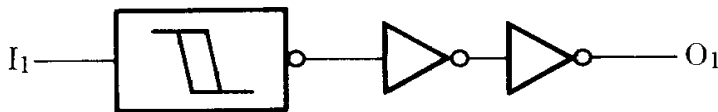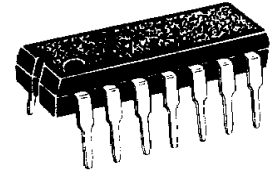# MN4584B / MN4584BS

Hex Schmitt Triggers

■ Description

The MN4584B/S have hex waveform shaping circuits.
They are used when high noise immunity is desired, and as waveform-shaping circuits to make late rise and fall time input.
The MN4548B/S are equivalent to MOTOROLA MC14584B.
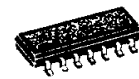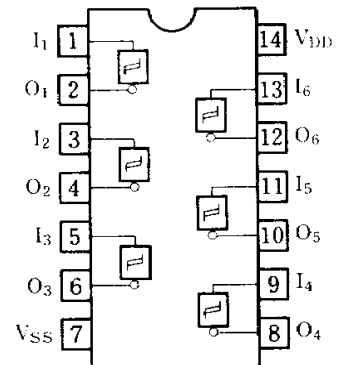
■ Logic Diagram (1/6)

P- 1

14-Pin • Plastic DIL Package

P- 2

14-Pin • Panaflat Package (SO-14D)

Pin Configuration

■ Maximum Ratings (Ta=25℃)

Item		Symbol	Ratings	Unit
Supply Voltage		V_{DD}	$-0.5 \sim +18$	V
Input Voltage		V_I	$-0.5 \sim V_{DD}+0.5^*$	V
Output Voltage		V_O	$-0.5 \sim V_{DD}+0.5^*$	V
Peak Input · Output Current		$\pm I_I$	max. 10	mA
Power Dissipation (per package)	$Ta=-40 \sim +60℃$	P_D	max. 400	mW
	$Ta=+60 \sim +85℃$		Decrease up to 200mW rating at 8mW/℃	
Power Dissipation (per output terminal)		P_D	max. 100	mW
Operating Ambient Temperature		Topr	$-40 \sim +85$	℃
Storage Temperature		Tstg	$-65 \sim +150$	℃

* V_{DD} + 0.5V should be under 18V

■ DC Characteristics ($V_{SS}=0V$)

Item	V_{DD} (V)	Symbol	Conditions	Ta=−40℃ min.	Ta=−40℃ max.	Ta=25℃ min.	Ta=25℃ max.	Ta=85℃ min.	Ta=85℃ max.	Unit
Quiescent Power Supply Current	5	I_{DD}	$V_I=V_{SS}$ or V_{DD}	—	1	—	1	—	7.5	μA
	10			—	2	—	2	—	15	
	15			—	4	—	4	—	30	
Output Voltage Low Level	5	V_{OL}	$V_I=V_{SS}$ or V_{DD}	—	0.05	—	0.05	—	0.05	V
	10		$|I_O|<1\mu A$	—	0.05	—	0.05	—	0.05	
	15			—	0.05	—	0.05	—	0.05	
Output Voltage High Level	5	V_{OH}	$V_I=V_{SS}$ or V_{DD}	4.95	—	4.95	—	4.95	—	V
	10		$|I_O|<1\mu A$	9.95	—	9.95	—	9.95	—	
	15			14.95	—	14.95	—	14.95	—	
Input Voltage Low Level	5	V_{IL}	$|I_O|<1\mu A$, $V_O=0.5V$ or 4.5V	—	1.5	—	1.5	—	1.5	V
	10		$V_O=1V$ or 9V	—	3	—	3	—	3	
	15		$V_O=1.5V$ or 13.5V	—	4	—	4	—	4	
Input Voltage High Level	5	V_{IH}	$|I_O|<1\mu A$, $V_O=0.5V$ or 4.5V	3.5	—	3.5	—	3.5	—	V
	10		$V_O=1V$ or 9V	7	—	7	—	7	—	
	15		$V_O=1.5V$ or 13.5V	11	—	11	—	11	—	
Output Current Low Level	5	I_{OL}	$V_O=0.4V$, $V_I=0$ or 5V	0.52	—	0.44	—	0.36	—	mA
	10		$V_O=0.5V$, $V_I=0$ or 10V	1.3	—	1.1	—	0.9	—	
	15		$V_O=1.5V$, $V_I=0$ or 15V	3.6	—	3	—	2.4	—	
Output Current High Level	5	$-I_{OH}$	$V_O=4.6V$, $V_I=0$ or 5V	0.52	—	0.44	—	0.36	—	mA
	10		$V_O=9.5V$, $V_I=0$ or 10V	1.3	—	1.1	—	0.9	—	
	15		$V_O=13.5V$, $V_I=0$ or 15V	3.6	—	3	—	2.4	—	
Output Current High Level	5	$-I_{OH}$	$V_O=2.5V$, $V_I=0$ or 5V	1.7	—	1.4	—	1.1	—	mA
Input Leakage Current	15	$\pm I_I$	$V_I=0$ or 15V	—	0.3	—	0.3	—	1	μA

■ Switching Characteristics (Ta=25℃, $V_{SS}=0V$, $C_L=50pF$)

Item	V_{DD} (V)	Symbol	min.	typ.	max.	Unit
Output Rise Time (Fig. 1)	5	t_{TLH}	—	60	180	ns
	10		—	30	90	
	15		—	20	60	
Output Fall Time (Fig. 1)	5	t_{THL}	—	60	180	ns
	10		—	30	90	
	15		—	20	60	
Propagation Delay Time (Fig. 1)	5	t_{PLH}	—	75	225	ns
	10		—	35	105	
	15		—	30	90	
Propagation Delay Time (Fig. 1)	5	t_{PHL}	—	90	270	ns
	10		—	35	105	
	15		—	30	90	
Threshold Voltage (Fig. 2)	5	V_{IH}	—	3.0	3.5	V
	10		—	5.8	7	
	15		—	8.3	11	

■ **Switching Characteristics** (Ta = 25°C, Vss = 0V, C_L = 50pF) (continued)

Item	V_{DD} (V)	Symbol	min.	typ.	max.	Unit
Threshold Voltage (Fig. 2)	5	V_{IL}	1.5	2.2	—	V
	10		3	4.5	—	
	15		4	6.5	—	
Hysteresis Voltage (Fig. 2)	5	V_H	0.5	0.8	—	V
	10		0.7	1.3	—	
	15		0.9	1.8	—	
Input Capacitance		C_I	—	—	7.5	pF

Fig. 1 Switching Time Test Circuit and Waveforms

1. Test Circuit

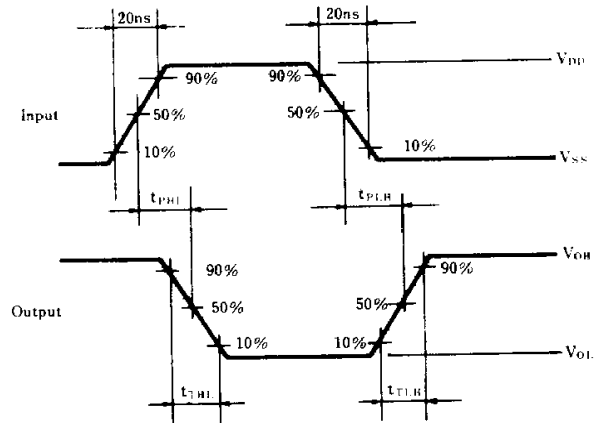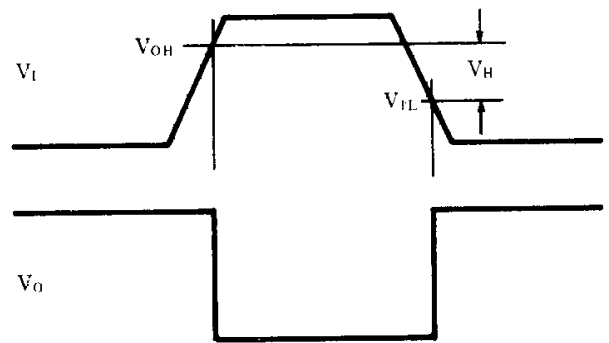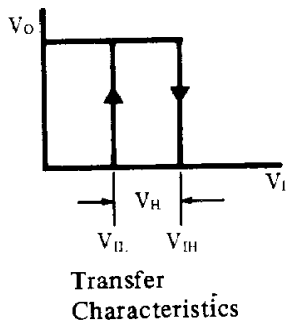2. Waveforms

Fig. 2 Transfer Characteristics

Transfer Characteristics

The waveform illustrated above shows its definition rating 30%, to 70% limit.