

MN54ACT825-X REV 1B0

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8-Bit D-Type Flop-Flop

General Description

The ACT825 is an 8-bit buffered register. They have Clock Enable and Clear features which are ideal for parity bus interfacing in high performance microprogramming systems. Also included are multiple enables that allow multi-use control of the interface. The ACT825 has noninverting outputs and is fully compatible with AMD's Am29825.

Industry Part Number

54ACT825

Prime Die

J825

NS Part Numbers

 54ACT825DMQB
 54ACT825FMQB
 54ACT825LMQB

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883 5005

Subgrp	Description	Temp (°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

- Outputs source/sink 24mA
- Inputs and Outputs are on opposite sides
- ACT825 has TTL-compatible inputs Standard Military Drawing (SMD)
- ACT825: 5962-91611

(Absolute Maximum Ratings)

(Note 1)

Supply Voltage (Vcc)	-0.5V to +7.0V
DC Input Diode Current (IIK)	
Vi = -0.5V	-20 mA
Vi = Vcc +0.5V	+20 mA
DC Input Voltage (Vi)	-0.5V to Vcc +0.5V
DC Output Diode Current (Iok)	
Vo = -0.5V	-20 mA
Vo = Vcc +0.5V	+20 mA
DC Output Voltage (Vo)	-0.5V to Vcc +0.5V
DC Output Source or Sink Current (Io)	±50 mA
DC Vcc or Ground Current Per Output Pin (Icc or Ignd)	±50 mA
Storage Temperature (Tstg)	-65 C to +150 C
Junction Temperature (Tj)	
CDIP	175 C

Note 1: Absolute maximum ratings are those values beyond which damage to the device may occur. The databook specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature, and output/input loading variables. National does not recommend operation of FACT TM circuits outside databook specifications.

Recommended Operating Conditions

Supply Voltage (Vcc)	4.5V to 5.5V
Input Voltage (Vi)	0V to Vcc
Output Voltage (Vo)	0V to Vcc
Operating Temperature (Ta)	-55 C to +125 C
Minimum Input Edge Rate (Delta V/Delta t)	
ACT devices	
Vin from 0.8V to 2.0V	
Vcc @ 4.5V, 5.5V	125 mV/ns

Electrical Characteristics

DC PARAMETER

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: VCC 4.5V to 5.5V, Temp. Range: -55°C to 125°C. NOTE: -55°C TEMPERATURE, SUBGROUP 3 IS GUARANTEED BUT NOT TESTED.

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
IIH	High Level Input Current	VCC=5.5V, VM=5.5V	1, 2	INPUT		0.1	uA	1
			1, 2	INPUT		1.0	uA	2, 3
IIL	Low Level input Current	VCC=5.5V, VM=0.0V	1, 2	INPUT		-0.1	uA	1
			1, 2	INPUT		-1.0	uA	2, 3
VOL	Low level output voltage	VCC=4.5V, VIH=2.0V, VIL=0.8V, IOL=50.0uA	1, 2	OUTPUT		.10	V	1, 2, 3
		VCC=5.5V, VIH=2.0V, VIL=0.8V, IOL=50.0uA	1, 2	OUTPUT		.10	V	1, 2, 3
		VCC=4.5V, VIH=2.0V, VIL=0.8V, IOL=24.0mA	1, 2	OUTPUT		.36	V	1
		VCC=4.5V, VIH=2.0V, VIL=0.8V, IOL=24.0mA	1, 2	OUTPUT		.50	V	2, 3
		VCC=5.5V, VIH=2.0V, VIL=0.8V, IOL=24.0mA	1, 2	OUTPUT		.36	V	1
		VCC=5.5V, VIH=2.0V, VIL=0.8V, IOL=24.0mA	1, 2	OUTPUT		.50	V	2, 3
VIOL	Dynamic output current Low	VCC=5.5V, VIH=2.0V, VIL=0.8V, IOL=50.0mA	1, 2, 5	OUTPUT		1.65	V	1, 2, 3
VOH	High Level Output Voltage	VCC=4.5V, VIH=2.0V, VIL=0.8V, IOH=-50.0uA	1, 2	OUTPUT	4.40		V	1, 2, 3
		VCC=5.5V, VIH=2.0V, VIL=0.8V, IOH=-50.0uA	1, 2	OUTPUT	5.40		V	1, 2, 3
		VCC=4.5V, VIH=2.0V, VIL=0.8V, IOH=-24.0mA	1, 2	OUTPUT	3.86		V	1
		VCC=4.5V, VIH=2.0V, VIL=0.8V, IOH=-24.0mA	1, 2	OUTPUT	3.70		V	2, 3
		VCC=5.5V, VIH=2.0V, VIL=0.8V, IOH=-24.0mA	1, 2	OUTPUT	4.86		V	1
		VCC=5.5V, VIH=2.0V, VIL=0.8V, IOH=-24.0mA	1, 2	OUTPUT	4.70		V	2, 3
VIOH	Dynamic output current High	VCC=5.5V, VIH=2.0V, VIL=0.8V, IOH=-50.0mA	1, 2, 5	OUTPUTS	3.85		V	1, 2, 3
ICCH	Supply Current Outputs HIGH	VCC=5.5V	1, 2	VCC		8.0	uA	1
			1, 2	VCC		160	uA	2, 3
ICCL	Supply Current Outputs LOW	VCC=5.5V	1, 2	VCC		8.0	uA	1
			1, 2	VCC		160	uA	2, 3
ICCZ	Supply Current Outputs Tri-State	VCC=5.5V	1, 2	VCC		8.0	uA	1
			1, 2	VCC		160	uA	2, 3
ICCT	Supply Current per Input	VCC=5.5V, VIHT=VCC-2.1V	1, 2	VCC		1.0	mA	1
			1, 2	VCC		1.6	mA	2, 3

Electrical Characteristics

DC PARAMETER(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: VCC 4.5V to 5.5V, Temp. Range: -55C to 125C. NOTE: -55C TEMPERATURE, SUBGROUP 3 IS GUARANTEED BUT NOT TESTED.

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
IOZH	Maximum TRI-STATE Current	VCC=4.5V, VM=4.5V, VIH=2.0V	1, 2	OUTPUT		0.5	uA	1
			1, 2	OUTPUT		10.0	uA	2, 3
		VCC=5.5V, VM=5.5V, VIH=2.0V	1, 2	OUTPUT		0.5	uA	1
			1, 2	OUTPUT		10.0	uA	2, 3
IOZL	Maximum TRI-STATE Current	VCC=4.5V, VM=4.5V, VIH=2.0V	1, 2	OUTPUT		-0.5	uA	1
			1, 2	OUTPUT		-10.0	uA	2, 3
		VCC=5.5V, VM=5.5V, VIH=2.0V	1, 2	OUTPUT		-0.5	uA	1
			1, 2	OUTPUT		-10.0	uA	2, 3

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)

AC: CL=50pf, RL=500 OHMS, TR/TF=3.0ns, Temp range: -55C to +125C. NOTE: -55C TEMPERATURE, SUBGROUP 11 IS GUARANTEED BUT NOT TESTED.

tpLH(1)	Propagation Delay	VCC=4.5V	3, 4, 7	CP to On	1.5	9.5	ns	9
			3, 4, 7	CP to On	1.5	11.5	ns	10, 11
tpHL(1)	Propagation Delay	VCC=4.5V	3, 4, 7	CP to On	1.5	9.5	ns	9
			3, 4, 7	CP to On	1.5	11.5	ns	10, 11
tpHL(2)	Propagation Delay	VCC=4.5V	3, 4, 7	CLR to On	1.5	14.5	ns	9
			3, 4, 7	CLR to On	1.5	18.0	ns	10, 11
tpZH	Output Enable Time	VCC=4.5V	3, 4, 7	OE to On	1.5	9.5	ns	9
			3, 4, 7	OE to On	1.5	11.5	ns	10, 11
tpZL	Output Enable Time	VCC=4.5V	3, 4, 7	OE to On	1.5	10.5	ns	9
			3, 4, 7	OE to On	1.5	12.5	ns	10, 11
tpHZ	Output Disable Time	VCC=4.5V	3, 4, 7	OE to On	1.5	11.5	ns	9
			3, 4, 7	OE to On	1.5	13.5	ns	10, 11

Electrical Characteristics

AC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)

AC: CL=50pf, RL=500 OHMS, TR/TF=3.0ns, Temp range: -55C to +125C. NOTE: -55C TEMPERATURE, SUBGROUP 11 IS GUARANTEED BUT NOT TESTED.

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLZ	Output Disable Time	VCC=4.5V	3, 4, 7	OE to On	1.5	10.5	ns	9
			3, 4, 7	OE to On	1.5	13.0	ns	10, 11
ts(H/L)(1)	Setup Time HIGH or LOW	VCC=4.5V	6	Dn to CP	3.5		ns	9
			6	Dn to CP	4.0		ns	10, 11
th(H/L)(1)	Hold Time HIGH or LOW	VCC=4.5V	6	Dn to CP	2.5		ns	9, 10, 11
ts(H/L)(2)	Setup Time HIGH or LOW	VCC=4.5V	6	En to CP	3.5		ns	9
			6	En to CP	4.0		ns	10, 11
th(H/L)(2)	Hold Time HIGH or LOW	VCC=4.5V	6	En to CP	2.0		ns	9, 10, 11
tw(H/L)(1)	Pulse Width High or Low	VCC=4.5V	6	CP	6.0		ns	9, 10, 11
tw(L)(2)	Pulse Width	VCC=4.5V	6	CLR	6.0		ns	9
			6	CLR	7.0		ns	10, 11
trec	Recovery Time	VCC=4.5V	6	CLR to CP	4.0		ns	9
			6	CLR to CP	4.5		ns	10, 11
Fmax	Maximum Clock Frequency	VCC=4.5V	6	CP	95		MHz	9, 10, 11

Note 1: SCREEN TESTED 100% ON EACH DEVICE AT +25C & +125C TEMPERATURE, SUBGROUPS 1, 2, 7, & 8.

Note 2: SAMPLE TESTED (METHOD 5005, TABLE 1) ON EACH MFG. LOT AT +25C & +125C TEMPERATURE, SUBGROUPS A1, 2, 7, & 8.

Note 3: SCREEN TESTED 100% ON EACH DEVICE AT +25C TEMPERATURE ONLY SUBGROUP A9.

Note 4: SAMPLE TESTED (METHOD 5005, TABLE 1) ON EACH MFG. LOT AT +25C & +125C TEMPERATURE, SUBGROUPS A9 & 10.

Note 5: TRANSMISSION LINE DRIVING TEST, GUARDBAND LIMITS SET FOR +25C, 2 MSEC DURATION MAX.

Note 6: NOT TESTED AT +25C, +125C, OR -55C TEMPERATURE. LIMITS ARE GUARANTEED BY DESIGN CHARACTERIZATION DATA

Note 7: +25C & +125C MIN LIMITS GUARANTEED FOR 5.5V BY GUARDBANDING 4.5V MIN. LIMITS.