National Semiconductor

DM74ALS29827
10-Bit Buffers and Bus Drivers with TRI-STATE® Outputs

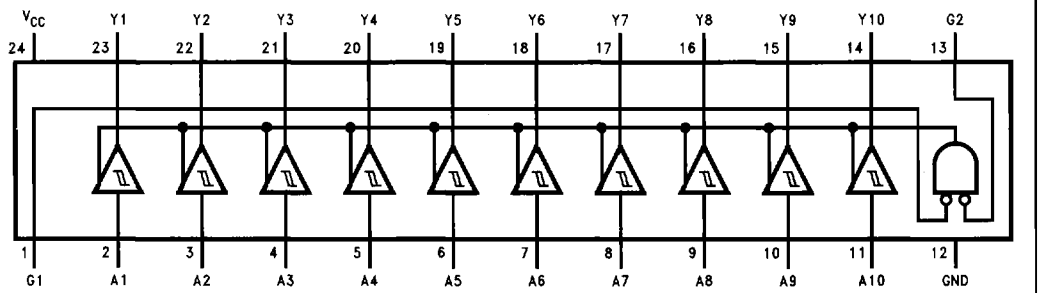
General Description

This 10-bit buffer/bus driver is designed for bus interfacing or busses with parity. The inputs include hysteresis which provides improved noise rejection. The device can be disabled when either controls (G1, G2) is at high; and the buses are effectively isolated.

Features

- Advanced oxide-isolated, ion implanted Schottky TTL process
- Switching specification guaranteed over the full temperature and V_{CC} range
- PNP inputs to reduce input loading
- Input hysteresis to improve noise margin
- Functionally and pin-for-pin compatible with AM29827 and SN74ALS29827

Connection Diagram



TL/F/11715–1

Order Number DM74ALS29827WM or DM74ALS29827NT
See NS Package Number M24B or N24C

Function Table

Control Inputs		Operation
G1	G2	
L	L	A Data to Y Bus
H	X	High Impedence
X	H	High Impedence

L = Low Logic Level

H = High Logic Level

X = Don't Care (Either Low or High Logic Level)

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Absolute Maximum Ratings

Supply Voltage	7V
Input Voltage	5.5V
Operating Free-Air Temperature Range	0°C to +75°C
Storage Temperature Range	−65°C to +150°C
Typical θ_{JA}	
N Package	86.4°C/W
M Package	81.4°C/W

Note: *The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the aboluste maximum ratings. The "Recomended Operating Conditions" table will define the conditions for actual device operations.*

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.5	5	5.5	V
V_{IH}	High Level Input Voltage	2			V
V_{IL}	Low Level Input Voltage			0.8	V
I_{OH}	High Level Output Current			−15	mA
I_{OL}	Low Level Output Current			48	mA
T_A	Free Air Operating Temperature Range	0		70	°C

Electrical Characteristics over recommended free air temperature range

Symbol	Parameter	Test Conditions		Min	Typ	Max	Units
V_{IK}	Input Clamp Voltage	V_{CC} = Min, I_I = −18 mA				−1.2	V
HYS	Hysteresis ($V_{T+} - V_{T-}$)	V_{CC} = Min		0.2	0.4		V
V_{OH}	High Level Output Voltage	V_{CC} = 4.5V to 5.5V	I_{OH} = −0.4 mA	V_{CC}−2			V
		V_{CC} = Min	I_{OH} = −15 mA	2			V
V_{OL}	Low Level Output Voltage	V_{CC} = Min, I_{OL} = 48 mA				0.53	V
I_I	Input Current at Maximum Input Voltage	V_{CC} = Max, V_I = 5.5V				100	μA
I_{IH}	High Level Input Current	V_{CC} = Max, V_I = 2.7V				20	μA
I_{IL}	Low Level Input Current	V_{CC} = Max, V_I = 0.4V				−100	μA
I_O	Output Drive Current	V_{CC} = Max, V_O = 0V (Note 1)		−75		−250	mA
I_{OZH}	High Level TRI-STATE Output Current	V_{CC} = Max, V_O = 2.7V				20	μA
I_{OZL}	Low Level TRI-STATE Output Current	V_{CC} = Max, V_O = 0.4V				−20	μA
I_{CC}	Supply Current	V_{CC} = Max				40	mA

Note 1: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Switching Characteristics over recommended operating free air temperature range (Note 4)

Symbol	Parameter	Conditions (Note 2) V_{CC} = 4.5V to 5.5V	From (Input) To (Output)	Min	Typ (Note 3)	Max	Units
t_{PLH}	Propagation Delay Time Low to High Level Output	C_L = 50 pF	A to Y		4.5	8	ns
		C_L = 300 pF			8.5		ns
t_{PHL}	Propagation Delay Time High to Low Level Output	C_L = 50 pF	A to Y		5.5	10	ns
		C_L = 300 pF			10.0		ns
t_{PZH}	Output Enable Time to High Level Output	C_L = 50 pF	G1 or G2 to Y		7.5	15	ns
		C_L = 300 pF			10.5		ns
t_{PZL}	Output Enable Time to Low Level Output	C_L = 50 pF	G1 or G2 to Y		10.0	15	ns
		C_L = 300 pF			15.5		ns
t_{PHZ}	Output Disable Time from High Level Output	C_L = 50 pF	G1 or G2 to Y		4.0	17	ns
		C_L = 300 pF			16.0		ns
t_{PLZ}	Output Disable Time from Low Level Output	C_L = 50 pF	G1 or G2 to Y		7.5	12	ns
		C_L = 300 pF			11.0		ns

Note 2: Standard ALS/AS test and loading conditions.

Note 3: All typicals are at V_{CC} = 5V T_A = 25°C.

Note 4: See Section 5 for test waveforms and output load.