

DUAL PERIPHERAL POSITIVE-OR DRIVER

DESCRIPTION

The SG55453B/SG55463/SG55473 (SG75453B/SG75463/SG75473) series of dual peripheral Positive-OR 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 SN55453B/63/73 (SN75453B/63/73) 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 SG55453B/SG55463/SG55473 drivers are characterized for operation over the full military ambient temperature range of -55°C to 125°C and the SG75453B/SG75463/SG75473 drivers are characterized for operation from 0°C to 70°C.

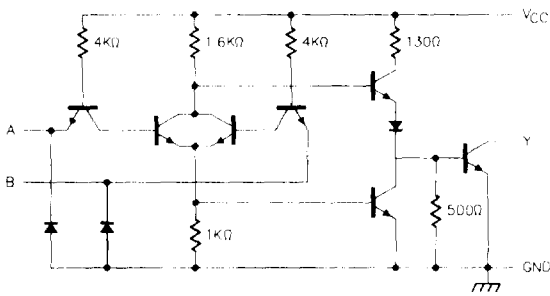
FEATURES

- 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

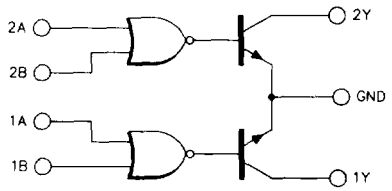
- SG55453B/SG55463/SG55473
- ◆ Available to MIL-STD-883
- ◆ Scheduled for MIL-M-38510 GPL listing
- ◆ SG level "S" processing available

EQUIVALENT CIRCUIT SCHEMATIC (each driver)



BLOCK DIAGRAM

Positive Logic: $Y = A + B$



FUNCTION TABLE (each gate)

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

H = High Level, L = Low Level

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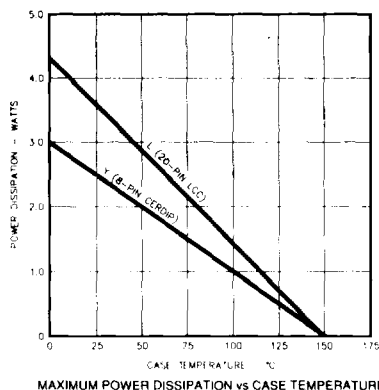
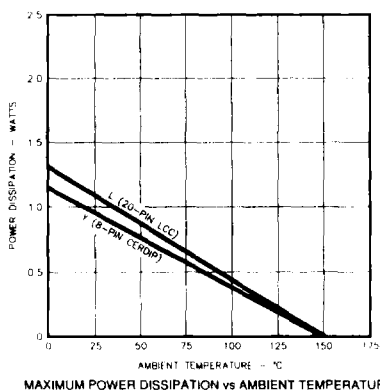
SG55453B/63/73 SERIES

ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage (V_{CC})	7V	Output Current	400mA
Input Voltage	5.5V	Continuous Total Dissipation at (or below)	
Interemitter Voltage	5.5V	25°C Free-Air Temperature	800mW
Off-state Output Voltage		Operating Junction Temperature	
X5453B Series	30V	Hermetic (Y, L Packages)	150°C
X5463 Series	35V	Storage Temperature Range	-65°C to 150°C
X5473 Series	70V	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})		Operating Ambient Temperature Range	
SG55453B, SG55463, SG55473	4.5V to 5.5V	SG55453B, SG55463, SG55473	-55°C to 125°C
SG75453B, SG75463, SG75473	4.75V to 5.25V	SG75453B, SG75463, SG75473	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 SG55453B/463/473 with $-55^{\circ}\text{C} \leq T_a \leq 125^{\circ}\text{C}$, and SG75453B/463/473 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	SG55453B SG55463 SG55473			SG75453B SG75463 SG75473			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		-1.2	-1.5	V
Input Clamp Voltage (V_{IK})	$V_{CC} = \text{MIN}, I_{IN} = -12\text{mA}$			300			100	μA
High-level Output Current (I_{OH})	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}$ $V_{OH} = 30\text{V SGX5453B}$ $V_{OH} = 35\text{V SGX5463}$ $V_{OH} = 70\text{V SGX5473}$							
Low-level Output Voltage (V_{OL})	$V_{CC} = \text{MIN}, V_{IL} = 0.8\text{V}, I_{OL} = 100\text{mA}$ $V_{CC} = \text{MIN}, V_{IL} = 0.8\text{V}, I_{OL} = 300\text{mA}$	0.25	0.5		0.25	0.4		V
Input Current at Max V_{IN} (I_{IN})	$V_{CC} = \text{MAX}, V_{IN} = 5.5\text{V}$	0.5	0.8		0.5	0.7		V
High-level Input Current (I_{IH})	$V_{CC} = \text{MAX}, V_{IN} = 2.4\text{V}$			1.0			1.0	mA
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	$V_{CC} = \text{MAX}, V_{IN} = 5\text{V}$	8	11		8	11		mA
Supply Current, Outputs Low	$V_{CC} = \text{MAX}, V_{IN} = 0\text{V}$							
	SGX5453B	54	68		54	68		mA
	SGX5463	58	76		58	76		mA
	SGX5473	58	76		58	76		mA

SG55453B/63/73 SERIES

SWITCHING SPECIFICATIONS ($V_{CC} = 5V, T_A = 25^\circ C$)

Parameter	Test Conditions	SG55453B SG75453B			SG55463 SG75463			SG55473 SG75473			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Propagation Delay Time, Low-to-High Level Output	$I_C = 200mA, C_L = 15pF,$ $R_L \approx 50\Omega$		18	25		30	55		30	55	ns
Propagation Delay Time, High-to-Low Level Output			16	25		25	40		25	40	ns
Transition Time, Low-to-High Output			5	8		8	20		8	20	ns
Transition Time, High-to-Low Level Output			7	12		10	20		10	20	ns
High-Level Output Voltage After Switching	$I_C = 300mA,$ $V_S = 20V$ SGX5453B $V_S = 30V$ SGX5463 $V_S = 55V$ SGX5473	$V_S - 6.5$			$V_S - 10$			$V_S - 18$			mV mV mV

CONNECTION DIAGRAMS & ORDERING INFORMATION (See Notes Below)

Package	Part No.	Ambient Temperature Range	Connection Diagram
8-PIN CERAMIC DIP Y - PACKAGE	SG55453BY/883B SG55453BY SG55463Y/883B SG55463Y SG55473Y/883B SG55473Y SG75453BY SG75463Y SG75473Y	-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	SG55453BL/883B SG55453BL SG55463L/883B SG55463L SG55473L/883B SG55473L	-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	

- 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.

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