

DUAL SOURCE / DUAL SINK MEMORY DRIVER

DESCRIPTION

The SG55325/SG75325 is a monolithic dual source/dual sink driver designed to meet the high current and fast switching speed requirements of magnetic memory systems. Each driver can be independently selected through separate input logic. Also, each pair of drivers (sink or source pairs) has a separate strobe input to allow control of either pair of drivers. Each driver of the SG55325/SG75325 can switch 600mA.

Although used extensively in magnetic memory systems, this versatile driver has been used to drive relays, lamps, and small motors as well as being used as the driver in a clock circuit.

The SG55325 is characterized for use over the military ambient temperature range of -55°C to 125°C. The SG75325 has an operating ambient temperature range of 0°C to 70°C.

These devices are available in 16-pin ceramic DIP, 16-pin plastic DIP, and 16-pin flatpack.

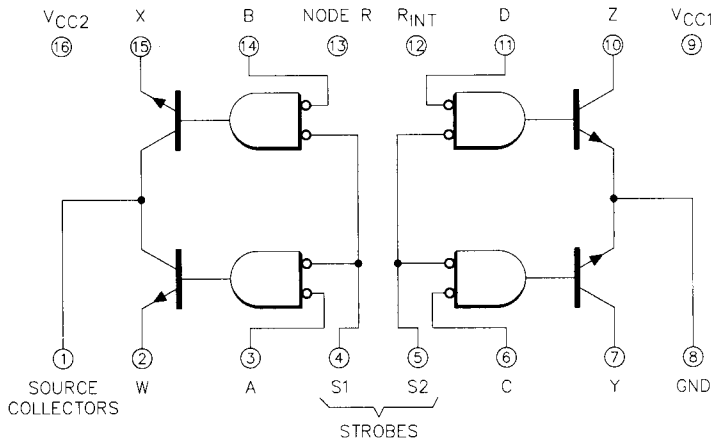
FEATURES

- 600mA output capability
- Fast switching times
- Output short-circuit protection
- 24V output capability
- Source base drive externally adjustable
- TTL or DTL compatibility
- Input clamping diodes

HIGH RELIABILITY FEATURES - SG55325

- ◆ Available to MIL-STD-883
- ◆ MIL-M-38510/13001BEA - JAN55325J
- ◆ Radiation data available
- ◆ SG level "S" processing available

BLOCK DIAGRAM



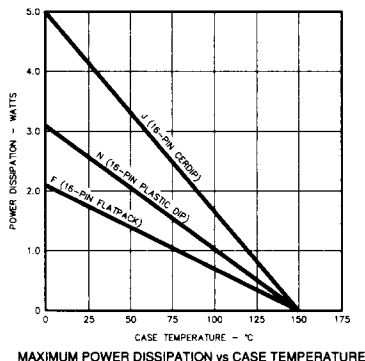
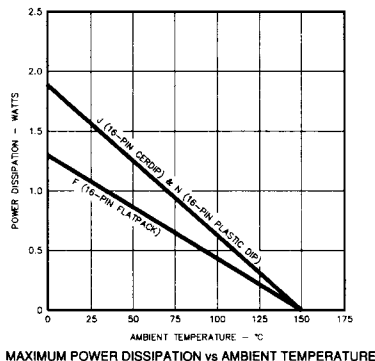
ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage (V_{CC1}) (Note 2) 7.0V
 Supply Voltage (V_{CC2}) (Note 2) 25V
 Input Voltage (any address or strobe input) 5.5V
 Storage Temperature Range -65°C to 150°C

Operating Junction Temperature (T_C)
 Hermetic (J, F-Packages) 150°C
 Plastic (N-Package) 150°C
 Storage Temperature Range -65°C to 150°C
 Lead Temperature (Soldering, 10 seconds) 300°C

Note 1. Values beyond which damage may occur.
 Note 2. Voltage values are with respect to network ground terminal.

THERMAL DERATING CURVES



RECOMMENDED OPERATING CONDITIONS (Note 3)

Supply Voltage (V_{CC1}) 4.5V to 5.5V
 Supply Voltage (V_{CC2}) 15V to 24V
 Input Voltage 0.4V to 5V

R_{EXT} ($V_{CC2} = 24V$) 100Ω
 Operating Ambient Temperature Range:
 SG55325 -55°C to 125°C
 SG75325 0°C to 70°C

Note 3. Range over which the device is functional.

ELECTRICAL SPECIFICATIONS

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG55325 with $-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$, SG75325 with $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$, $V_{CC1} = 5.5V$, and $V_{CC2} = 24V$. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

Parameter	Test Conditions	SG55325			SG75325			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Static Section								
High-Level Input Voltage (V_{IH})		2		0.8	2		0.8	V
Low-Level Input Voltage (V_{IL})				-1.3			-1.3	V
Input Clamp Voltage (V_{IK})	$V_{CC1} = 4.5V, I_{IN} = -10mA, T_A = 25^\circ\text{C}$			-1.7			-1.7	V
Source-Collectors Terminal Off-State Current (I_{OFF})	$V_{CC1} = 4.5V$ $V_{CC1} = 4.5V, T_A = 25^\circ\text{C}$			500			200	μA
High-Level Sink Output Voltage (V_{OH})	$V_{CC1} = 4.5V, I_{OUT} = 0$			3.0			3.0	μA
Saturation Voltage (V_{SAT}) (Note 3)	$V_{CC1} = 4.5V, V_{CC2} = 15V, R_L = 24\Omega$	19	23		19	23		V
Source Outputs	$I_{SOURCE} \approx -600mA$ $I_{SOURCE} \approx -600mA, T_A = 25^\circ\text{C}$			0.90			0.90	V
Sink Outputs	$I_{SINK} \approx -600mA$ $I_{SINK} \approx -600mA, T_A = 25^\circ\text{C}$			0.43			0.43	V
Input Current (I_{IN})	At max. input voltage, $V_{IN} = 5.5V$			0.90			0.90	V
Address Inputs				0.43			0.43	V
Strobe Inputs				1			1	mA
				2			2	mA

ELECTRICAL SPECIFICATIONS (continued)

Parameter	Test Conditions	SG55325			SG75325			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Static Section (continued)								
High-Level Input Current (I_{IH}) Address Inputs	$V_{IN} = 2.4V$		3	40		3	40	μA
Strobe Inputs			6	80		6	80	μA
Low-Level Input Current (I_{IL}) Address Inputs	$V_{IN} = 0.4V$		-1	-1.6		-1	-1.6	mA
Strobe Inputs			-2	-3.2		-2	-3.2	mA
Supply Current From V_{CC1}	All sources and sinks off, $T_A = 25^\circ C$		14	22		14	22	mA
From V_{CC2}			7.5	20		7.5	20	mA
Supply Current From V_{CC1}	Either sink on, $I_{SINK} = 50mA$, $T_A = 25^\circ C$		55	70		55	70	mA
Supply Current From V_{CC2} (Note 4)	Either source on, $I_{SOURCE} = -50mA$, $T_A = 25^\circ C$		32	50		32	50	mA

Parameter	To (Outputs)	Test Conditions	SG55325/75325			Units
			Min.	Typ.	Max.	
Dynamic Section (Note 6)						
Propagation Delay, Low to High (TPLH)	Source Collectors Sink Outputs			35	50	ns
Propagation Delay, High to Low (TPHL)	Source Collectors Sink Outputs			35	50	ns
Transition Time, Low to High (TTLH)	Source Outputs Sink Outputs	$V_{CC2} = 20V, R_L = 1K\Omega$		55		ns
Transition Time, High to Low (TTHL)	Source Outputs Sink Outputs	$V_{CC2} = 20V, R_L = 1K\Omega$		7	15	ns
Storage Time (T_s)	Sink Outputs			9	20	ns
				15	30	ns

Note 4. These parameters must be measured using pulse techniques, $T_w = 200ms$, duty cycle $\leq 2\%$.

Note 5. Under these conditions, not more than one output is to be on at any one time.

Note 6. Unless otherwise specified, $V_{CC1} = 5V$, $V_{CC2} = 15V$, $C_L = 25pF$, $R_L = 24\Omega$, and $T_A = 25^\circ C$.

CONNECTION DIAGRAMS & ORDERING INFORMATION (See Note Below)

Package	Part No.	Ambient Temperature Range	Connection Diagram
16-PIN CERAMIC DIP J - PACKAGE	SG55325J/883B SG55325J SG75325J	-55°C to 125°C -55°C to 125°C 0°C to 70°C	
16-PIN PLASTIC DIP N - PACKAGE	SG75325N	0°C to 70°C	
16-PIN CERAMIC FLAT PACK F - PACKAGE	SG55325F/883B SG55325F	-55°C to 125°C -55°C to 125°C	

Note 1. All packages are viewed from the top.