National Semiconductor

MILITARY DATA SHEET

MN54F827-X REV 1A0

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10-BIT BUFFER/LINE DRIVER

General Description

The F827 10-bit bus buffer provides high performance bus interface buffering for wide data/address paths or buses carrying parity. The 10-bit buffers have NOR output enables for maximum control flexibility.

The F827 is functionally and pin compatible to AMDs AM29827. The F828 is an inverting version of the F827.

Industry Part Number

54F827

NS Part Numbers

54F827DMQB
54F827FMQB
54F827LMQB

Prime Die

M827

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (^{o}C)
1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55

Features

- TRI-STATE output
- F828 is inverting
- Direct replacement for AMDs Am29827 and Am29828

(Absolute Maximum Ratings)

(Note 1)

Storage Temperature	-65 C to +150 C
Ambient Temperature under Bias	-55 C to +125 C
Junction Temperature under Bias	-55 C to +175 C
Vcc Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-30 mA to +5.0 mA
Voltage Applied to Output in HIGH State (with Vcc =0V)	
Standard Output	-0.5V to Vcc
TRI-STATE Output	-0.5V to +5.5V
Current Applied to Output in LOW State (Max)	twice the rated Iol(mA)

Note 1: Absolute Maximum ratings are those values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

Free Air Ambient Temperature	
Commercial	0 C to +70 C
Military	-55 C to +125 C
Supply Voltage	
Military	+4.5V to +5.5V
Commercial	+4.5V to +5.5V

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: VCC 4.5V to 5.5V, Temp range: -55C to 125C

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
IIH	Input High Current	VCC=5.5V, VM=2.7V, VINH=5.5V	1, 3	INPUTS		20	uA	1, 2, 3
IBVI	Input HIGH Current	VCC=5.5V, VM=7.0V, VINH=5.5V	1, 3	INPUTS		100	uA	1, 2, 3
IILX	Input LOW Current	VCC=5.5V, VM=0.5V, VINL=0.0V	1, 3	INPUTS		-0.6	mA	1, 2, 3
VOLB	Output LOW Voltage	VCC=4.5V, VIH=0.8V, VIH=2.0V, IOLB=48mA, VINL=0.0V	1, 3	OUTPUTS		.55	V	1, 2, 3
VOH3	Output HIGH Voltage	VCC=4.5V, VIL=0.8V, IOH=-3.0mA, VINL=0.0V, VIH=2.0V	1, 3	OUTPUTS	2.4		V	1, 2, 3
VOHB	Output HIGH Voltage	VCC=4.5V, VIL=0.8V, IOH=-12.0mA, VINL=0.0V, VIH=2.0V	1, 3	OUTPUTS	2.0		V	1, 2, 3
IOS	Output Short-Circuit Current	VCC=5.5V, VINL=0.0V, VM=0.0V, VINH=5.5V	1, 3	OUTPUTS	-100	-225	mA	1, 2, 3
VCD	Input Clamp Diode Voltage	VCC=4.5V, IM=-18mA, VINH=5.5V	1, 3	INPUTS		-1.2	V	1, 2, 3
ICCH	Power Supply Current	VCC=5.5V, VINL=0.0V, VINH=5.5V	1, 3	VCC		43	mA	1, 2, 3
ICCL	Power Supply Current	VCC=5.5V, VINL=0.0V	1, 3	VCC		90	mA	1, 2, 3
ICCZ	Power Supply Current	VCC=5.5V, VINL=0.0V, VINH=5.5V	1, 3	VCC		57	mA	1, 2, 3
ICEX	Output HIGH Leakage Current	VCC=5.5V, VINL=0.0V, VINH=5.5V, VM=5.5V	1, 3	OUTPUTS		250	uA	1, 2, 3
IOZH	Output Leakage Current	VCC=5.5V, VM=2.7V, VIH=2.0V, VINH=5.5V, VINL=0.0V	1, 3	OUTPUTS		50	uA	1, 2, 3
IOZL	Output Leakage Current	VCC=5.5V, VM=0.5V, VIH=2.0V, VINH=5.5V, VIL=0.0V	1, 3	OUTPUTS		-50	uA	1, 2, 3

Electrical Characteristics

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: CL=50pf, RL=500 OHMS, TR=2.5ns, TF=2.5ns SEE AC FIGS

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLH	Propagation Delay	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	Dn to On	1.0	5.5	ns	9
			2, 4	Dn to On	1.0	7.5	ns	10, 11
tpHL	Propagation Delay	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	Dn to On	1.5	5.5	ns	9
			2, 4	Dn to On	1.5	7.0	ns	10, 11
tpZH	Enable Time	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	$\overline{OE}$ to On	3.0	9.0	ns	9
			2, 4	$\overline{OE}$ to On	2.5	10.0	ns	10, 11
tpZL	Enable Time	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	$\overline{OE}$ to On	3.5	11.5	ns	9
			2, 4	$\overline{OE}$ to On	3.0	12.5	ns	10, 11
tpHZ	Disable Time	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	$\overline{OE}$ to On	1.5	8.0	ns	9
			2, 4	$\overline{OE}$ to On	1.5	9.0	ns	10, 11
tpLZ	Disable Time	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	$\overline{OE}$ to On	1.0	8.0	ns	9
			2, 4	$\overline{OE}$ to On	1.0	9.0	ns	10, 11

Note 1: Screen tested 100% on each device at +25C, +125C & -55C temperature, subgroups A1, 2, 3, 7 & 8.
Note 2: Screen tested 100% on each device at +25C temperature only, subgroup A9.
Note 3: Sample tested (Method 5005, Table 1) on each MFG. lot at +25C, +125C & -55C temperature, subgroups A1, 2, 3, 7 & 8.
Note 4: Sample tested (Method 5005, Table 1) on each MFG. lot at +25C subgroup A9, and periodically at +125C & -55C temperature, subgroups 10 & 11.