462Y/883B SG55462Y SG55472Y/883B SG55472Y SG75452BY SG75462Y SG75472Y	-55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C 0°C to 70°C 0°C to 70°C 0°C to 70°C	
20-PIN CERAMIC LEADLESS CHIP CARRIER L- PACKAGE	SG55452BL/883B SG55452BL SG55462L/883B SG55462L SG55472L/883B SG55472L	-55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C	

6

- Note 1. Contact factory for JAN and DESC product availability.
 2. All parts are viewed from the top.
 3. Product is also available in flat pack. Consult factory for price and delivery.