



MILITARY DATA SHEET

MN54F08-X REV 1A0

Original Creation Date: 03/06/96
Last Update Date: 07/30/96
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QUAD 2 INPUT AND GATE

General Description

This device contains four independent gates, each of which performs the logic AND function.

Industry Part Number

54F08

NS Part Numbers

54F08DMQB
54F08FMQB
54F08LMQB

Prime Die

M008

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

- Guaranteed 4000V minimum ESD protection

(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 +5.0mA |
| 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) |
| ESD Last Passing Voltage (Min) | 4000V |

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 PARAMETER

(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, VINL=0.0V | 1, 3 | INPUTS | | 20 | uA | 1, 2, 3 |
| IBVI | Input High Current | VCC=5.5V, VM=7.0V, VINH=5.5V, VINL=0.0V | 1, 3 | INPUTS | | 100 | uA | 1, 2, 3 |
| IIL | Input LOW Current | VCC=5.5V, VM=0.5V, VINH=5.5V | 1, 3 | INPUTS | | -0.6 | mA | 1, 2, 3 |
| VOL | Output LOW Voltage | VCC=4.5V, VIL=0.8V, IOL=20mA, VINH=5.5V | 1, 3 | OUTPUTS | | 0.5 | V | 1, 2, 3 |
| VOH | Output HIGH Voltage | VCC=4.5V, VIH=2.0V, IOH=-1.0mA, VINH=5.5V | 1, 3 | OUTPUTS | 2.5 | | V | 1, 2, 3 |
| IOS | Short-Circuit Current | VCC=5.5V, VINH=5.5V, VOUT=0.0V | 1, 3 | OUTPUTS | -60 | -150 | 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 | Supply Current | VCC=5.5V, VINH=5.5V | 1, 3 | VCC | | 8.3 | mA | 1, 2, 3 |
| ICCL | Supply Current | VCC=5.5V, VINL=0.0V | 1, 3 | VCC | | 12.9 | 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 |

AC PARAMETER

(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

| | | | | | | | | |
|------|-------------------|--|------|-------------|-----|-----|----|--------|
| tpLH | Propagation Delay | VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C | 2, 4 | An/Bn to On | 3.0 | 5.6 | ns | 9 |
| | | | 2, 4 | An/Bn to On | 2.5 | 7.5 | ns | 10, 11 |
| tpHL | Propagation Delay | VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C | 2, 4 | An/Bn to On | 2.5 | 5.3 | ns | 9 |
| | | | 2, 4 | An/Bn to On | 2.0 | 7.5 | ns | 10, 11 |

Note 1: Screen tested 100% on each device at -55C, +25C & +125C 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 at +125C & -55C temperature, subgroups 10 & 11.