

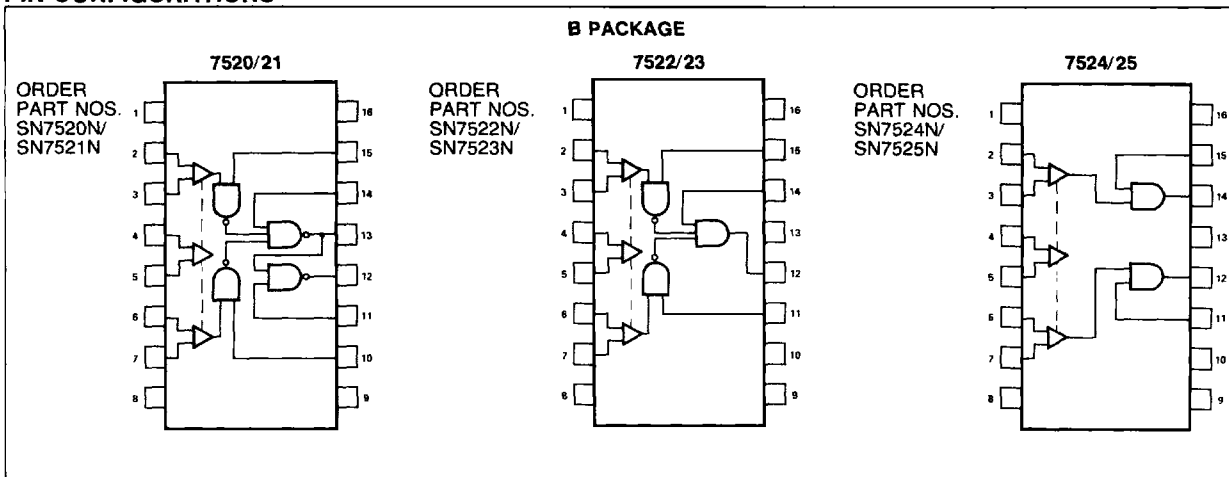
FEATURES

- DUAL SENSE AMPS
- $\pm 4\text{mV}$ THRESHOLD UNCERTAINTY
- DESIGN VERSATILITY
- 25ns PROPAGATION DELAY

ABSOLUTE MAXIMUM RATINGS

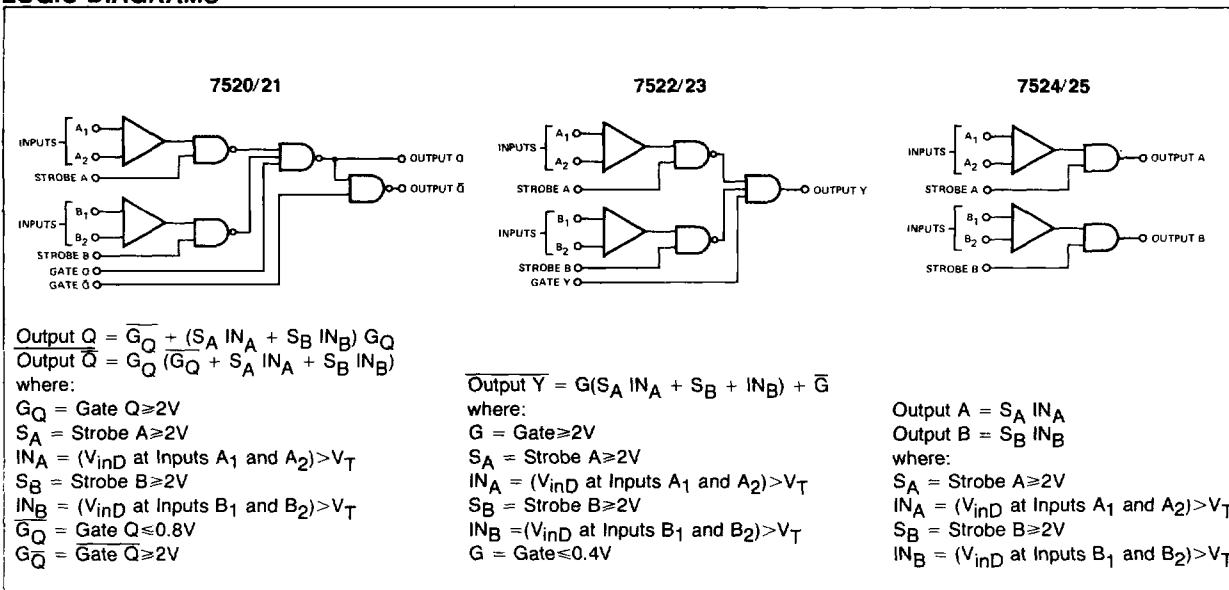
Differential Input Voltage	$\pm 5\text{V}$
VCC	$\pm 7\text{V}$
Strobe & Gain Input Voltages	$+5.5\text{V}$
Storage Temperature	-65°C to $+150^\circ\text{C}$
Operating Temperature	0°C to $+70^\circ\text{C}$
Power Dissipation	500mW

PIN CONFIGURATIONS



*The 7520/21/22/23/24/25 does not require an external capacitor (C_{ext}) to stabilize the pre-amplifier. Pin 1 may be used as a test point, giving access to the pre-amplifier output. No degradation of performance will result if a 100pF capacitor is connected from Pin 1 to GND.

LOGIC DIAGRAMS



AC CHARACTERISTICS 7520/21

PROPAGATION DELAY TIMES			MIN	TYP	MAX	UNIT
SYMBOL	FROM INPUT	TO OUTPUT				
$t_{pd(1)DQ}, t_{pd(0)DQ}$	A ₁ -A ₂ -or B ₁ -B ₂	Q		20 30	40	ns ns
$t_{pd(1)D\bar{Q}}, t_{pd(0)D\bar{Q}}$	A ₁ -A ₂ or B ₁ -B ₂	$\bar{Q}$		25 35		ns ns
$t_{pd(1)SQ}, t_{pd(0)SQ}$	Strobe A or B	Q		15 25	55 30	ns ns
$t_{pd(1)S\bar{Q}}, t_{pd(0)S\bar{Q}}$	Strobe A or B	$\bar{Q}$		15 35		ns ns
$t_{pd(1)G_QQ}, t_{pd(0)G_QQ}$	Gate Q	Q		10 15	20	ns ns
$t_{pd(1)G_Q\bar{Q}}, t_{pd(0)G_Q\bar{Q}}$	Gate Q	$\bar{Q}$		15 20		ns ns
$t_{pd(1)G_{\bar{Q}}Q}, t_{pd(0)G_{\bar{Q}}Q}$	Gate $\bar{Q}$	Q		15 10	30 20	ns ns
$t_{pd(1)G_{\bar{Q}}\bar{Q}}, t_{pd(0)G_{\bar{Q}}\bar{Q}}$	Gate $\bar{Q}$	$\bar{Q}$		15 10		ns ns

AC CHARACTERISTICS 7522/23

PROPAGATION DELAY TIMES			MIN	TYP	MAX	UNIT
SYMBOL	FROM INPUT	TO OUTPUT				
$t_{pd(1)D}$	A ₁ -A ₂ or B ₁ -B ₂	Y		20	45	ns
$t_{pd(0)D}$				30		ns
$t_{pd(1)S}$	Strobe A or B	Y		15	40	ns
$t_{pd(0)S}$				25		ns
$t_{pd(1)G}$	Gate	Y		10	25	ns
$t_{pd(0)G}$				15		ns

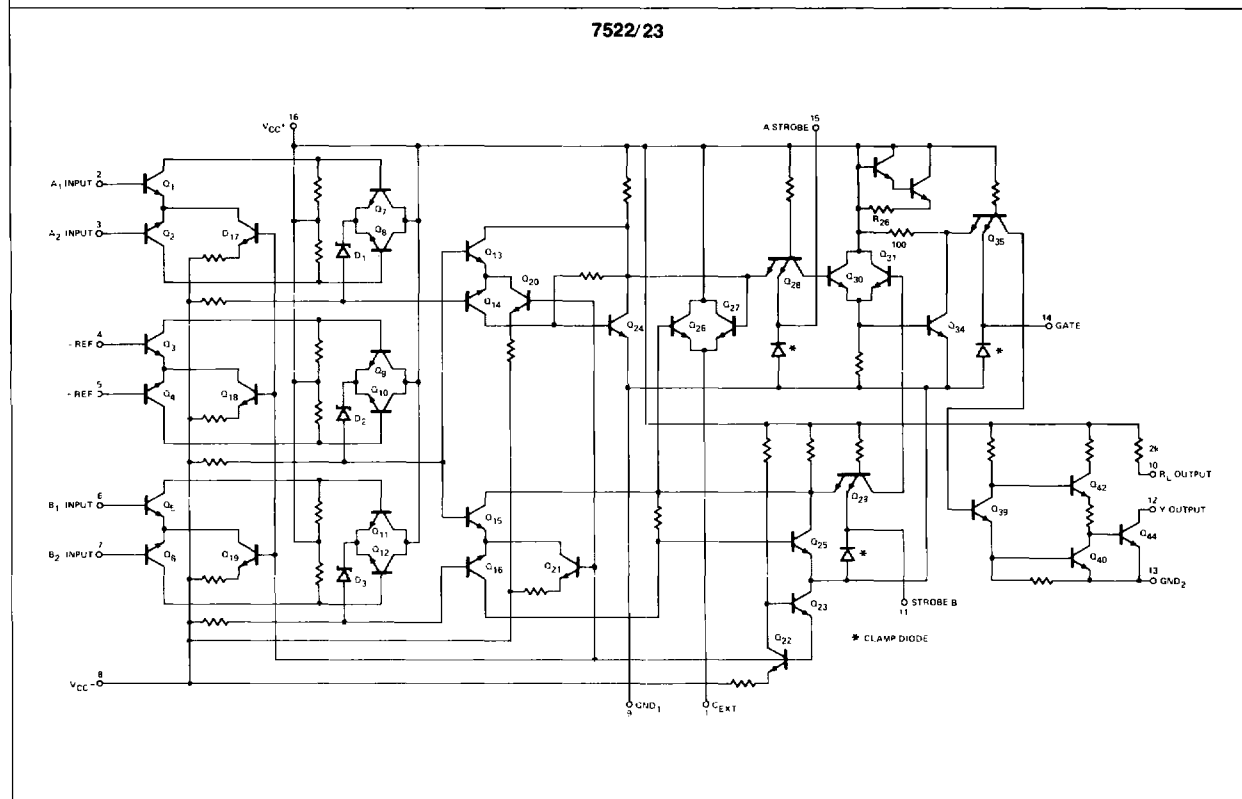
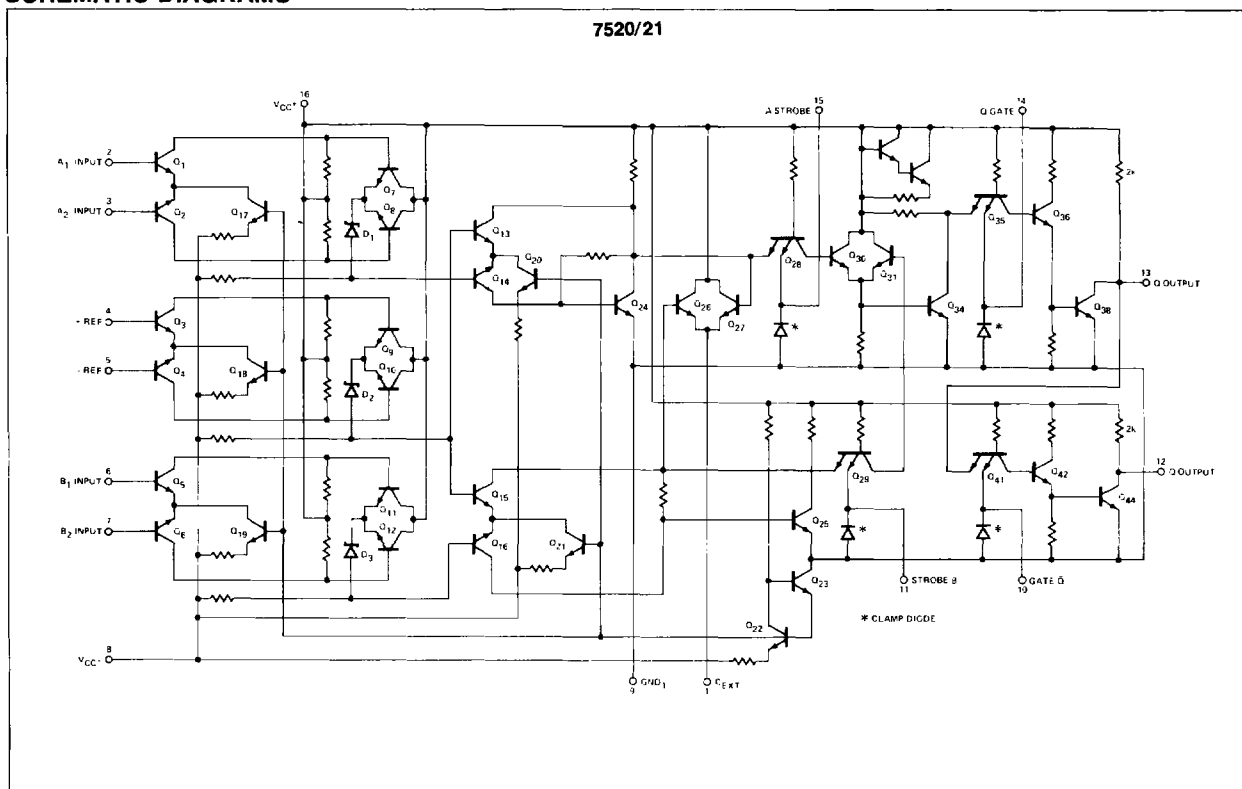
AC CHARACTERISTICS 7524/25

PROPAGATION DELAY TIMES			MIN	TYP	MAX	UNIT
SYMBOL	FROM INPUT	TO OUTPUT				
$t_{pd(1)D}$	A ₁ -A ₂ or B ₁ -B ₂	A or B		25	40	ns
$t_{pd(0)D}$				20		ns
$t_{pd(1)S}$	Strobe A or B	A or B		15	30	ns
$t_{pd(0)S}$				20		ns

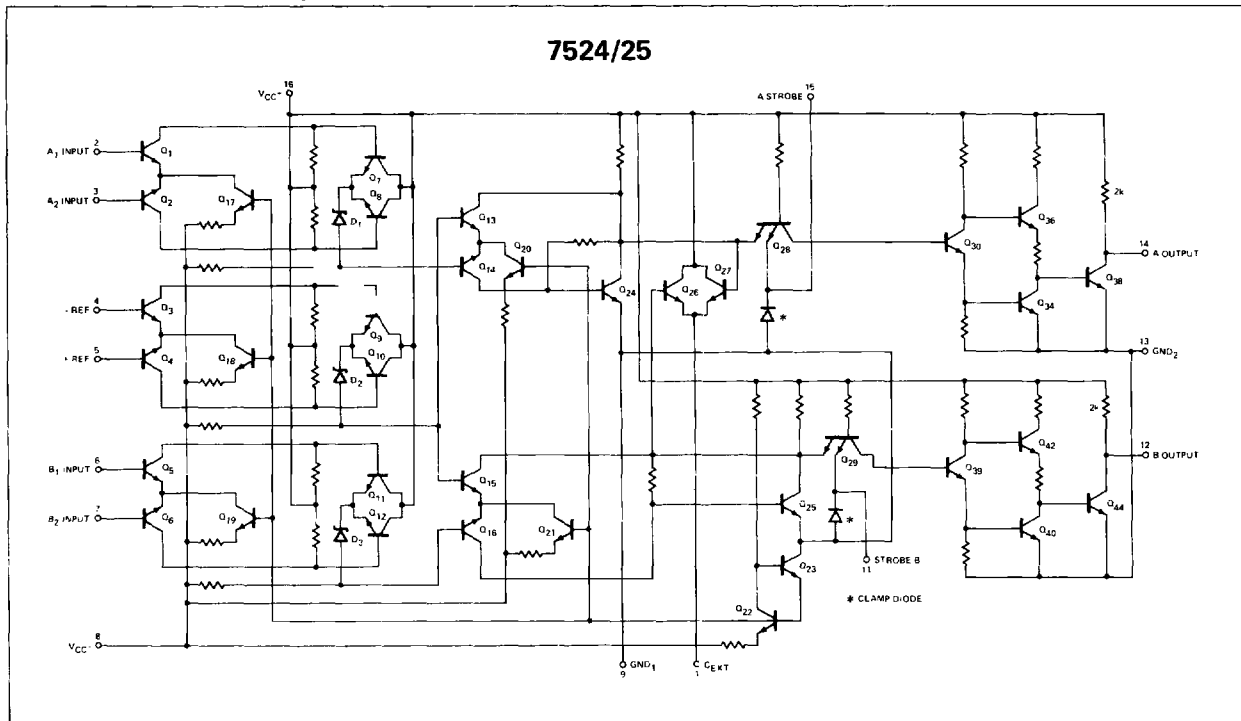
NOTES:

1. The differential input threshold voltage (V_T) is defined as the DC input voltage (V_{in}) required to force the output of the sense amplifier to the logic gate threshold voltage level.
2. Common mode input firing voltage is the common mode voltage that will exceed the dynamic range of the input at the specified conditions and cause the logic output to switch. The specified common mode input signal is applied with a strobe enable signal present.
3. Differential input overload recovery time is the time necessary for the device to recover from the specified differential input overload signal prior to the strobe enable signal.
4. Common mode input overload recovery time is the time necessary for the device to recover from the specified common mode input overload signal prior to the strobe enable signal.

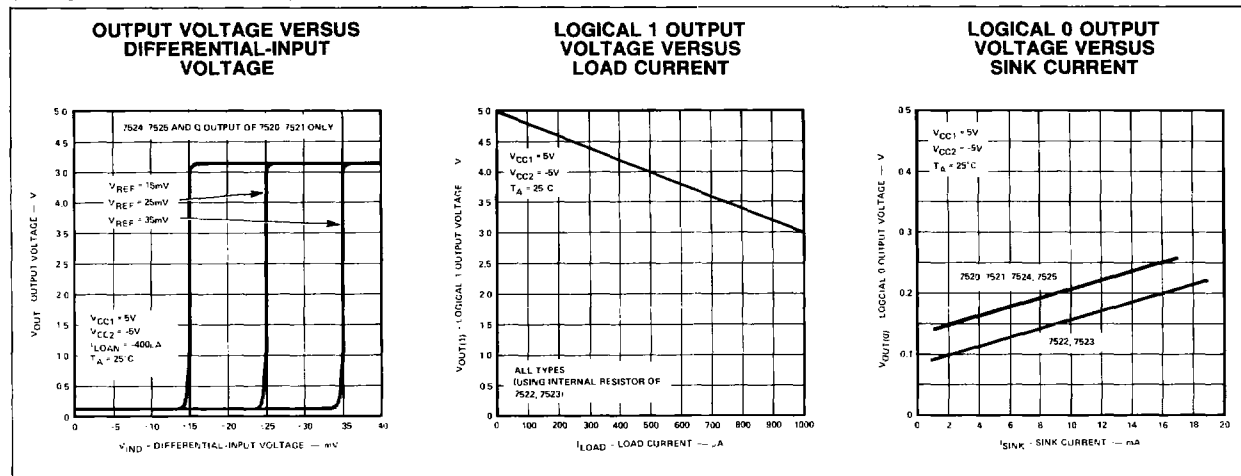
SCHEMATIC DIAGRAMS



SCHEMATIC DIAGRAMS (CONT'D)

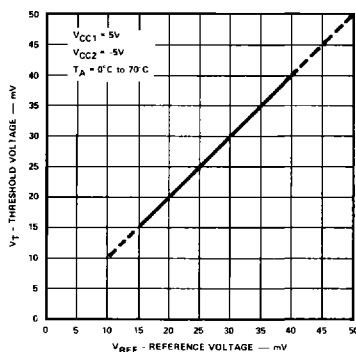


TYPICAL CHARACTERISTIC CURVES

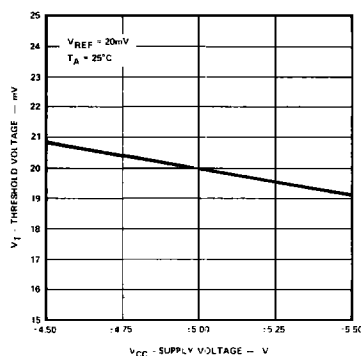


TYPICAL CHARACTERISTIC CURVES (CONT'D)

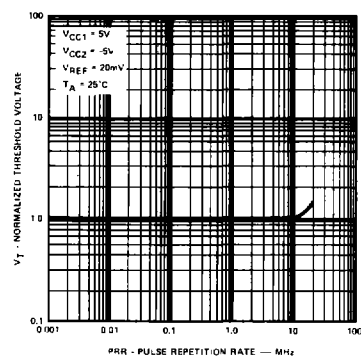
THRESHOLD VOLTAGE
VERSUS
REFERENCE VOLTAGE



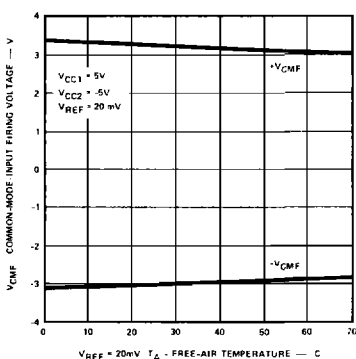
THRESHOLD VOLTAGE
VERSUS
SUPPLY VOLTAGE



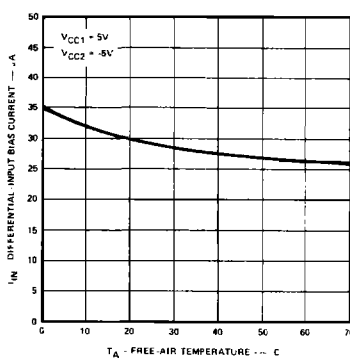
NORMALIZED THRESHOLD
VOLTAGE VERSUS
PULSE REPETITION RATE



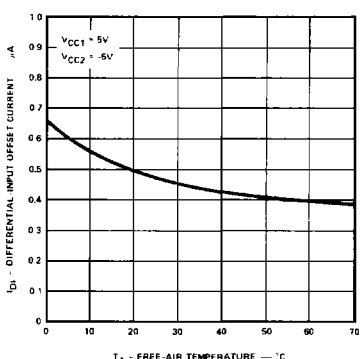
COMMON MODE FIRING
VOLTAGE VERSUS
FREE-AIR TEMPERATURE



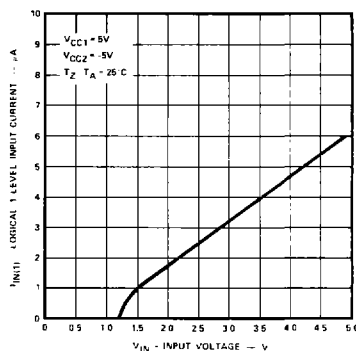
DIFFERENTIAL-INPUT BIAS
CURRENT VERSUS
FREE-AIR TEMPERATURE



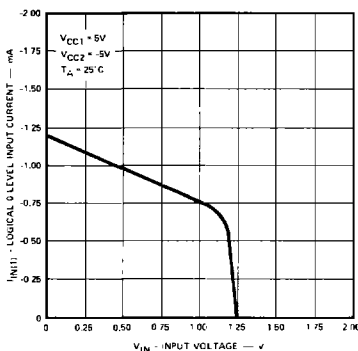
DIFFERENTIAL-INPUT
OFFSET CURRENT VS
FREE-AIR TEMPERATURE



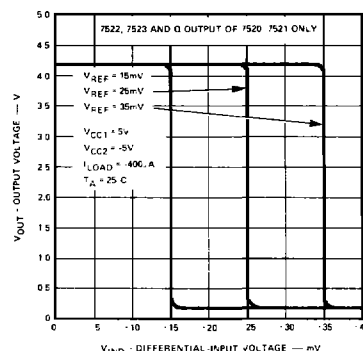
LOGICAL 1 LEVEL INPUT
CURRENT VS
INPUT VOLTAGE



LOGICAL 0 LEVEL INPUT
CURRENT VS
INPUT VOLTAGE



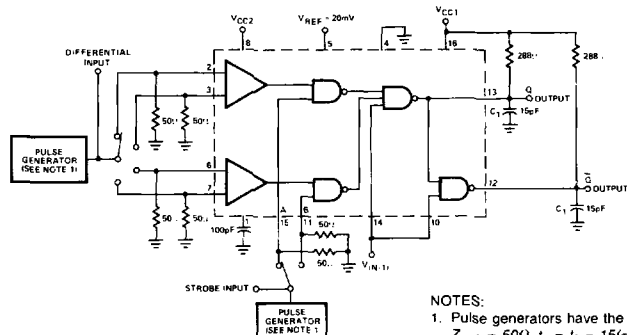
OUTPUT VOLTAGE VERSUS
DIFFERENTIAL INPUT
VOLTAGE



SWITCHING CHARACTERISTICS (Propagation Delay Times)

TEST CIRCUIT—DIFFERENTIAL AND STROBE INPUTS TO OUTPUTS

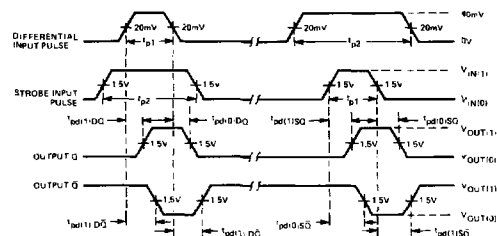
7520/21



NOTES:

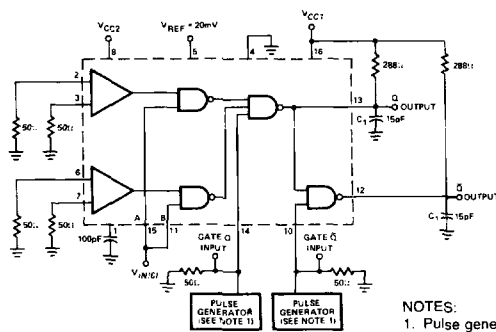
1. Pulse generators have the following characteristics:
 $Z_{out} = 50\Omega$, $t_r = t_f = 15(\pm 5)\text{ns}$, $t_{p1} = 100\text{ns}$,
 $t_{p2} = 300\text{ns}$, and $\text{PRR} = 1\text{MHz}$.
2. C_1 includes probe and jig capacitance.

VOLTAGE WAVEFORMS—DIFFERENTIAL AND STROBE INPUTS TO OUTPUTS



TEST CIRCUIT

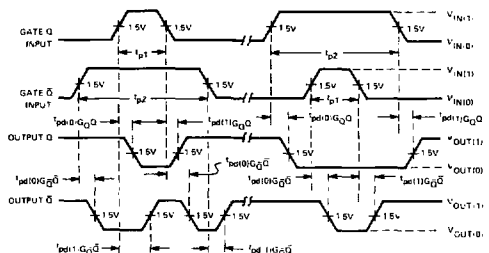
7520/21



NOTES:

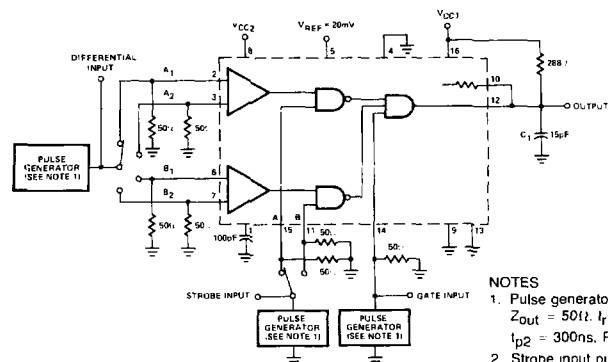
1. Pulse generators have the following characteristics:
 $Z_{out} = 50\Omega$, $t_r = t_f = 15(\pm 5)\text{ns}$, $t_{p1} = 100\text{ns}$,
 $t_{p2} = 300\text{ns}$, and $\text{PRR} = 1\text{MHz}$.
2. C_1 includes probe and jig capacitance.

VOLTAGE WAVEFORMS



TEST CIRCUIT

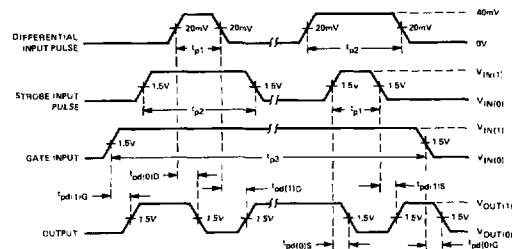
7522/23



NOTES:

1. Pulse generators have the following characteristics:
 $Z_{out} = 50\Omega$, $t_r = t_f = 15(\pm 5)\text{ns}$, $t_{p1} = 100\text{ns}$,
 $t_{p2} = 300\text{ns}$, $\text{PRR} = 1\text{MHz}$.
2. Strobe input pulse is applied to Strobe A when inputs A₁-A₂ are being tested and to Strobe B when inputs B₁-B₂ are being tested.
3. C_1 includes probe and jig capacitance.

VOLTAGE WAVEFORMS



SWITCHING CHARACTERISTICS (Propagation Delay Times) (Cont'd)

