National Semiconductor

MILITARY DATA SHEET

MN100371-X REV 0B0

Original Creation Date: 10/30/95
Last Update Date: 08/28/96
Last Major Revision Date: 10/30/95

LOW POWER TRIPLE 4-INPUT MULTIPLEXER WITH ENABLE

General Description

The F100371 contains three 4-Input multiplexers which share a common decoder (inputs S0 and S1). Output buffer gates provide true and complement outputs. A HIGH on the Enable Input ($\overline{E}$) forces all true outputs LOW (see Truth Table). All inputs have 50 ohm pull-down resistors.

Industry Part Number

100371

NS Part Numbers

100371DMQB
100371FMQB

Prime Die

F371

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 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

- 35% power reduction of the 100171
- 2000V ESD protection
- Pin/function compatible with 100171
- Voltage compensated operating range= −4.2V to −5.7V
- Available to industrial grade temperature range

(Absolute Maximum Ratings)

(Note 1)

Storage Temperature (Tstg)	−65C to +150C
Maximum Junction Temperature (Tj)	
Ceramic	+175C
Plastic	+150C
Vee Pin Potential to Ground Pin	−7.0V to +0.5V
Input Voltage (DC)	Vee to +0.5V
Output Current (DC Output HIGH)	−50 mA
ESD (Note 2)	≥2000V

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: ESD testing conforms to MIL-STD-883, Method 3015.

Recommended Operating Conditions

Case Temperature (Tc)	
Commercial	0 C to +85 C
Industrial	−40 C to +85C
Military	−55C to +125C
Supply Voltage (Vee)	−5.7V to −4.2V

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Vee Range: -4.2V to -5.7V, Tc=-55C to +125C, VCC=VCCA=GND

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
IIH(1)	Input HIGH Current	VEE=-5.7V, VM=-0.87V	1, 3	IN		340	uA	1, 2
			1, 3	IN		490	uA	3
IIH(2)	Input HIGH Current	VEE=-5.7V, VM=-0.87V	1, 3	Sn, $\overline{E}$		300	uA	1, 2
			1, 3	Sn, $\overline{E}$		450	uA	3
IIL	Input Low Current	VEE=-4.2V, VM=-1.83V	1, 3	INPUTS	0.5		uA	1, 2, 3
VOH	Output HIGH Voltage	VEE=-4.2V/-5.7V, VIH=-0.87V, VIL=-1.83V, LOADING:50 Ohms to -2.0V	1, 3	OUTPUTS	-1025	-870	mV	1, 2
			1, 3	OUTPUTS	-1085	-870	mV	3
VOL	Output LOW Voltage	Vee=-4.2V/-5.7V, VIH=-0.87V, VIL=-1.83V, LOADING: 50 Ohms to -2.0V	1, 3	OUTPUTS	-1830	-1620	mV	1, 2
			1, 3	OUTPUTS	-1830	-1555	mV	3
VOHC	Output HIGH Voltage Corner Point High	Vee=-4.2V/-5.7V, VIH=-1.165V, VIL=-1.475V, Loading: 50 Ohms to -2.0V	1, 3	OUTPUTS	-1035		mV	1, 2
			1, 3	OUTPUTS	-1085		mV	3
VOLC	Output LOW Voltage Corner Point High	Vee=-4.2V/-5.7V, VIH=-1.165V, VIL=-1.475V, LOADING: 50 Ohms to -2.0V	1, 3	OUTPUTS		-1610	mV	1, 2
			1, 3	OUTPUTS		-1555	mV	3
VIH	Input HIGH Voltage		1, 3, 7	INPUTS	-1165	-870	mV	1, 2, 3
VIL	Input LOW Voltage		1, 3, 7	INPUTS	-1830	-1475	mV	1, 2, 3
IEE	Input LOW Voltage	VEE=-4.2/-5.7V	1, 3	INPUTS	-80	-30	mA	1, 2, 3

Electrical Characteristics

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: VEE Range: -4.2V to -5.7V, LOADING: 50 Ohms to -2.0V, VCC=VCCA=GND

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tPLH/tPHL(1)	Propagation Delay	VEE=-4.2/-5.7V	2, 4	In to Qn/$\overline{Qn}$	0.2	1.7	ns	9
			2, 4	In to Qn/$\overline{Qn}$	0.2	2.0	ns	10
			2, 4	In to Qn/$\overline{Qn}$	0.1	1.9	ns	11
tPLH/tPHL(2)	Propagation Delay	VEE=-4.2/-5.7V	2, 4	Sn to Qn/$\overline{Qn}$	0.6	2.4	ns	9
			2, 4	Sn to Qn/$\overline{Qn}$	0.5	2.9	ns	10
			2, 4	Sn to Qn/$\overline{Qn}$	0.4	2.7	ns	11
tPLH/tPHL(3)	Propagation Delay	VEE=-4.2/-5.7V	2, 4	$\overline{E}$ to Qn/$\overline{Qn}$	0.6	2.4	ns	9
			2, 4	$\overline{E}$ to Qn/$\overline{Qn}$	0.5	2.9	ns	10
			2, 4	$\overline{E}$ to Qn/$\overline{Qn}$	0.5	2.7	ns	11
tTLH/tTHL	Transistion Time	VEE=-4.2/-5.7V	6	Qn/$\overline{Qn}$	0.3	1.5	ns	9
			6	Qn/$\overline{Qn}$	0.2	1.6	ns	10, 11

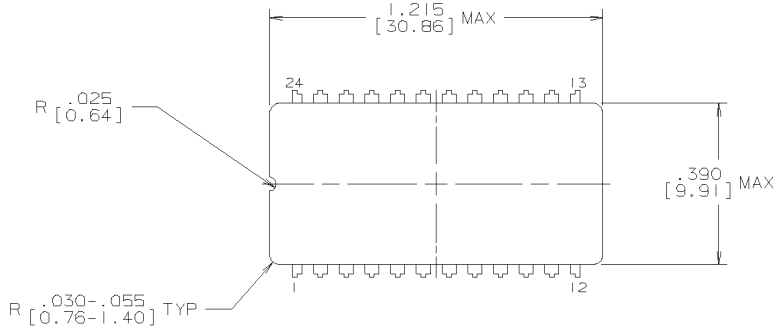
Note 1: Screen tested 100% on each device at -55 C, +25 C and +125 C temp., subgroups 1, 2, 3, 7 & 8.
Note 2: Screen tested 100% on each device at +25 C temp only, subgroup A9.
Note 3: Sample tested (Method 5005, Table 1) on each MFG. lot at +25 C, +125 C & -55 C temp., subgroups A1, 2, 3, 7 & 8.
Note 4: Sample tested (Method 5005, Table 1) on each MFG. lot at +25 C, subgroup A9, and at +125 C & -55 C temp., subgroups A10 & 11.
Note 5: Sample tested (Method 5005, Table 1) on each MFG. lot at +25 C temp. only, subgroup A9.
Note 6: Not tested at +25 C, +125 C & -55 C temp. (DESIGN CHARACTERIZATION DATA).
Note 7: Guaranteed by applying specified input condition and testing VOH/VOL.

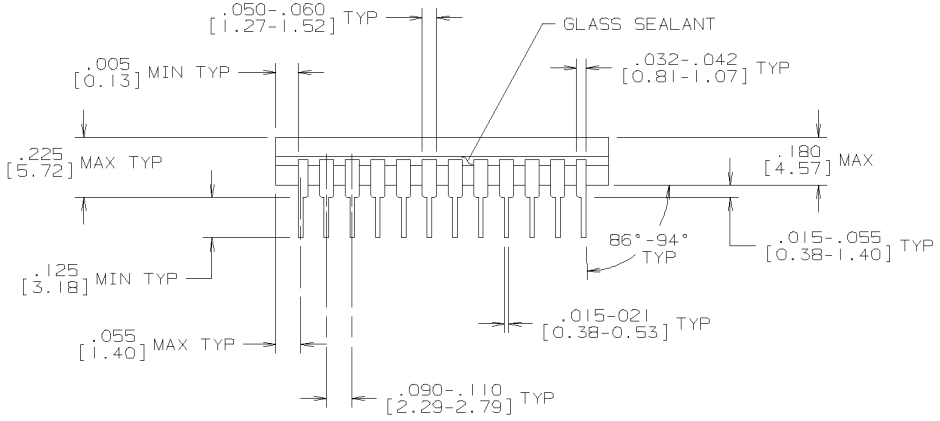
Graphics and Diagrams

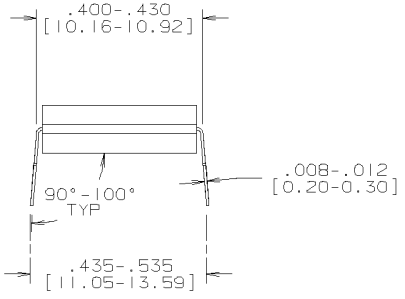
GRAPHICS#	DESCRIPTION
J24ERJ	CERDIP(J), 24LD .400 CENTERS (P/P DWG)
P000092A	CERDIP (J), 24LD .400 CENTERS (PIN OUT)
P000093A	CERPAC, QUAD, 24 LEAD (PIN OUT)
W24BRE	CERPAC, QUAD, 24 LEAD (P/P DWG)

See attached graphics following this page.

REVISIONS				
LTR	DESCRIPTION	E.C.N.	DATE	BY/APP'D
J	REVISE AND REDRAW	09044	03/05/92	DEG/







NOTES: UNLESS OTHERWISE SPECIFIED

1. LEAD FINISH: SOLDER DIPPED WITH Sn60 OR Sn63 SOLDER CONFORMING TO MIL-M-38510 TO A MINIMUM THICKNESS OF 200 MICROINCHES/5.08 MICROMETERS. SOLDER MAY BE APPLIED OVER LEAD BASIS METAL OR Sn PLATE.
2. LEAD THICKNESS MAY BE INCREASED BY .003 [0.08] MAXIMUM AFTER LEAD FINISH APPLIED.
3. BUMPERS ARE AVAILABLE ON CERTAIN PRODUCTS. BUMPERS WILL ADD .040 [1.02] MAX TO THE LENGTH OF THE PACKAGE.
4. NO JEDEC REGISTRATION AS OF 2/17/92.

MIL/AERO CONFIGURATION CONTROL

MIL-M-38510 CONFIGURATION CONTROL

CONTROLLING DIMENSION: INCH

APPROVALS	DATE
DRAWN D.E.GRADY	03/05/92
DFTG. CHK.	
ENGR. CHK.	
APPROVAL	

NATIONAL SEMICONDUCTOR CORPORATION
2900 Semiconductor Drive, Santa Clara, CA 95052-8090

CERDIP (J),
24 LEAD,
.400 CENTERS

PROJECTION
INCH
MM

SCALE	SIZE	DRAWING NUMBER	REV
N/A	C	MKT-J24E	J

FORMERLY: N/A

SHEET 1 OF 1