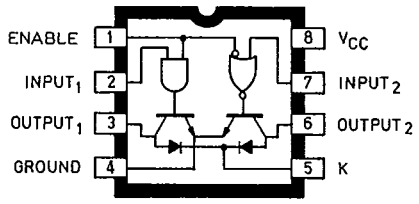
5725

T-52-17

DUAL PERIPHERAL/POWER DRIVER —ENHANCED OUTPUT CAPABILITY



Dwg. No. 13,242

ABSOLUTE MAXIMUM RATINGS at T_A = +25°C

Output Off-State Voltage, V_{OFF} . . . . . **70 V**
Output On-State Sink Current, I_{ON}
(continuous) . . . . . **1.0 A†**
(peak) . . . . . **1.2 A**
Logic Supply Voltage, V_{CC} . . . . . **16 V**
Input Voltage, V_{IN} . . . . . **30 V**
Suppression Diode Off-State Voltage, V_{OFF} . . . . . **70 V**
Suppression Diode On-State Current, I_{ON} . . . . . **1.0 A**
Allowable Package Power Dissipation, P_D . . . . . **See Graph**
Operating Free-Air Temperature Range, T_A . . . . . **-20°C to +85°C**
Storage Temperature Range, T_S . . . . . **-55°C to +150°C**

† Limited by P_D.

The UDN5725M power driver combines NAND and NOR logic gates in a configuration particularly useful with small brushless dc motor drivers. The integrated circuit includes high-current saturated output transistors and transient-suppression diodes. It can be used in many applications beyond the capabilities of standard logic buffers: With inputs tied together, one of two loads is energized by a single input signal.

Additional applications include driving peripheral loads such as solenoids, light-emitting diodes, memories, heaters, and incandescent lamps with peak load currents of up to 1.2 A.

Each of the output transistors is capable of sinking 800 mA continuously at 55°C, or 650 mA at 85°C. In the OFF state, the drivers will withstand at least 70 V.

The UDN5725M is supplied in a miniature 8-pin dual-in-line plastic package with a copper lead frame for superior package power dissipation ratings.

For applications requiring output currents of up to 700 mA, Series UDN5740M is recommended.

FEATURES

- DTL/TTL/PMOS/CMOS Compatible
- Low Input Current
- Continuous Output Current to 1 A
- 70 V Output Standoff Voltage

Always order by complete part number: **UDN5725M**.

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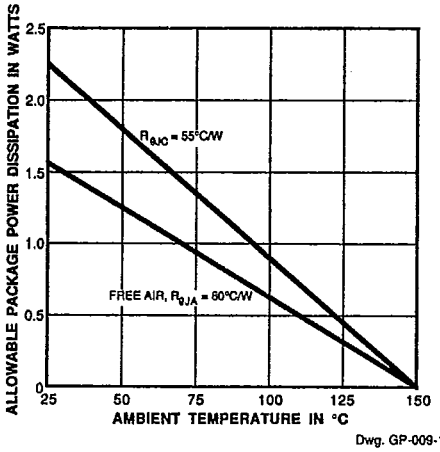
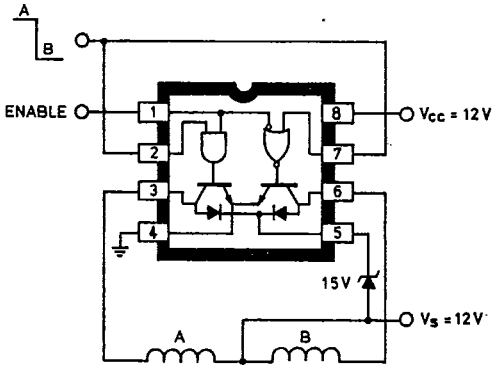


Dwg. GP-009-1

TYPICAL APPLICATION



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RECOMMENDED OPERATING CONDITIONS

Operating Conditions	Min.	Nom.	Max.	Units
Supply Voltage, V_{CC}	4.75	12	14	V
Output Current, I_{ON}	—	—	650	mA
Operating Temperature Range	0	+25	+85	°C

SWITCHING CHARACTERISTICS at T_A = +25°C , V_{CC} = 5.0 V

Characteristic	Symbol	Test Conditions	Limits			Notes
			Min.	Max.	Units	
Turn-On Delay Time	t_{pd0}	V_S = 30 V, R_L = 100 Ω (10 W), C_L = 15 pF	—	750	ns	1, 2
Turn-Off Delay Time	t_{pd1}	V_S = 30 V, R_L = 100 Ω (10 W), C_L = 15 pF	—	1000	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.

TRUTH TABLE

Strobe Input	Phase Inputs		Outputs	
	1	2	1	2
H	H	H	L	H
H	H	L	L	L
H	L	L	H	L
H	L	H	H	H
L	X	X	H	H

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

Characteristic	Symbol	Test Conditions					Limits				Notes
		Temp.	V_{CC}	Enable Input	Other Inputs	Output	Min.	Typ.	Max.	Units	
Output Reverse Current	I_{CEX}	—	4.75	0.8 V	2.0 V	70 V	—	—	100	µA	—
			4.75	0.8 V	0.8 V	70 V	—	—	100	µA	—
Output Voltage	$V_{CE(sat)}$	—	14	2.0 V	2.0 V	0.6 A	—	0.4	0.6	V	—
			14	2.0 V	2.0 V	0.8 A	—	0.7	1.0	V	—
			14	2.0 V	2.0 V	1.0 A	—	0.9	1.2	V	3
			14	2.0 V	0.8 V	0.6 A	—	0.4	0.6	V	—
			14	2.0 V	0.8 V	0.8 A	—	0.7	1.0	V	—
			14	2.0 V	0.8 V	1.0 A	—	0.9	1.2	V	3
	$V_{CE(sus)}$	+25°C	14	⌐	0 V	0.8 A	50	—	—	V	3, 4
			14	⌐	2.0 V	0.8 A	50	—	—	V	3, 4
Input Voltage	$V_{IN(1)}$	—	—	—	—	—	2.0	—	—	V	—
	$V_{IN(0)}$	—	—	—	—	—	—	—	0.8	V	—
Input Current	$I_{IN(0)}$	—	12.6	0.4 V	30 V	—	—	5.0	25	µA	1
	$I_{IN(1)}$	—	12.6	30 V	0 V	—	—	5.0	25	µA	1
Enable Input Current	$I_{IN(0)}$	—	12.6	0.4 V	30 V	—	—	10	50	µA	—
	$I_{IN(1)}$	—	12.6	30 V	0 V	—	—	10	50	µA	—
Input Clamp Volt.	V_{CLAMP}	—	4.75	-12 mA	—	—	—	—	-1.5	V	—
Diode Leakage	I_R	+25°C	5.0	0 V	0 V	Open	—	—	100	µA	2
Diode Forward Voltage	V_F	+25°C	5.0	0 V	0 V	0.6 A	—	1.5	2.0	V	—
			5.0	0 V	0 V	1.0 A	—	1.9	2.5	V	3
Supply Current (Total Package)	$I_{CC(1)}$	+25°C	12.6	0 V	0 V	—	—	3.9	5.0	mA	—
			12.6	0 V	2.0 V	—	—	3.9	5.0	mA	—
	$I_{CC(0)}$	+25°C	12.6	2.0 V	0 V	—	—	22	30	mA	—
			12.6	2.0 V	2.0 V	—	—	22	30	mA	—

NOTES: 1. Except ENABLE input, each input tested separately.
2. Diode leakage current measured at V_R = 70 V.
3. Pulse Test.
4. L_L = 3 mH.

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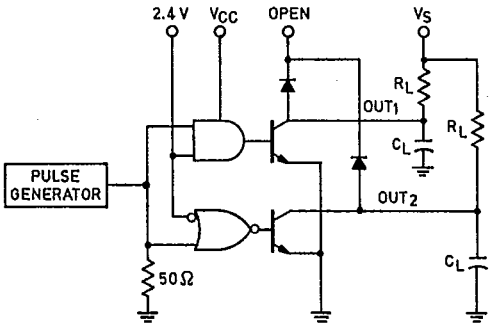

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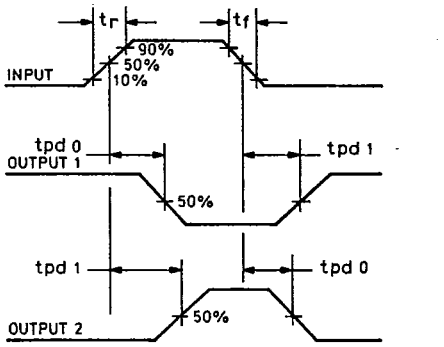

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INPUT-PULSE CHARACTERISTICS

$V_{IN(0)}$ = 0 V	t_f = 7 ns	t_p = 1 µs
$V_{IN(1)}$ = 3.5 V	t_r = 14 ns	PRR = 500 kHz