

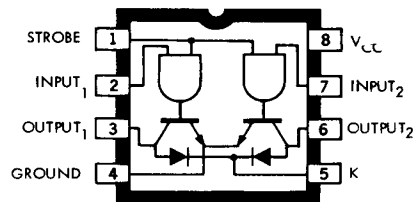
SERIES UDN-5720M, UDN-5740M, UDN-5750M DUAL PERIPHERAL/POWER DRIVERS

—Transient-Protected Outputs

FEATURES

- DTL/TTL/PMOS/CMOS Compatible
- Low Input Current
- Continuous Output Current to 700 mA
- 70 V Output Standoff Voltage
- Low Supply-Current Requirement

PERIPHERAL AND POWER DRIVERS combining dual logic gates, high-current saturated output transistors, and transient-suppression diodes are the Series UDN-5720/40/50M. These monolithic dual drivers surpass the interface requirements normally associated with standard logic buffers and are ideally suited for interface between low-level logic and high-current inductive loads. Internal transient-suppression diodes allow their use with loads such as stepping motors, relays, or solenoids. Additional (non-inductive) applications include driving peripheral loads such as light-emitting diodes, memories, heaters, and incandescent lamps with peak load currents of up to 700 mA. When not required for transient suppression, the diode common bus can be used to perform the "lamp test" function.



Dwg. No. A-9790B

UDN-5722/42/52M

The Series UDN-5720M output transistors are capable of simultaneously sinking 350 mA continuously over the rated operating temperature range. The Series UDN-5740M is capable of sinking 600 mA continuously for a single output (57% duty cycle for both outputs). The series UDN-5750M will sink 500 mA continuously for a single output (86% duty cycle for both outputs). The outputs may be paralleled for higher load-current capability. In the OFF state, the drivers will withstand at least 70 V.

All devices in this series are supplied in a miniature 8-pin dual-in-line plastic package with a copper lead frame for superior package power dissipation ratings.

ABSOLUTE MAXIMUM RATINGS

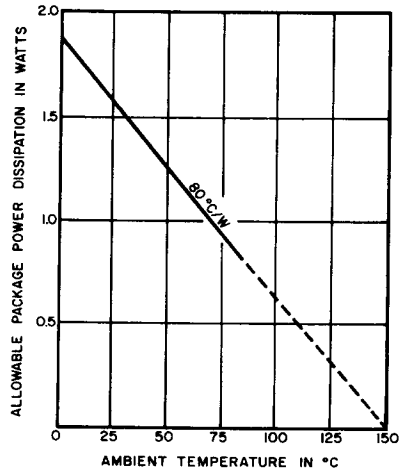
Supply Voltage, V_{CC} (UDN-5740/50M)	7.0 V
(UDN-5720M)	15 V
Input Voltage, V_{IN}	30 V
Output Off-State Voltage, V_{OFF}	70 V
Output On-State Sink Current, I_{ON} (UDN-5720/50M)	600 mA
(UDN-5740M)	700 mA
Suppression Diode Off-State Voltage, V_{OFF}	70 V
Suppression Diode On-State Current, I_{ON} (UDN-5720/50M)	600 mA
(UDN-5740M)	700 mA
Allowable Package Power Dissipation, P_D	1.5 W*
Operating Free-Air Temperature Range, T_A	-20°C to +85°C
Storage Temperature Range, T_S	-55°C to +150°C

*Derate at the rate of 12.5 mW/°C above $T_A = +25^\circ\text{C}$

RECOMMENDED OPERATING CONDITIONS

Operating Condition	Min.	Nom.	Max.	Units
Supply Voltage, V_{CC} (UDN-5720M) (UDN-5740/50M)	4.75	—	12.6	V
	4.75	5.00	5.25	V
Output Current, I_{ON} (UDN-5720M) (UDN-5740M) (UDN-5750M)	—	—	350	mA
	—	—	600	mA
	—	—	500	mA
Operating Temperature Range	0	+ 25	+ 85	°C

**ALLOWABLE AVERAGE PACKAGE
POWER DISSIPATION AS A
FUNCTION OF TEMPERATURE**



Dwg. No. A-13,220

SWITCHING CHARACTERISTICS at $T_A = +25^\circ\text{C}$, $V_{CC} = 5.0\text{V}$

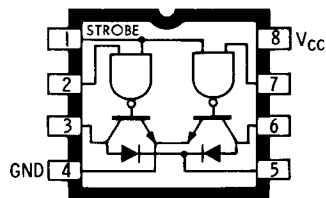
Characteristic	Symbol	Test Conditions	Limits			Notes
			Min.	Max.	Units	
Turn-On Delay Time	t_{pd0}	$V_S = 30\text{V}$, $R_L = 100$ (10 W), $C_L = 15\text{pF}$	—	500	ns	1, 2
Turn-Off Delay Time	t_{pd1}	$V_S = 30\text{V}$, $R_L = 100$ (10 W), $C_L = 15\text{pF}$	—	750	ns	1, 2

- Notes: 1. Capacitance value specified includes probe and test fixture capacitance.
2. Voltage values shown in test circuit waveforms are with respect to network ground.

Input-Pulse Characteristics

$V_{IN(0)} = 0\text{V}$	$t_r \leq 7\text{ns}$	$t_p = 1\mu\text{s}$
$V_{IN(1)} = 3.5\text{V}$	$t_f \leq 14\text{ns}$	PRR = 500kHz

UDN-5721M, UDN-5741M, UDN-5751M



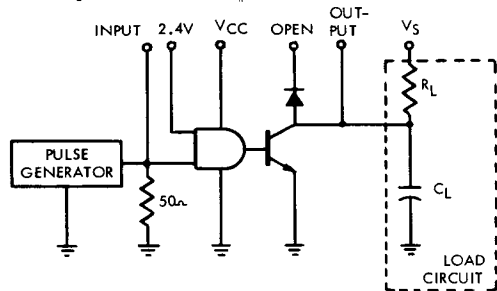
Dwg. No. A-9791A

ELECTRICAL CHARACTERISTICS over recommended operating temperature range (unless otherwise noted)

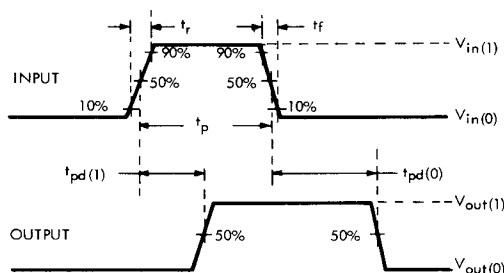
Characteristic	Symbol	Temp.	Applicable Devices*	Test Conditions			Limits			Notes		
				V _{CC}	Driven Input	Other Input	Output	Min.	Typ.		Max	Units
Output Reverse Current	I _{CEX}	—	All	4.75	2.0 V	2.0 V	70 V	—	—	100	μA	—
				Open	2.0 V	2.0 V	70 V	—	—	100	μA	—
Output Voltage	V _{CE(SAT)}	—	5721	4.75	0.8 V	4.75 V	200 mA	—	0.4	0.6	V	—
			5741/51	4.75	0.8 V	4.75 V	300 mA	—	0.3	0.6	V	—
			5721	4.75	0.8 V	4.75 V	350 mA	—	0.6	0.8	V	—
			5751	4.75	0.8 V	4.75 V	500 mA	—	0.5	0.8	V	—
			5741	4.75	2.0 V	4.75 V	600 mA	—	0.7	1.0	V	—
Input Voltage	V _{IN(1)}	—	All	4.75	—	—	—	2.0	—	—	V	—
	V _{IN(0)}	—	All	4.75	—	—	—	—	—	0.8	V	—
Input Current	I _{IN(0)}	—	All	Max.	0.4 V	30 V	—	—	-5.0	-10	μA	1, 2
	I _{IN(1)}	—	All	Max.	30 V	0 V	—	—	5.0	10	μA	1, 2
Strobe Input Current	I _{IN(0)}	—	All	Max.	0.4 V	30 V	—	—	-10	-20	μA	2
	I _{IN(1)}	—	All	Max.	30 V	0 V	—	—	10	20	μA	2
Input Clamp Volt.	V _{CLAMP}	—	All	4.75	-12 mA	—	—	—	—	-1.5	V	—
Diode Leakage Current	I _k	+25°C	All	5.0	0 V	0 V	Open	—	—	100	μA	3
Diode Forward Voltage	V _f	+25°C	5721	5.0	5.0 V	5.0 V	300 mA	—	1.5	1.75	V	—
			5751	5.0	5.0 V	5.0 V	500 mA	—	1.5	2.0	V	—
			5741	5.0	5.0 V	5.0 V	600 mA	—	1.5	2.0	V	—
			5741/51	5.25	5.0 V	5.0 V	—	—	2.6	4.0	mA	—
Supply Current (Total Package)	I _{CC(1)}	+25°C	5721	5.25	5.0 V	5.0 V	—	—	1.0	2.0	mA	—
				12.6	5.0 V	5.0 V	—	—	2.6	4.0	mA	—
			5741/51	5.25	5.0 V	5.0 V	—	—	1.0	3.0	mA	—
	I _{CC(0)}	+25°C	5721	5.25	0 V	0 V	—	—	13	16	mA	—
				12.6	0 V	0 V	—	—	38	45	mA	—
			5741/51	5.25	0 V	0 V	—	—	20	25	mA	—

Notes:

- * Complete part number includes the prefix UDN- and the package suffix M, e.g. UDN-5721M.
- 1. Except STROBE input, each input tested separately.
- 2. V_{CC(MAX)} is 12.6 V for Series UDN-5720M and 5.25 V for Series UDN-5740M and UDN-5750M.
- 3. Diode leakage current measured at V_r = 70 V.

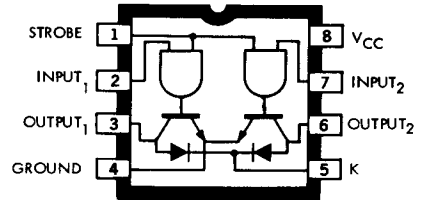


Dwg. No. A-11.746A



Dwg. No. A-7628D

UDN-5722M, UDN-5742M, UDN-5752M



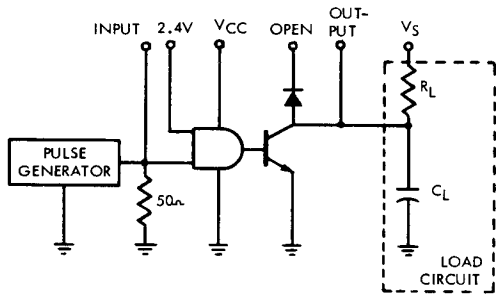
Dwg. No. A-9790B

ELECTRICAL CHARACTERISTICS over recommended operating temperature range (unless otherwise noted)

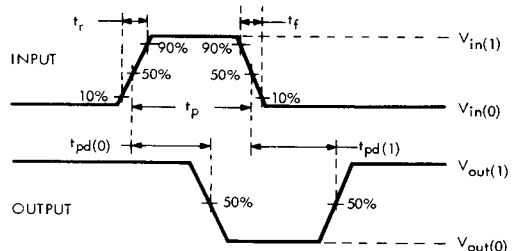
Characteristic	Symbol	Temp.	Applicable Devices*	Test Conditions				Limits			Notes	
				V _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max		Units
Output Reverse Current	I _{CEX}	—	All	4.75 Open	0.8 V 0.8 V	4.75 V 4.75 V	70 V 70 V	— —	— 100	— 100	— μA	— —
Output Voltage	V _{CE(SAT)}	—	5722	4.75	2.0 V	2.0 V	200 mA	—	0.4	0.6	V	—
			5742/52	4.75	2.0 V	2.0 V	300 mA	—	0.3	0.6	V	—
			5722	4.75	2.0 V	2.0 V	350 mA	—	0.6	0.8	V	—
			5752	4.75	2.0 V	2.0 V	500 mA	—	0.5	0.8	V	—
			5742	4.75	2.0 V	2.0 V	600 mA	—	0.7	1.0	V	—
Input Voltage	V _{IN(1)}	—	All	4.75	—	—	—	2.0	—	—	V	—
	V _{IN(2)}	—	All	4.75	—	—	—	—	—	0.8	V	—
Input Current	I _{IN(2)}	—	All	Max.	0.4 V	30 V	—	—	-5.0	-10	μA	1, 2
	I _{IN(1)}	—	All	Max.	30 V	0 V	—	—	5.0	10	μA	1, 2
Strobe Input Current	I _{IN(2)}	—	All	Max.	0.4 V	30 V	—	—	-10	-20	μA	2
	I _{IN(1)}	—	All	Max.	30 V	0 V	—	—	10	20	μA	2
Input Clamp Volt.	V _{CLAMP}	—	All	4.75	-12 mA	—	—	—	—	-1.5	V	—
Diode Leakage Current	I _r	+25°C	All	5.0	5.0 V	5.0 V	Open	—	—	100	μA	3
Diode Forward Voltage	V _f	+25°C	5722	5.0	0 V	0 V	300 mA	—	1.5	1.75	V	—
			5752	5.0	0 V	0 V	500 mA	—	1.5	2.0	V	—
			5742	5.0	0 V	0 V	600 mA	—	1.5	2.0	V	—
Supply Current (Total Package)	I _{CC(1)}	+25°C	5722	5.25	0 V	0 V	—	—	1.0	2.0	mA	—
				12.6	0 V	0 V	—	—	2.6	4.0	mA	—
			5742/52	5.25	0 V	0 V	—	—	1.0	3.0	mA	—
	I _{CC(2)}	+25°C	5722	5.25	5.0 V	5.0 V	—	—	13	16	mA	—
				12.6	5.0 V	5.0 V	—	—	38	45	mA	—
5742/52	5.25	5.0 V	5.0 V	—	—	20	25	mA	—			

Notes:

- * Complete part number includes the prefix UDN- and the package suffix M, e.g. UDN-5722M.
1. Except STROBE input, each input tested separately.
2. V_{CC(MAX)} is 12.6 V for Series UDN-5720M and 5.25 V for Series UDN-5740M and UDN-5750M.
3. Diode leakage current measured at V_R = 70 V.



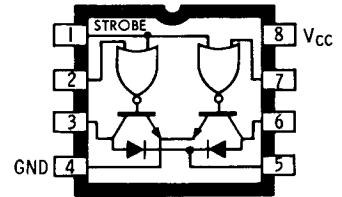
Dwg. No. A-11,746A



Dwg. No. A-7900B

3

UDN-5723M, UDN-5743M, UDN-5753M



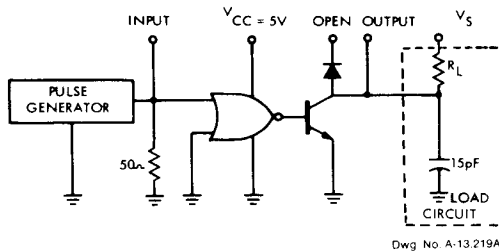
Dwg. No. A-9789A

ELECTRICAL CHARACTERISTICS over recommended operating temperature range (unless otherwise noted)

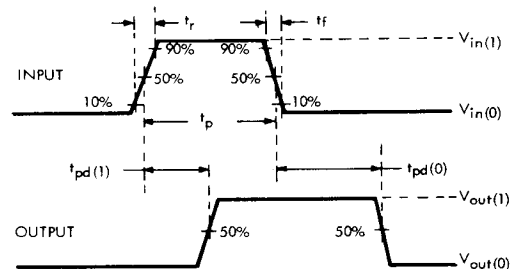
Characteristic	Symbol	Temp.	Applicable Devices*	Test Conditions				Limits			Notes	
				V _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max		Units
Output Reverse Current	I _{CEK}	—	All	4.75	2.0 V	0 V	70 V	—	—	100	μA	—
				Open	2.0 V	0 V	70 V	—	—	100	μA	—
Output Voltage	V _{CE(SAT)}	—	5723	4.75	0.8 V	0.8 V	200 mA	—	0.4	0.6	V	—
			5743/53	4.75	0.8 V	0.8 V	300 mA	—	0.3	0.6	V	—
			5723	4.75	0.8 V	0.8 V	350 mA	—	0.6	0.8	V	—
			5753	4.75	0.8 V	0.8 V	500 mA	—	0.5	0.8	V	—
			5743	4.75	0.8 V	0.8 V	600 mA	—	0.7	1.0	V	—
Input Voltage	V _{IN(1)}	—	All	4.75	—	—	—	2.0	—	—	V	—
	V _{IN(2)}	—	All	4.75	—	—	—	—	—	0.8	V	—
Input Current	I _{IN(2)}	—	All	Max.	0.4 V	30 V	—	—	-5.0	-10	μA	1, 2
	I _{IN(1)}	—	All	Max.	30 V	0 V	—	—	5.0	10	μA	1, 2
	I _{IN(3)}	—	All	Max.	0.4 V	30 V	—	—	-10	-20	μA	2
Strobe Input Current	I _{IN(3)}	—	All	Max.	0.4 V	30 V	—	—	-10	-20	μA	2
	I _{IN(1)}	—	All	Max.	30 V	0 V	—	—	10	20	μA	2
Input Clamp Volt.	V _{CLAMP}	—	All	4.75	-12 mA	—	—	—	—	-1.5	V	—
Diode Leakage Current	I _R	+25°C	All	0	0 V	0 V	Open	—	—	100	μA	3
Diode Forward Voltage	V _F	+25°C	5723	5.0	5.0 V	5.0 V	300 mA	—	1.5	1.75	V	—
			5753	5.0	5.0 V	5.0 V	500 mA	—	1.5	2.0	V	—
			5743	5.0	5.0 V	5.0 V	600 mA	—	1.5	2.0	V	—
Supply Current (Total Package)	I _{CC(1)}	+25°C	5723	5.25	5.0 V	5.0 V	—	—	1.0	2.0	mA	—
				12.6	5.0 V	5.0 V	—	—	2.6	4.0	mA	—
			5743/53	5.25	5.0 V	5.0 V	—	—	1.0	3.0	mA	—
	I _{CC(2)}	+25°C	5723	5.25	0 V	0 V	—	—	13	16	mA	—
				12.6	0 V	0 V	—	—	38	45	mA	—
			5743/53	5.25	0 V	0 V	—	—	20	25	mA	—

Notes:

- * Complete part number includes the prefix UDN- and the package suffix M, e.g. UDN-5723M.
- 1. Except STROBE input, each input tested separately.
- 2. V_{CC(MAX)} is 12.6 V for Series UDN-5720M and 5.25 V for Series UDN-5740M and UDN-5750M.
- 3. Diode leakage current measured at V_o = 70 V.

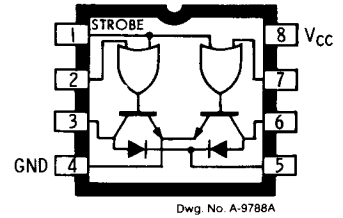


Dwg. No. A-13.219A



Dwg. No. A-7628D

UDN-5724M, UDN-5744M, UDN-5754M

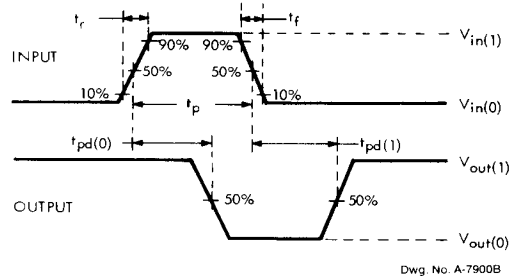
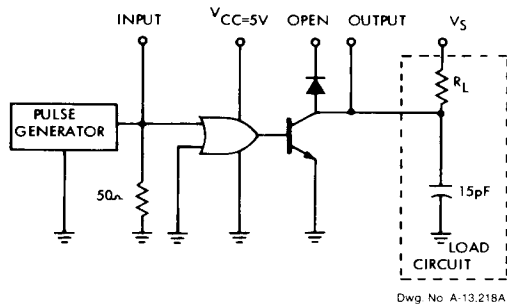


ELECTRICAL CHARACTERISTICS over recommended operating temperature range (unless otherwise noted)

Characteristic	Symbol	Temp.	Applicable Devices*	Test Conditions				Limits			Notes	
				V _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max.		Units
Output Reverse Current	I _{CEX}	—	All	4.75	0.8 V	0.8 V	70 V	—	—	100	μA	—
				Open	0.8 V	0.8 V	70 V	—	—	100	μA	—
Output Voltage	V _{CE(SAT)}	—	5724	4.75	2.0 V	0 V	200 mA	—	0.4	0.6	V	—
			5744/54	4.75	2.0 V	0 V	300 mA	—	0.3	0.6	V	—
			5724	4.75	2.0 V	0 V	350 mA	—	0.6	0.8	V	—
			5754	4.75	2.0 V	0 V	500 mA	—	0.5	0.8	V	—
			5744	4.75	2.0 V	0 V	600 mA	—	0.7	1.0	V	—
Input Voltage	V _{IN(1)}	—	All	4.75	—	—	—	2.0	—	—	V	—
	V _{IN(0)}	—	All	4.75	—	—	—	—	—	0.8	V	—
Input Current	I _{IN(0)}	—	All	Max.	0.4 V	0 V	—	—	-5.0	-10	μA	1, 2
	I _{IN(1)}	—	All	Max.	30 V	30 V	—	—	5.0	10	μA	1, 2
Strobe Input Current	I _{IN(1)}	—	All	Max.	0.4 V	0 V	—	—	-10	-20	μA	2
	I _{IN(1)}	—	All	Max.	30 V	30 V	—	—	10	20	μA	2
Input Clamp Volt.	V _{CE(LAMP)}	—	All	4.75	-12 mA	—	—	—	—	-1.5	V	—
Diode Leakage Current	I _r	+25°C	All	5.0	5.0 V	5.0 V	Open	—	—	100	μA	3
Diode Forward Voltage	V _f	+25°C	5724	5.0	0 V	0 V	300 mA	—	1.5	1.75	V	—
			5754	5.0	0 V	0 V	500 mA	—	1.5	2.0	V	—
			5744	5.0	0 V	0 V	600 mA	—	1.5	2.0	V	—
Supply Current (Total Package)	I _{CC(1)}	+25°C	5724	5.25	0 V	0 V	—	—	1.0	2.0	mA	—
			—	12.6	0 V	0 V	—	—	2.6	4.0	mA	—
	5744/54	5.25	0 V	0 V	—	—	1.0	3.0	mA	—		
	I _{CC(0)}	+25°C	5724	5.25	5.0 V	5.0 V	—	—	13	16	mA	—
			—	12.6	5.0 V	5.0 V	—	—	38	45	mA	—
5744/54	5.25	5.0 V	5.0 V	—	—	20	25	mA	—			

Notes:

- * Complete part number includes the prefix UDN- and the package suffix M, e.g. UDN-5724M.
- 1. Except STROBE input, each input tested separately.
- 2. V_{CC(MAX)} is 12.6 V for Series UDN-5720M and 5.25 V for Series UDN-5740M and UDN-5750M.
- 3. Diode leakage current measured at V_r = 70 V.



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